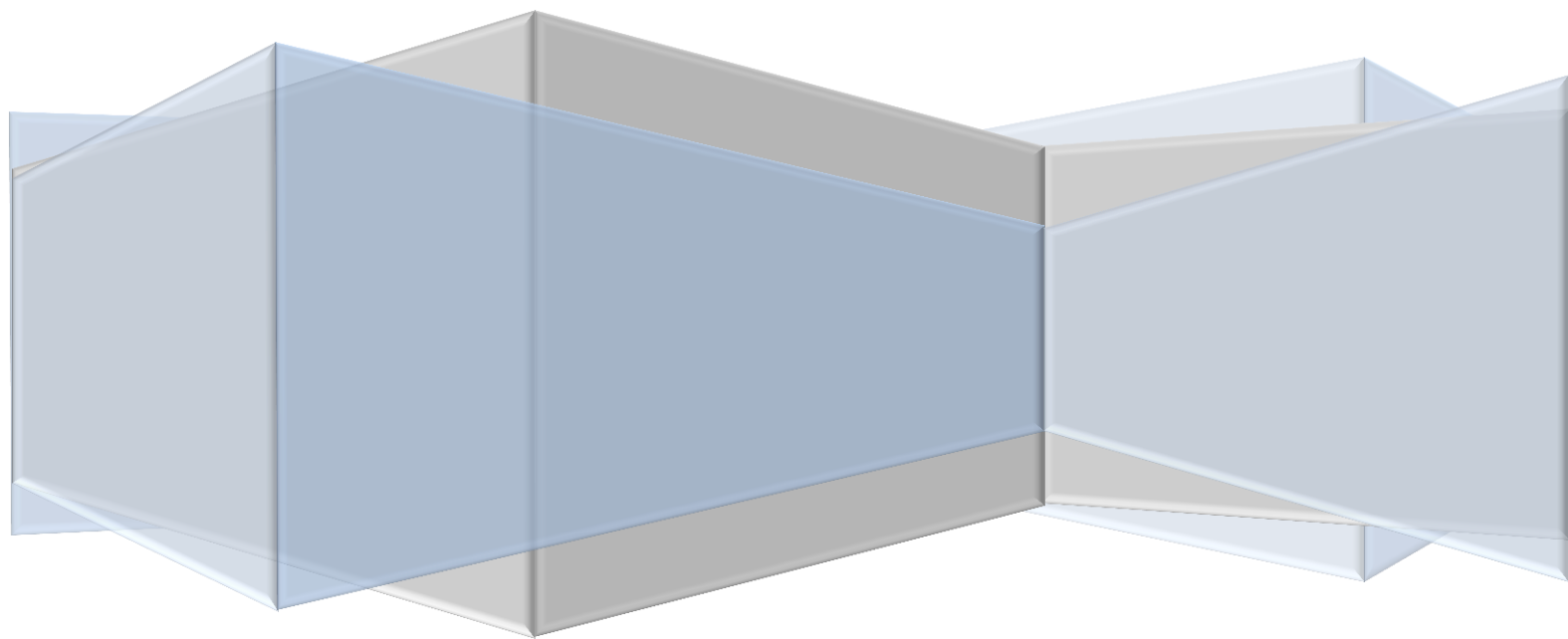
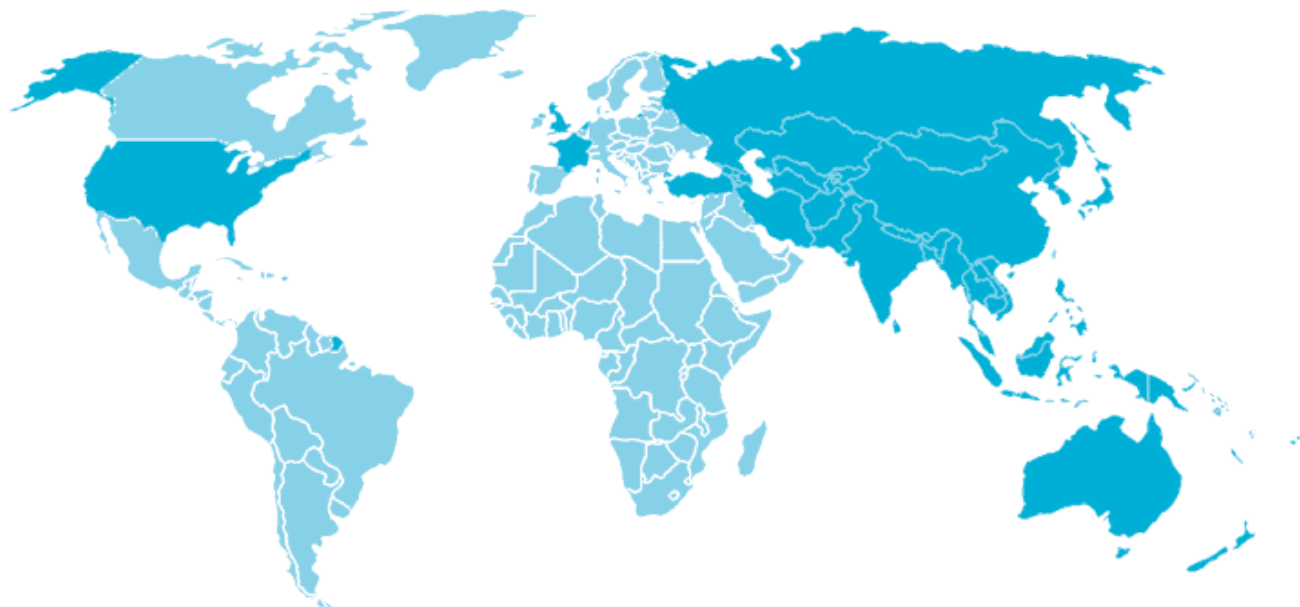


# Study on Integration of Transport Requirements in Single Window Environment



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UNITED NATIONS NETWORK OF EXPERTS FOR PAPERLESS TRADE  
AND TRANSPORT IN ASIA AND THE PACIFIC

UNITED NATIONS ECONOMIC AND SOCIAL COMMISSION FOR ASIA  
AND THE PACIFIC

# Study on Integration of Transport Requirements in Single Window Environment

This study was prepared by Transport Division ESCAP under the joint ESCAP (TID, TD and IDD) and ECE Development Account Project - Eighth Tranche entitled “Deepening Regional Connectivity: Strengthening Capacities of Asian Developing Countries to Increase Intra-regional Trade by Implementing Paperless Trade and Transport Facilitation Systems”. The draft of the study was prepared by Mr. Goran Andreev, Consultant, under the supervision of Mr. Sandeep Raj Jain, Economic Affairs Officer, Transport Facilitation and Logistics Section (TFLS), Transport Division, under the guidance of Ms. Virginia Tanase, Chief of the Section. Overall guidance was provided by Mr. Li Yuwei, Director, Transport Division.

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The work in this study was also presented at the Expert Group Meeting on Integrated Use of Single Windows for Trade Facilitation held in Bangkok on 8 September 2015 and Export Group Meeting on Integrated use of Single Window for Transport Facilitation held in Bangkok on 26 November 2015, both organized by ESCAP with support of United Nations Network of Experts for Paperless Trade and Transport in Asia and the Pacific (UNNExT). This publication incorporates some of the comments and suggestions provided by the selected government and private sector experts who participated in the Expert Group Meetings.

The views expressed in this guide are those of the authors and do not necessarily reflect the views of the United Nations Secretariat. The opinions, figures and estimates set forth in this guide are the responsibility of the authors, and should not necessarily be considered as reflecting the views or carrying the endorsement of the United Nations.

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This study is issued without formal editing.

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## LIST OF ABBREVIATIONS and ACRONYMS

<b>ACTS</b>	ASEAN Customs Transit System
<b>ASEAN</b>	Association of Southeast Asian Nations
<b>ASYCUDA</b>	Automated System for Customs Data
<b>AWB</b>	Air Waybill
<b>B2B</b>	Business to Business
<b>B2G</b>	Business to Government
<b>B/L</b>	Bill of Lading
<b>CBRA</b>	Cross-border regulatory agency
<b>CCN/CSI</b>	Common Communications Network / Common Systems Interface
<b>CCN</b>	Cargo Community Network
<b>CCS</b>	Cargo Community System
<b>CCP</b>	Cargo Clearance Permit
<b>COMESA</b>	Common Market for Eastern and Southern Africa
<b>D/O</b>	Delivery Order
<b>EDI</b>	Electronic data interchange
<b>EDIFACT</b>	Electronic Data Interchange for Administration, Commerce and Transport
<b>EFTA</b>	European Free Trade Association
<b>ERP</b>	Enterprise Resource Planning
<b>EU</b>	European Union
<b>FCL</b>	Full Container Load
<b>FIATA</b>	International Federation of Freight Forwarders Associations ( <i>French: Fédération Internationale des Associations de Transitaires et Assimilés</i> )
<b>G2G</b>	Government to Government
<b>GHS/HAZMAT</b>	Globally Harmonized System/Hazardous Materials and Items
<b>GPS</b>	Global positioning systems
<b>IATA</b>	International Air Transport Association

<b>ICAO</b>	International Civil Aviation Organization
<b>ICC</b>	International Chamber of Commerce
<b>ICT</b>	Information and communication technology
<b>IMO</b>	International Maritime Organization
<b>IOS</b>	Inter-Organization System
<b>ISCM</b>	International Supply Chain Model
<b>ISO</b>	International Organization for Standardization
<b>IPCSA</b>	International Port Community Systems Association
<b>LCL</b>	Less Than Container Load
<b>MFCS</b>	Manifest Consolidation System
<b>MOU</b>	Memorandum of Understanding
<b>NCTS</b>	New Computerized Transit System
<b>NSW</b>	National Single Window
<b>NVOCC</b>	Non-Vessel Operating Common Carrier
<b>PAA</b>	Pan Asian Alliance
<b>PCS</b>	Port Community System
<b>PKI</b>	Public Key Infrastructure
<b>PPP</b>	Private Public Partnership
<b>RFID</b>	Radio frequency identification
<b>SAD</b>	Single Administrative Document
<b>SADC</b>	Southern African Development Community
<b>SCMS</b>	Supply Chain Management System
<b>SFTP</b>	Secure File Transfer Protocol
<b>SW</b>	Single Window
<b>SWB</b>	Sea Waybill
<b>SWIF</b>	Single Window Implementation Framework
<b>TMS</b>	Transport Management System



<b>UN ESCAP</b>	UN Economic and Social Commission for Asia and the Pacific
<b>UN/CEFACT</b>	United Nations Centre for Trade Facilitation and Electronic Business
<b>UNCITRAL</b>	United Nations Commission on International Trade Law
<b>UNCTAD</b>	United Nations Conference on Trade and Development
<b>UNDA</b>	United Nations Development Agenda
<b>UNECE</b>	United Nations Economic Commission for Europe
<b>UNLK</b>	UN Layout Key
<b>UNNExT</b>	United Nations Network of Experts for paperless Trade and Transport
<b>ENS</b>	Entry Summery declaration
<b>UNTDDED</b>	United Nations Trade Data Elements Directory
<b>VAN</b>	Value-added network
<b>VAS</b>	Value-added service
<b>WB</b>	World Bank
<b>WCO</b>	World Customs Organization
<b>WTO</b>	World Trade Organization
<b>XML</b>	Extensible Mark-up Language

# Chapter 1      Background

Trade and transport procedures among developing countries of the region are complex and cumbersome. In order to enhance intraregional trade it is necessary to effectively address trade and transport facilitation concerns leading to high transaction costs. In this regard application of information and communications technologies (ICT) can play substantial role by increasing efficiency of flow of information among various stakeholders and streamlining the procedures involved.

In order to assist member states in building their capacity to implement paperless systems for cross-border trade and transport and support the implementation of national and regional single windows, ESCAP along with ECE are implementing United Nations Development Account tranche eight project entitled “Deepening Regional Connectivity: Strengthening capacities of Asian Developing Countries to Increase Intra-regional Trade by Implementing Paperless Trade and Transportation Systems”. This study on integrating transport requirements for international trade in Single Window environment has been undertaken under the project, to document current practices, ascertain gaps and suggest way forward.

Single window concept has been successfully implemented in many countries in Asia and the Pacific region, resulting in increase in efficiency of export and import processes. Implemented single windows have introduced effective electronic exchange of information with customs and other government agencies involved. However, in order to address overall international supply chain efficiency, it is necessary to improve information flows with respect to the processes among all supply chain stakeholders (e.g. port authorities, carriers, logistics operators).

Regulatory single windows, which are mainly present in the countries of the region, are often focused on export and import processes and they are not necessarily covering customs transit (e.g. customs transit declarations and transit guarantees) and transit/transport-related regulation and processes (e.g. transit/transport permits or transport management).

The focus of this study is on:

- transport and transit requirements in paperless systems;
- transport-related single windows systems; and
- integration of transport requirements and transport-related systems, including customs transit systems, in overall single window environment.

This study highlights how the transport requirements in international transport are being met or can be met in the single window environment with aim to enhance the capacities of member countries to develop and implement paperless transport and

transit systems and improve efficiency of international transport, which is in line with the newly adopted United Nations Sustainable Development Goals (SDGs).

The study could be subsequently used as the basis for training and capacity building workshops on implementation of paperless transport and transit systems in single window environment.

Introduction of integrated single window solutions with paperless customs transit and transport-related systems could bring important economic advantages in terms of:

- reduction of time required for processing of transport documents,
- simplification and facilitation of transport and transit-related processes,
- reduced time for transport operations, and
- decreased transaction costs.

This study is organized into eight chapters; the first Chapter gives the background of the study and explains its structure.

Chapter 2 reviews the existing single window definitions, concepts and models with regard to transport. It proposes categorization of single windows for analysis purposes based on territorial coverage and main business area covered. In addition, it briefly presents United Nations and World Customs Organization (WCO) tools and recommendations including studies and guidelines developed by United Nations Network of Experts for Paperless Trade and Transport Facilitation in Asia and the Pacific (UNNExT). More specifically transport-oriented guidelines for setting up single window systems in maritime transport developed by International Maritime Organization (IMO) are also presented.

Chapter 3 ascertains key transport requirements in international trade for different modes of transport that have to be considered while analysing and developing paperless transport-related information exchange and related systems in single window environment. The chapter further identifies main stakeholders by mode of transport. It analyses transport processes and elements from the point of view of different business areas covered: business-to-business (B2B), port related or regulatory area. Transport-related information exchange and documentary requirements, in interactions between main transport stakeholders and other stakeholders in the international supply chain are underlined. Electronic alternatives to paper-based transport related documents such as e-air waybill (e-AWB), e-bill of lading (e-B/L), are also presented.

Chapter 4 gives an overview of the research on different single window systems with transport related features included. It documents several cases of national single windows in the region (e.g. Republic of Korea, Singapore, Thailand).

Some regional and international transport-oriented initiatives related to single window concept are also presented (e.g. EU e-maritime single window, IATA e-freight).

This chapter also reviews customs transit modules in e-customs systems and their relation with single window facilities (e.g. ASYCUDA, NCTS). The widely accepted TIR transit system has not been covered in detail because it is still predominantly paper based. However, it should be noted that some options for electronic support of TIR Carnet processing have already been introduced (e.g. TIR Electronic Pre-Declaration TIR-EPD) and opened possibilities for integration with customs information systems and accordingly with single window facilities. Initiatives for cross border connectivity such as international electronic document exchange; regional single windows; and global supply chain visibility projects are also pointed out in the Chapter 4.

Chapter 5 identifies key issues for developing transport related single window where transport requirements are integrated. This chapter classifies the attributes of transport related single window as regulatory, port-related and B2B transport/logistics-related single windows, and discusses options for integration of transport-related single windows, and other related paperless systems in overall single window environment.

Chapter 6 discusses challenges to integrate transport requirements in single window with regard to: technical and legal requirements on electronic transport documentation; fragmentation of single windows and stakeholders systems; data harmonization, standardization and technological requirements; national and cross-border coordination; establishment of legal framework; ICT infrastructure, interoperability and interconnectivity among the systems.

Chapter 7 gives an overview on the role of the governments and international organizations in promoting integration of transport requirements in the single window by expressing political will, supporting interagency coordination, enabling legislative framework, laying standards for exchange of information and providing platform for sharing experience and forum for forging institutional arrangements.

Chapter 8 provides conclusions and recommendations for the way ahead, suggesting long term vision and intermediate solutions towards integration of transport requirements in single window environment.

# Chapter 2      Review of Single Window Definitions, Concepts and Models

## 2.1      Defining single window

There are several definitions on single window offered by international organizations and the most quoted definition of UN Centre for Trade Facilitation and Electronic Business (UN/CEFACT) is clearly transport relevant.

### **Box 1: UN/CEFACT definition of “single window”**

“A facility that allows parties involved in trade and transport to lodge standardized information and documents with a single entry point to fulfil all import, export, and transit-related regulatory requirements. If information is electronic, then individual data elements should only be submitted once.”

Source: ECE, UN/CEFACT, 2005, Recommendation 33 - Recommendation and Guidelines on establishing a SW

World Customs Organization (WCO) definition of “single window environment” is mainly in line with UN/CEFACT definition. The emphasis on cross-border component supports inclusion of transport related stakeholders, since they are most directly involved in moving the goods across the borders. The preference for using the term “environment” is supported with observations that the single window implementation usually involves a collection of interdependent facilities, regulatory requirements and cross border regulatory agencies' business processes.<sup>1</sup>

WCO definition emphasize that single window facility should be “intelligent”, indicating that in addition to unified access for submission of information and documents, the single window should provide various services and integrated view of the transactions (e.g. computation of duties, coordinated risk managements).<sup>2</sup>

### **Box 2: WCO definition of “single window environment”**

“A cross border, ‘intelligent’, facility that allows parties involved in trade and transport to lodge standardized information, mainly electronic, with a single entry point to fulfill all import, export and transit-related regulatory requirements.”

Source: WCO, Single Window Information Store

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

2 WCO Compendium, 2011, How to Build Single Window Environment – Volume 1: The Executive Guide, (p.17)- Accessible at: <http://www.wcoomd.org/en/topics/facilitation/activities-and-programmes/single-window/~media/252D1BF37A814526BF5BFFEAB7F13692.ashx>

Single window definitions on regional and national level generally follow UN and WCO definitions, sometimes with adjustments in order to respond to local specifics and to highlight specific scope of the single window.

Both UN/CEFACT and WCO definitions on single window refer to trade and transport with regard to “single entry point to fulfil all import, export, and transit-related regulatory requirements”. In these definitions the focus is mainly on regulatory side (e.g. customs, transport related authorities), which means that business-to-business (B2B) transport related information exchange (e.g. information about discovery of transport partners, transport documents, shipment and dispatch of the cargo, B2B port operations) are not covered.

B2B information exchange and data exchange on regulatory requirements regarding procedures and processes at seaports, airports, dry-ports (e.g. cargo centres, border-crossing facilities) between the trade and transport community and port authorities/operators are often taking place via specialized systems (e.g. port community systems). Some of port/cargo community systems could be considered to be single windows, even if they have limited coverage. These systems may substantially vary from port to port and from country to country. The International Port Community System Association (IPCSA) defines port community systems in a compatible way for single window concept.

### **Box 3: IPCSA definition of port community system**

“A neutral and open electronic platform enabling intelligent and secure exchange of information between public and private stakeholders in order to improve the efficiency and competitive position of the sea and airports’ communities.

Optimizes, manages and automates smooth port and logistics processes through a single submission of data and by connecting transport and logistics chains.”

Source: IPCSA, 2015, How to develop a Port Community System

Existing understanding of single window concept, as expressed in various single window definitions discussed above, includes opportunities for transport related stakeholders to lodge standardized transport related information and documentation in relation to international transport, including transit.

Implementation of single window shows that there are various forms of facilities in practice, depending on country’s priorities and capacities. In reality there are very different models of single windows and such variety not necessarily fits well with the attempts to define the single window.

## 2.2 Single window concepts and models

Complexity of international trade and transport, with abundance of stakeholders, different procedures, repeated submission of various documents, represents serious operational challenge if participants cannot communicate and exchange all necessary information among them in efficient and cost effective way. Significant delays could be caused by poor coordination between the stakeholders.

Single window offers the concept of single entry point for the relevant information exchange among the stakeholders involved. It increases efficiency of communication between stakeholders, and reduces delays and costs of trade and transport operations.

Single Window concept is not a new idea and there are many examples where governments have been making efforts to organize their operations in a way that a single front office will enable transparent and easy single entry point for the paper or electronic communication and subsequent reorganized back-offices will provide relevant individual services.

Even though paper based documents and manual systems of communication are not excluded from the single window concept, efficient exchange of variety of documents and messages between various stakeholders in the complex international trade and transport environment could be done only with use of ICT and Internet. New ICT solutions and easier availability are opening possibilities for new and better services. ICT solutions and electronic information exchange are improving efficiency of communication and offering options for redesign of business processes in order to extend even further trade and transport facilitation.

### Single window models

UN/CEFACT Recommendation Number 33 identifies following different models of single window:

- a) a **single authority** that receives paper based or electronic information and disseminates them to the relevant authorities;
- b) a **single automated system**:
  - integrated – where data are collected, processed and then distributed to interested cross border regulatory agencies;
  - interfaced – where data are collected and sent to the interested agencies for processing; or
  - hybrid which is combination of previous two options; and
- c) an **automated information transaction system**, which offers a possibility of submitting necessary information and single application for approvals to

the various cross border regulatory agencies that subsequently electronically transmit approvals back to the traders.

The WCO builds on UN/CEFACT models on single window and expands understanding of **cross-border regulatory** single window environment. Further WCO analysis identifies single window as:

- **part of coordinated border management;**
- **virtual enterprise**, which may be:
  - a legal entity,
  - a web-portal or
  - an orchestrated network of collaborating facilities and organizations;  
and
- **collection of trade, transport and regulatory processes.**<sup>3</sup>

The WCO overview of trade, transport and regulatory processes, presents three distinct views that take place simultaneously. The overview shows transport processes (such as discovery of transport service provider, booking transport service, carriage of goods, delivery of goods, and post-delivery formalities) and corresponding trade processes (e.g. order, despatch, shipment and delivery of goods) and regulatory processes (e.g. export, transit, import).

The WCO overview of trade, transport and regulatory processes recognizes relevant IT systems associated with various business processes for:

- Trade sector (e.g. traders systems; enterprise resource planning (ERP) systems; B2B, business to government (B2G), and government to government (G2G) e-commerce portals; B2B trade single windows; value-added network (VAN) service providers and intermediaries);
- Transport sector (e.g. transporters systems; ERP systems; B2B logistics portals; B2B logistics single windows; VAN service providers and intermediaries);
- Regulatory authorities (certificate authorities systems; e-government portals; automated customs systems; automated cross-border regulatory authorities (CBRA) systems; Cargo Community Systems; Single Windows (B2G/G2B and G2G); electronic port clearance systems.<sup>4</sup>

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<sup>3</sup> WCO Compendium, 2011, How to Build Single Window Environment – Volume 1: The Executive Guide, (p.17). Accessible at: <http://www.wcoomd.org/en/topics/facilitation/activities-and-programmes/single-window/~media/252D1BF37A814526BF5BFFEAB7F13692.ashx>

<sup>4</sup> WCO Compendium, 2011, How to Build Single Window Environment – Volume 2: The Professional Practice Guide (p.83-86), Accessible at: <http://www.wcoomd.org/en/topics/facilitation/activities-and-programmes/single-window/~media/861FFA93206B41D8BE754371ADA7A112.ashx>



Some classifications identify **limited** single windows such as:

- **Customs** single window, which includes customs authorities and trading community, and do not fully cover the permits and licensing of all other cross border regulatory agencies;
- **Port** single window (which provides information about the vessel to the authorities on a port level) and **port community** systems (which enables B2B exchange of messages in the port environment, with regard to commercial, transportation and logistics processes); and
- **Sub-national** single window at city or provincial level in larger countries (e.g. Shanghai E-Port Platform in China) as more feasible way to group local trade and regulatory agencies.<sup>5</sup>

Single window is usually implemented gradually and development of single window environment may include integration of several separate single window initiatives. When the stages of evolution of the single window are considered the United Nations network of experts for paperless trade and transport (UNNExT) identifies five development levels, which could correlate with several models of single window:

- 1) **paperless customs** systems;
- 2) **regulatory single window**, which includes customs and other regulatory bodies that issue permits and other documents with respect to export, import or transit;
- 3) **port single window** or **B2B port community system**, which include entire trade and logistics communities within airports, seaports and dry ports;
- 4) **fully integrated national single window**, which includes all companies and service sector related to the import, export and transit operations (e.g. banks and trade finance, cargo insurance companies, traders, freight forwarders, customs agents and customs brokers, agents and carriers); and
- 5) **cross-border single window**, which extends integration of national single windows into bilateral/regional electronic information exchange platform.<sup>6</sup>

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<sup>5</sup> Jonathan Koh Tat Tsen, 2011, Ten Years of Single Window Implementation: Lessons Learned for the Future (p.10-12). Accessible at:  
[http://www.unece.org/fileadmin/DAM/trade/Trade\\_Facilitation\\_Forum/BkgrdDocs/TenYearsSingleWindow.pdf](http://www.unece.org/fileadmin/DAM/trade/Trade_Facilitation_Forum/BkgrdDocs/TenYearsSingleWindow.pdf)

<sup>6</sup> UNESCAP/UNECE/UNNEXT, 2012, Single Window Planning and Implementation Guide. Accessible at:  
<http://unnex.unescap.org/tools/implement-guide.pdf>

Single windows could differ if analyzed by their business model regarding:

- operator, which could be
  - governmental institution, or
  - service provider.
- establishment and financing, which could be provided by:
  - the government (e.g. Finland, Sweden, United States),
  - private sector (e.g. Guatemala, Germany), or
  - private-public partnership (e.g. China, Malaysia, Mauritius, Singapore);
- obligation for usage, which could be:
  - compulsory (e.g. Finland, Guatemala, Mauritius, Senegal), or
  - voluntary (e.g. China, Germany, Malaysia, Sweden, United States);
- obligation for service payment, which could be:
  - free of charge (e.g. Finland, Sweden, United States)
  - on service payment scheme (e.g. Guatemala, Germany, China, Malaysia, Mauritius, Senegal, Singapore).<sup>7</sup>

More transport-oriented concept of single window is provided by IMO, which recognizes two types of single window in the context of shipping:

- **Ship single window**, for the clearance information that may be required according to the Convention on Facilitation of International Maritime Traffic (FAL Convention); and
- **Cargo and trade single window**, which deal with the import or export clearance of cargo by customs authorities and other involved agencies.<sup>8</sup>

Building on IMO observations, UNECE 2013, paper “Trends for collaboration in international trade: Building a common Single Window Environment” recognizes:

- **Trade-related single windows**, which provide electronic services for trade-related regulations (e.g. customs clearance of cargo, import/export permits). The focus on trade-related single window is on trading goods and handling cargo; and
- **Transport operations-related single windows**, which deal with the physical operations to move the goods (e.g. electronic information exchange involving maritime authorities, sea safety and traffic controllers,

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<sup>7</sup> UNECE/UNCEFACT, Case Studies on Implementing a Single Window, Accessible at: [http://www.unece.org/fileadmin/DAM/cefact/single\\_window/draft\\_160905.pdf](http://www.unece.org/fileadmin/DAM/cefact/single_window/draft_160905.pdf)

<sup>8</sup> IMO, 2011, Guidelines for Setting up a Single Window System in Maritime Transport (p.18). Accessible at: <http://www.imo.org/OurWork/Facilitation/docs/FAL%20related%20nonmandatory%20instruments/FAL.5-%20Circ.36.pdf>

vessel piloting, towage and mooring services, port authorities, vessel agents and vessel operators).<sup>9</sup>

Variety of single window models presented above only proves that there are no one-size fits all solution. There are numerous options that could be based on single window concept and various IT systems that could be integrated or connected in order to enhance electronic exchange of trade, transport and regulatory data.

It is very challenging to decide:

- what kind of single window(s) suits best for all stakeholders involved;
- what kind of single windows and related IT systems could provide best value in terms of economic benefits and return of investment;
- how to develop and implement single window systems;
- how to include transport requirements in single window environment; and
- which other existing single windows and/or IT systems to be integrated and/or connected.

For such decision in depth local knowledge and thorough analysis of possible options, is necessary in order to determine advantages and disadvantages and feasibility for each of the options. Carefully managed process for establishing and upgrading single window systems should eventually provide recommendation for single window solution that corresponds best to specific national/regional conditions and adequately includes transport requirements as well.

### 2.3 Types of single window systems and single window environment

For better understanding of transport requirements and their integration in single window environment this study proposes categorization of single windows for analysis purposes based on territorial coverage and main business area covered.

For the purposes of this study we will refer to single window in regard to:

- a) territorial coverage as:
  - national single window systems; and
  - international single window systems;
- b) main business area and transactions covered as:
  - regulatory single window systems;
  - port-related single window systems; and
  - single windows with B2B trade/transport/logistics components.

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<sup>9</sup> UNECE, 2013, Trends for collaboration in international trade: Building a common Single Window Environment (p.16). Accessible at: <http://www.unece.org/fileadmin/DAM/trade/Publications/ECE-TRADE-411.pdf>

It should be understood that such references express the attributes of single windows, which are not exclusive. The actual single windows systems could have several attributes. National single windows for example may offer some services for cross-border information exchange. Single windows may cover several business area and transactions, some more dominant than other.

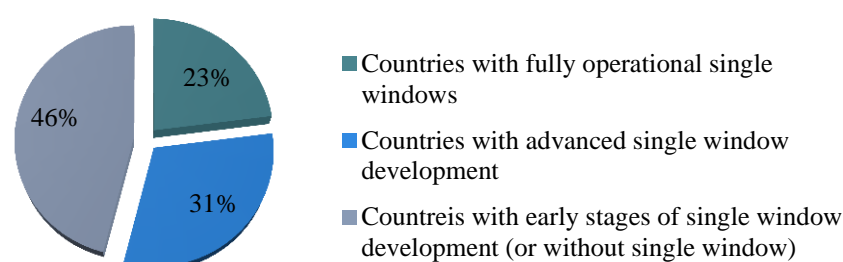
Proposed categorization of single window models could be useful for: studying single window requirements; comparative analysis between various single window options and best practices between different countries/regions; and evaluating possibilities for single window integration nationally/cross-border.

**National single windows** systems are designed to cover national information exchange. They usually include requirements from customs and other regulatory/permit issuing agencies. National single windows may also include systems with limited national regulatory coverage (e.g. paperless customs systems without all regulatory agencies being included), or systems with limited territorial processing/territorial coverage (e.g. port community systems).

The number of national single windows around the world is steadily rising since the 1990s. WCO survey of single window implementation in 2010 shows that 34 percent, out of the 58 member customs administrations surveyed, had single window type cargo clearance system, however most of the customs administrations without a single window, implied that they are in the process of developing single window system.<sup>10</sup>

An expert survey of participants the Asia-Pacific Trade Facilitation Forum (2012), shows that majority of 26 countries in this region already have or are in the various stages of national single window development.<sup>11</sup>

**Figure 1: Development of national single window systems in Asian countries**



Source: ESCAP, 2013, Trade Facilitation and Paperless Trade in Asia: Results from an Expert Survey

<sup>10</sup> Jae Young Choi, August 2011, WCO Research Paper No. 17: A Survey of Single Window Implementation. Accessible at: <http://www.wcoomd.org/en/topics/research/~/media/2DF5A36D3ECA46CCB7B17BDF77ACC021.ashx>

<sup>11</sup> Source: ESCAP, 2013, Trade Facilitation and Paperless Trade in Asia: Results from an Expert Survey. Accessible at: [http://www.unescap.org/sites/default/files/TIDwp01\\_13\\_0.pdf](http://www.unescap.org/sites/default/files/TIDwp01_13_0.pdf)

World Bank Doing Business report 2013 presents that on global level 71 countries are providing single window, and among them 18 have the systems that link all relevant government agencies, and remaining 53 systems partially link selected agencies. The trend of providing national single window facilities and expanding their scope is expected to rise in the future.

**International single windows** are designed to cover cross-border information exchange, and they could be regulated on bilateral, multilateral or regional level. International single windows may be developed as centralized facility for common use of several countries or in distributed manner, where interface among several national single windows is enabled. Development of international single windows is still in early stages, however it might be expected that such systems will be more and more visible in the future.

Examples of cross-border exchanges and international single windows include cross-border information exchange under pan Asian e-commerce alliance<sup>12</sup> and regional ASEAN single window.<sup>13</sup> UNECE keeps repository of single window case studies from several countries that provide information on various country experiences with the establishment of single window.<sup>14</sup> Several national windows and international initiatives are presented in Chapter 4 of this study.

**Regulatory single window** systems are focused on information exchange regarding regulatory requirements mainly about cargo and clearance for import, export or transit. They cover interactions of traders, transporters, and other professionals with customs and other permit issuing authorities. Regulatory processes are presented in level five (trade regulation) in Figure 2 below. They are most frequently present in a form of trade single windows. In this study our interest for regulatory single windows is in the part of e-customs transit systems (e.g. ASYCUDA transit module integration with single window systems; EU NCTS transit systems and EU member states national regulatory single windows). Transport regulatory requirements could be covered with single window systems as well (e.g. transit/transport permits for land transport). In practice systems that cover transport regulation often operate as independent systems that could be better integrated with port related systems (e.g. maritime single window and seaport single window).

**Port-related single window** systems cover port centric information exchange among relevant regulatory and commercial stakeholders. That includes electronic interactions with port authorities and other stakeholders about entrance, exit and movements of transport means, cargo, crew and passengers at specific port (e.g. specific airport, seaport and dry-port/border crossing). The exchanges in port-related

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<sup>12</sup> <http://www.paa.net>

<sup>13</sup> <http://asw.asean.org>

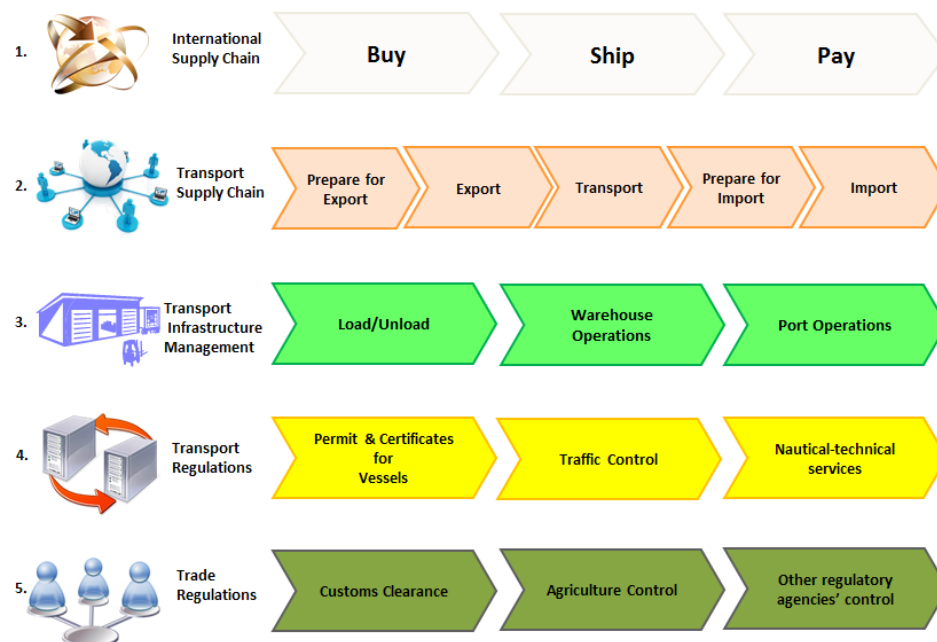
<sup>14</sup> Accessible at UNECE website: [http://www.unece.org/cefact/single\\_window/welcome.html](http://www.unece.org/cefact/single_window/welcome.html)

single window could be B2G/G2B concerning transport regulation (e.g. safety and security of the transport) and often B2B about using port services. Port-related single windows could interact on national level or even cross border.

#### Box 4: Business processes and interoperability in single window environment

UNECE 2013, paper “Trends for collaboration in international trade: Building a common Single Window Environment” identifies layers of business process areas in the international supply chain could that be clustered in five groups as presented in Figure 2. Collaboration between relevant stakeholders in each level could be supported with related inter-organization systems (IOSs) /single windows. With global interoperability established, IOSs could exchange information among themselves expanding single window environment.

**Figure 2: Layers of business processes in the international supply chain**



Source: UNECE, 2013, Trends for collaboration in international trade: Building a common Single Window Environment. Accessible at: <http://www.unece.org/fileadmin/DAM/trade/Publications/ECE-TRADE-411.pdf>

Transport and port-related processes are presented in the level four (transport regulation) and the level three (transport infrastructure management) in the Figure 2. Port-related single windows are not so frequent if compared with regulatory single windows. They are mostly visible in EU, even though such single windows are emerging in some of Asia and Pacific countries as well. They are mostly present in a form of maritime single window and port community systems. They could be developed as standalone systems, or integrated/connected in platforms with other regulatory single windows and/or trade/transport/logistics B2B systems.

**Single windows extended with B2B trade/transport/logistics components** are single window platforms, which provide services for trade/transport/logistics information exchange among private sector. They may relate to international supply chain process presented in level one in the Figure 2 or to transport supply chain presented in levels two and three in the same figure.

Such platforms may cover various trade, transport and logistics transactions such as commercial transactions between traders/transporters, interactions with banks, insurance companies, forwarders, logistics operators and clearing agents. They could exist in a form of:

- standalone portals/networks (e.g. e-logistics portals/networks) linked with regulatory/port-related single windows;
- individual transport/logistics systems linked in extended regulatory/port-related single window systems; or
- centralized regulatory/port-related single windows with integrated B2B trade/transport/logistics services.

In this study we will refer mainly to transport/logistics requirements and related B2B systems in integrated single window environment.

The main idea behind single window concept is trade and transport facilitation. Due to the complexity of international trade and transport processes and huge number of stakeholders involved, single windows may substantially differ in the scope covered. Differences with respect to involved stakeholders, type of transactions covered, territorial coverage result in different single window models. Several individual projects could sometimes lead to development of more integrated single window environment. In some countries several models of single windows could exist in same time.

#### **Box 5: Main characteristics of single window concept**

- Trade and transport facilitation oriented;
- Provides single entry point for exchange of relevant documents and information among the stakeholders involved (regulatory and extended B2B);
- Enables electronic data exchange and additional services with support of ICT;
- Supports redesigned and streamlined business processes;
- Variety in scope and several implementation modalities due to differences with respect to: involved stakeholders, transactions covered, territorial coverage etc.;
- Incremental and project driven development;
- Intention for integration of various single windows whenever it is viable.



Single window concept is applicable in different scenarios with the main goal to enable maximized opportunities for trade and transport facilitation. Existence of different models of single window is understandable, having in mind that the conditions and policies for facilitation of international trade and transport differ from country to country. Having multiple single windows should not eventually burden international trade and transport with multiple requirements for the same stakeholders. Therefore it is important to strive to integrate and/or interlink various single window initiatives whenever it is viable. On long run it will be much more efficient if with incremental steps integration/interconnection of various types of single window systems and other relevant information systems could be achieved nationally and even cross-border.

## 2.4 International instruments on Single Window

There are many instruments developed by United Nations (e.g. UNECE and ESCAP), WCO and other international agencies and developing partners regarding single window systems. A number of recommendation, tools and guidelines have been developed to support process of planning and implementing a single window environment. The governments and participating agencies are using those important instruments to analyze and develop or upgrade national single window systems.

UNCEFACT (2005) Recommendation 33 is one of the first international instruments that recommends to the governments to establish a single window.<sup>15</sup> The goal of such facility is to expedite and simplify information flows among parties involved in transport as well. It defines the concept of single window for submission of standardized information and/or documents only once at a single entry point to fulfil all import, export, and transit-related regulatory requirements. This recommendation advises participating authorities and agencies to share all information in respect of international trade transactions and co-ordinate their respective controls and formalities.

Guidelines attached to Recommendation 33 make general references to traders and trade related documents that also include transporters and transport related documents. The guidelines present most common single window models, suggest the role of leading agency, and list the benefits of single window. The guidelines briefly describe practical steps in planning and implementing single window and available tools for development of single window. Key factors for establishing successful single window are identified (e.g. political will, partnership between government and trade, establishment of clear project boundaries and objectives, legally-enabling environment) which are relevant for transport related requirements as well.

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<sup>15</sup> UNECE/UNCEFACT, 2005, Recommendation and Guidelines on establishing a Single Window (Recommendation No.33). Accessible at:  
[http://www.unece.org/fileadmin/DAM/cefact/recommendations/rec33/rec33\\_trd352e.pdf](http://www.unece.org/fileadmin/DAM/cefact/recommendations/rec33/rec33_trd352e.pdf)



UNCEFACT (2013) Recommendation 34 supports single window implementation with harmonization and standardization of trade information requirements, and encourages the use of international data exchange standards.<sup>16</sup> It provide guidance for using simple four-stage process (capture / define / analyze / reconcile), which will result with adoption of simplified and standardized national data set for exchange of information between governments and traders. The recommendation suggests international standards such as United Nations Trade Data Elements Directory (UNTD ED) and the respective UN/CEFACT Recommendations Code List. The guidelines which complement this recommendation provide further explanations and offer best practice examples from successfully undertaken data simplification and standardization exercises.

This recommendation includes harmonization and standardization of transport related data elements (e.g. mode of transport, place of discharge etc.) and data that originate from carriers and other transport related parties. The recommendation also advocates consultation between government, trade and transport community in the process for harmonization and standardization of information flows.

UNCEFACT (2013) Recommendation 35 address legal issues on setting up a single window facility, such as regulations on electronic submission of documents, electronic signatures including digital signatures, user and message authentication, data sharing, data retention and electronic evidence. This recommendation provides guidance on gap analysis of existing and potential legal barriers by using suggested checklist of common legal issues encountered when introducing a Single Window facility.<sup>17</sup>

The recommendation advises to amend existing legislation if necessary, to address the identified legal issues and utilize international standards/international legal instruments (e.g. UN Convention on the Use of Electronic Communications in International Contracts (2005); UNCITRAL Model Law on Electronic Commerce (1996); UNCITRAL Model Law on Electronic Signatures (2001) to create a legally enabling environment for an international trade single window. Even though transport related electronic information exchange is not specifically addressed; legal issues discussed in this recommendation are valid for introduction of transport related requirements in single window environment.

Revised UNCEFACT (2013) Recommendation 14 encourages the use of electronic data transfer and electronically transmitted authentication methods, which

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<sup>16</sup> UNECE/UNCEFACT, 2013, Data Simplification and Standardization for International Trade (Recommendation No.34). Accessible at: [http://www.unece.org/fileadmin/DAM/trade/Publications/ECE-TRADE-400E\\_Rec34.pdf](http://www.unece.org/fileadmin/DAM/trade/Publications/ECE-TRADE-400E_Rec34.pdf)

<sup>17</sup> UNECE/UNCEFACT, 2013, Establishing a legal framework for international trade Single Window (Recommendation No.35). Accessible at: [http://www.unece.org/fileadmin/DAM/trade/Publications/ECE-TRADE-401E\\_Rec35.pdf](http://www.unece.org/fileadmin/DAM/trade/Publications/ECE-TRADE-401E_Rec35.pdf)

may eliminate the need for paper-based trade documents.<sup>18</sup> It recommends creating a legal or contractual framework that enables equal legal status to such authentication methods and considering removal of the requirement for a signature (manual-ink or its electronic equivalent) in all nonessential cases. The related guidelines detail the functions of a signature and requirements for signatures in trade documents. It also refer to the use of various authentication methods, technological neutrality, levels of reliability, typologies of electronic authentication methods, use of third party services, security of data, transmission of data, archiving/retrieval, and creation of legally enabling environment.

Trade documents covered with this recommendation include transport documents such as Export Cargo Shipping Instruction, Bill of Lading, Sea and, or Airway Bill, Consignment Note and Certificate of Shipment.

**Figure 3: SWIF Single Window Development Methodology**



Source: UNNEXT, 2012, Single Window Planning and Implementation Guide, Fig3.2 (p.28)

UNNEXT Single window implementation tool kit consists of several practical guidelines, which complement each other and cover various aspects in the process of planning, analysing, developing and implementing single window.

UNNEXT (2012) “Single Window Planning and Implementation Guide”<sup>19</sup> recommends Single window implementation framework (SWIF),<sup>20</sup> an architecture-based approach that provides guidance how to systematically address single window implementation challenges. SFIW identifies ten smaller and easier manageable components critical to single window development.

<sup>18</sup> UN/CEFACT, 2014, Revision of Recommendation 14: Authentication of Trade Documents. Accessible at: [http://www.unece.org/fileadmin/DAM/cefact/recommendations/rec14/ECE\\_TRADE\\_C\\_CEFAC\\_2014\\_6E\\_Rec14.pdf](http://www.unece.org/fileadmin/DAM/cefact/recommendations/rec14/ECE_TRADE_C_CEFAC_2014_6E_Rec14.pdf)

<sup>19</sup> UNNEXT, 2012, Single Window Planning and Implementation Guide. Accessible at: <http://unnex.unescap.org/tools/implement-guide.pdf>

<sup>20</sup> SWIF is originally developed under EU funded ITAIDE project by Eveline van Stijn, Thayanan Phuaphanthong, Somnuk Kerotho, Markus Pikart, Wout Hofman, and Yao-Hua Tan. UNECE, 2011, SW Implementation Framework available at: <http://www.unece.org/fileadmin/DAM/cefact/publica/SWImplementationFramework.pdf>

Those 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.

SWIF, which is applicable for single window transport requirements, advises to implement single window project by establishing a development cycle focused on those ten critical components. It recommends step-by-step approach for analysis, planning and implementation of single window. Key objectives, activities and outputs in are summarized for each of the components.

As elaborated earlier in part 2.2 of this Study, this guide also discusses the evolution of single window, which includes integration of transport and logistics chains with customs and regulatory procedures. Port Community Systems or Port Single windows, which connect the private-sector stakeholders and intermediaries at major airports, seaports, or borders, may be connected with the paperless customs systems and regulatory single windows to serve entire trade and logistics communities.

UNNExT (2012) “Electronic Single Window Legal Issues: A Capacity-Building Guide”<sup>21</sup> covers wide-range of single window legal topics. It discusses single window enabling legislation and the legal framework for electronic transactions necessary for single window operation. The guide analyses legal challenges and processes for identification of potential gaps that could create legal barriers to electronic single window operation and interoperability. It examines the essential legal elements for single window implementation (e.g. legal framework issues; electronic signatures authentication and integrity; data quality, protection, retention issues). Several mini case studies on single window legal framework are also presented.

Single window legal topics addressed in this guide are generally relevant for transport-related single window requirements and electronic transport documents. Some specific legal issues (e.g. cross-border recognition of electronic signatures, electronic transferability of goods) important for transport related documents (e.g. electronic bills of lading) are tackled without being discussed in detail.

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<sup>21</sup> UNESCAP/UNECE/UNNEXT, 2012, Electronic Single Window Legal Issues: A Capacity-Building Guide. Accessible at: <http://unnex.unescap.org/pub/tipub2636.pdf>

UNNExT (2012) “Business Process Analysis Guide to Simplify Trade Procedures”<sup>22</sup> offers a simple methodology to analyze the “as-is” business processes in international trade and transport and identify problem areas, bottlenecks and redundancies that could be addressed. It recommends three phases and few steps in each phase such as: scope setting (defining the project scope; development of work plan), data collection and process documentation (acquiring background information; conducting interviews and documenting captured data) and process analysis and recommendations development (“as-is” processes analysis; proposing recommendations). The guidelines contain practical examples from application of business process analysis in Thailand, with analysis of transport procedures included.

Building on UNECE Recommendation No.34 and WCO Single window data harmonization guidelines, the UNNExT (2012), “Data Harmonization and Modeling Guide for Single Window Environment”<sup>23</sup> details on: step-by-step approach (capture / define / analyze / reconcile / obtain structure of electronic documents), for harmonization of data elements of different international supply chain documents including transport related services documents.

The guideline advises on planning a data harmonization project and introduces the standards for data harmonization and development of electronic documents such as: UN Layout Key (UNLK); UN Trade data element directory (UNTD); Data Models (UN/CEFACT Core Component Technical Specification (CCTS), UN/CEFACT Core Component Library (CCL), WCO Data Model).

This guideline is valuable capacity building resource for harmonization of data elements and the structure of trade, transport and administrative documents, which is necessary for implementation of single window projects including projects that cover transport related requirements.

UNNExT (2012) “Guide for the Design of Aligned Trade Forms for Paperless Trade”<sup>24</sup> offers support in designing trade and transport documents (e.g. Air Waybill, Sea Waybill) aligned with international standards and best practice. It also facilitates development of paperless electronic documents for use in single window environment. The guide is based on UNLK and illustrates common technical requirements on formatting and design of aligned forms and documents. Details on UNTDED, code lists and developing electronic documents based on aligned paper documents are also presented.

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<sup>22</sup> UNESCAP/UNECE/UNNEXT, 2012, Business Process Analysis Guide to Simplify Trade Procedures. Accessible at: <http://unnex.t.unescap.org/pub/tipub2558new.asp>

<sup>23</sup> UNESCAP/UNECE/UNNEXT, 2012, Data Harmonization and Modeling Guide for Single Window Environment. Accessible at: <http://unnex.t.unescap.org/pub/tipub2619.pdf>

<sup>24</sup> UNESCAP/UNECE/UNNEXT, 2012, Guide for the Design of Aligned Trade Forms for Paperless Trade. Accessible at: [http://www.unece.org/fileadmin/DAM/trade/Publications/ece\\_372\\_ManualForDesignAlignedTradeForms.pdf](http://www.unece.org/fileadmin/DAM/trade/Publications/ece_372_ManualForDesignAlignedTradeForms.pdf)

WCO Compendium (2011) “How to Build Single Window Environment”<sup>25</sup> is developed in order to support single window capacity building efforts. It has two volumes, Volume 1: “The Executive Guide” explains the concept of single window environment and examines different approaches to this concept. It analyzes various border management functions and the implications for services delivered under a single window environment.

The Volume 1 of the guide addresses the policy considerations in the development of single window solutions; establishing formal structures; designing single window services; dealing with legal issues; human resources and change management. The Volume 2: “The Professional Practice Guide” discusses tools and techniques to support technical experts working on projects to establish a single window. It refers to functional assessment for the single window environment and business processes; single window data harmonization and dematerialization of supporting documents; single window architecture and developing single window business case.

The WCO 2011 SW compendium identifies transport and logistics services as part of border management functions and single window concept. Such services may include: electronic facility for filing conveyance reports; sharing of electronic information on registration and certification on means of transport with the relevant regulatory authority; online services that guide traffic through the land air and sea facilities at the border; providing real-time waiting time and queuing information; services to deal with allocation of loading and unloading bays/berths, scheduling of cargo operations, regulatory inspections; access to cargo manifest data, etc.

The Compendium briefly discusses physical and logistics side of operations (e.g. tugging and pilotage, terminal handling, container yard management, tally and accounting, intra-terminal and intra-port-facility movements, and warehouse management) vis-à-vis overall single window environment. The role of cargo community systems as intermediary between B2B interactions and B2G single windows is reviewed. Trade, transport and regulatory views of the supply chain as well as related IT systems are examined in order to highlight complexities involved in single window implementation.

WCO (2009) Data Model (version 3.0)<sup>26</sup> is developed as a set of carefully combined data requirements in accordance with procedural and legal needs related to

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<sup>25</sup> WCO Compendium (2011) How to Build Single Window Environment. Accessible at: <http://www.wcoomd.org/en/topics/facilitation/activities-and-programmes/single-window/single-window-guidelines.aspx#{228E2A1B-6B48-4D59-9FF4-1451CBCF62EC}>

<sup>26</sup> Additional information of WCO Data Model are available on [http://www.wcoomd.org/en/topics/facilitation/instrument-and-tools/tools/pf\\_tools\\_datamodel.aspx#{A6A2ADDD-5C4E-410F-B6F4-9FC703BB1DC9}](http://www.wcoomd.org/en/topics/facilitation/instrument-and-tools/tools/pf_tools_datamodel.aspx#{A6A2ADDD-5C4E-410F-B6F4-9FC703BB1DC9}) WCO Data Model 3 is available at: [http://wcoomdpublishings.org/data-model-3.html?id=836&store=english&from\\_store=french](http://wcoomdpublishings.org/data-model-3.html?id=836&store=english&from_store=french)

export, import and transit transactions. It is aligned with other international instruments and standards such as Revised Kyoto Convention and UNTDED. The WCO Data Model is not just a list of data elements, because it offers an analysis/optimization of procedural requirements and processes; develops related business processes; illustrates the information flows from all cross border regulatory agencies and provides their categorization; assembles a range of models and produces messaging guidelines. WCO Data Model contains transport related data elements (e.g. container transport indicator; conveyance reference number; transport equipment information; mode/type mode of transport; transport document type/number; carrier name/identification etc.).

Agreement on Trade Facilitation<sup>27</sup> is the latest WTO instrument, which identifies single windows as one of the important contributors for trade and transport facilitation and calls upon endeavour to establish or maintain single window. Single window provisions in WTO Agreement on Trade Facilitation enquire notification from the member countries about details of single window operation, which might increase sharing of best experiences in this regard.

#### **Box 6: WTO Trade Facilitation Agreement**

##### **Article 10: Formalities connected with importation, exportation and transit**

##### **Paragraph 4: Single Window**

4.1 Members shall endeavor to establish or maintain a single window, enabling traders to submit documentation and/or data requirements for importation, exportation, or transit of goods through a single entry point to the participating authorities or agencies. After the examination by the participating authorities or agencies of the documentation and/or data, the results shall be notified to the applicants through the single window in a timely manner.

4.2 In cases where documentation and/or data requirements have already been received through the single window, the same documentation and/or data requirements shall not be requested by participating authorities or agencies except in urgent circumstances and other limited exceptions which are made public.

4.3 Members shall notify the Committee of the details of operation of the single window.

4.4 Members shall, to the extent possible and practicable, use information technology to support the single window.

Single window provisions of WTO Trade Facilitation Agreement include transit related requirements, however they do not specifically mention transport and transport related single window requirements. WTO provisions on single window are relevant for transport related single window requirements, having in mind that broad

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<sup>27</sup> WTO, 2014, Trade Facilitation Agreement. Accessible at: [https://www.wto.org/english/tratop\\_e/tradfa\\_e/tradfa\\_e.htm](https://www.wto.org/english/tratop_e/tradfa_e/tradfa_e.htm)



understanding of the term “trader” may include transporters as well, and participating authorities and agencies may be transport related authorities or agencies. IMO guidelines on maritime single window are an example of international instrument specifically developed with emphasis of single window in maritime transport environment.

IMO (2011) “Guidelines for setting up single window system in maritime transport”<sup>28</sup> provide specific guidance on maritime transport clearance. The guidelines objective is to provide a framework for single window system that will include:

- simplified electronic means of clearance of ships in maritime transport;
- standardized logistics activities and information in overall maritime transport, and
- improved maritime logistics efficiency and strengthened competitiveness.

The relevant clearance in the scope of IMO guidelines could refer to clearance for a ship to enter or leave national waters, clearance for a ship to berth, clearance for the ship to load or offload, clearance for the ship to leave berth, including clearance for the cargo to be imported or exported.

The IMO guidelines discuss different types of single windows, the concepts behind the single window for maritime transport; relationship of transport processes and requirements in general trade environment and scope of single window. Step-by-step approach to the implementation of a single window solution for maritime transport identifies following phases:

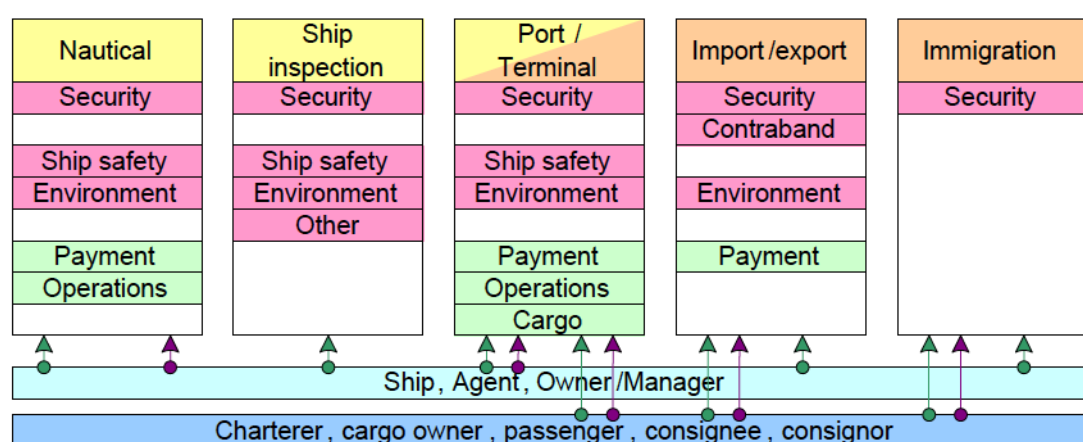
- determination of scope and stakeholders;
- analysis of relevant policy issues;
- consideration to use legacy systems;
- determination of requirements for information security, business model, methodology and tools;
- design process;
- identification of data elements (with cross references to all the FAL forms data elements);

The role of different user groups involved in ship clearance is analyzed. The main users groups responsible for the clearance process are authorities responsible for nautical matters, inspections, port operations, import/export and immigration. Users group involved in transport operations could be ship owner/managers, ship agents, charter/cargo owner, consignee and consignor.

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<sup>28</sup> IMO, 2011, Guidelines for Setting up a Single Window System in Maritime Transport (p.18). Accessible at: <http://www.imo.org/OurWork/Facilitation/docs/FAL%20related%20nonmandatory%20instruments/FAL.5-%20Circ.36.pdf>

**Figure 4: Maritime Single Window users groups**



Source: IMO, 2011, Guidelines for Setting up a Single Window System in Maritime Transport (Fig.5 p.15)

Several case studies of specific national maritime transport-related single windows are also presented in the annexes of the guidelines (e.g. Republic of Korea, Netherlands, Japan, Norway). IMO recommendation and guidelines promote and encourage the use of single window concept in maritime transport and could be useful tool in support for development of national maritime single windows.

IMO guidelines are showing that implementation of single window can take different paths, and main challenge is to provide that prospective users could actually make optimal use of the new technological solutions employed. There are various ways to integrate and link physical IT systems of ports, regulatory single window facilities and commercial operators. Some single windows are developed for exclusive use of regulatory authorities, and other are created in private-public partnership with strong commercial components. Differences also exist from country to country and among different single window facilities regarding data entry into single window, tools to facilitate data entry and electronic data exchange.

For example some countries have developed common national single window that serves for both, regulatory and port clearance. Other countries may prefer to have separate national single window only for regulatory clearance. Port clearance could be harmonized at national level or differences may exist among different ports. Some ports may have port single windows for handling commercial clearance (e.g. large ports), while port clearance at other ports may involve multiple parties in the port without single window facilities (e.g. small ports). Some small and medium sized ports have port management information systems that may be linked with different parties and their IT systems.

Following recommendations developed in international instruments on single window reduces gaps between various single window and other IT systems (e.g. with higher level of harmonization and standardization of data elements). That could enhance opportunities for future linkages among different systems in order to maximize benefits of trade and transport facilitation form the use of single window.



### **Box 7: International instruments on Single Window**

#### UNECE, UN/CEFACT Recommendations<sup>29</sup>:

- Recommendation No.33 - Recommendation and Guidelines on establishing a Single Window (2005);
- Recommendation No.34 - Data Simplification and Standardization for International Trade (2013);
- Recommendation No.35 - Establishing a legal framework for international trade Single Window (2013);
- Recommendation No. 14 - Authentication of Trade Documents (Revised 2014);

#### UNNExT Single window implementation tool kit<sup>30</sup>:

- Single Window Planning and Implementation Guide (2012);
- Electronic Single Window Legal Issues: A Capacity-Building Guide (2012);
- Business Process Analysis Guide to Simplify Trade Procedures (Sept 2012);
- Data Harmonization and Modeling Guide for Single Window Environment (2012);
- Guide for the Design of Aligned Trade Forms for Paperless Trade (2012).

#### WCO Compendium, How to Build Single Window Environment (2011):

- The Executive Guide (Volume 1),
- The Professional Practice Guide (Volume 2).

#### WCO Data Model (version 3.0 – 2009)

#### WTO Trade Facilitation Agreement (Article 10.4) (2014)

#### IMO Guidelines for setting up single window system in maritime transport (2011)

Majority of the instruments presented above do not have focus on transport/logistics aspects however the concepts and methodologies discussed in the instruments are fully applicable for transport/logistics oriented single windows. Therefore countries and parties interested in introducing transport related requirements in single window environment should study and use not only transport specific guidelines (e.g. IMO Guidelines), but other general international instruments such as UNECE, UN/CEFACT Recommendations, UNNExT Single window implementation tool kit and WCO compendium and data model as well. These instruments could enlarge the knowledge and understanding of single window concept, support capacity building for preparation and implementation of single window project, highlight opportunities and challenges expected.

<sup>29</sup> Accessible at UNECE website: <http://www.unece.org/tradewelcome/areas-of-work/un-centre-for-trade-facilitation-and-e-business-uncefact/outputs/cefactrecommendationsrec-index/list-of-trade-facilitation-recommendations-n-31-to-35.html>

<sup>30</sup> Accessible at UNNExT website: <http://unnnext.unescap.org/tools/default.asp>

## Chapter 3      Key international transport requirements in single window environment

The single window facilities are beneficial for efficient exchange of information with customs and other regulatory agencies and address other bottlenecks in international trade. However, other aspects of international supply chain, such as port related processes, transport and logistics processes are also burdensome and contribute to delays for trading across the borders increasing costs and reducing competitiveness.

Analysis of international transport processes can indicate impediments and opportunities for increased efficiency at national or cross-border/corridor level where the transport and transport-related processes could be improved. Such areas include international transport/transit, customs transit, operations at ports (including airports, seaports, dry-ports, intermodal terminals and land border crossings), and B2B transport-related operations.

Integration of transport requirements in single window environment involves providing single window services to main transport related stakeholders. Such services should facilitate transport related processes and enable seamless electronic exchange of transport related documents and information. This chapter gives an overview of main transport related: stakeholders, processes and documents by mode of transport. These three categories are considered while analysing transport-related requirements in single window environment.

The overview presented in this chapter is largely based on identified stakeholders, processes and documents in International Supply Chain Model (ISCM),<sup>31</sup> WCO Compendium (2011) How to Build Single Window Environment<sup>32</sup> and United Nations Layout Key (UNLK).<sup>33</sup> This serves only as initial guidance for

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<sup>31</sup> Additional information is available at:  
<http://www.unece.org/cefact/platform/display/TBG/International+Supply+Chain+Reference+Model>

<sup>32</sup> WCO Compendium, 2011, How to Build Single Window Environment – (Volume 1: p.27-29 and Volume 2: Chapter 3 p.92-102)

<sup>33</sup> UNECE, 2002, UN Layout Key for Trade Documents - Guidelines for application – Informative Annex to Recommendation No.1, accessible at:  
[http://www.unece.org/fileadmin/DAM/cefact/recommendations/rec01/rec01\\_ecetr270.pdf](http://www.unece.org/fileadmin/DAM/cefact/recommendations/rec01/rec01_ecetr270.pdf)

identification of stakeholders, processes and documents when analysing specific national transport requirements and documents.

### 3.1 Main transport-related stakeholders in international trade process

Following parties could be recognized as main transport-related stakeholders:

- **transport service providers**, which includes local/domestic/pre-carriers; main carriers (including carriers in transit); on-carriers, as well as multi modal or single transport mode carriers such as:
  - shipping lines (sea transport enterprises / shipping firms) and non-vessel operating common carrier-NVOCC (in maritime transport);
  - inland waterway transport enterprises (in inland waterway transport);
  - airlines (commercial air transport operators) (in air transport)
  - road transport enterprises (in road transport);
  - railway transport operators (in railway transport);
  - postal and express courier service providers.
- **shipping and forwarding service providers** (shipping agents; forwarders; forwarding agents; customs brokers);
- **other logistics / cargo handling service providers** (including services providers in warehouses, logistics centres, terminals and ports) (e.g. warehouse depositor; warehouse keeper; logistics centre operator; inland container depot operator, border crossing operator, shed operator; shipping agent, berth operator; terminal operator; cargo handling company).

Main transport-related stakeholders are included in the group of “intermediary” actors in accordance with International Supply Chain Reference Model (ISCM) (or Buy-Ship-Pay Model). Main transport-related stakeholders interact under the “ship” processes, with other actors such as:

- customers (consignees, buyers, importers);
- suppliers (consignors, sellers, exporters, manufacturers); and
- authorities (customs; transport related ministries (e.g. maritime, aviation, road transport); receiving authorities/port authorities; immigration; permit issuing agencies; inspections, control and safety agencies).

Other actors in intermediary group with whom main transport-related stakeholders could also interact include: banks/financial institutions; customs brokers; export/import agents; and insurance companies.

In general preparation for transport processes in order to ensure fundamental elements of international transport (e.g. transport permits, transport means

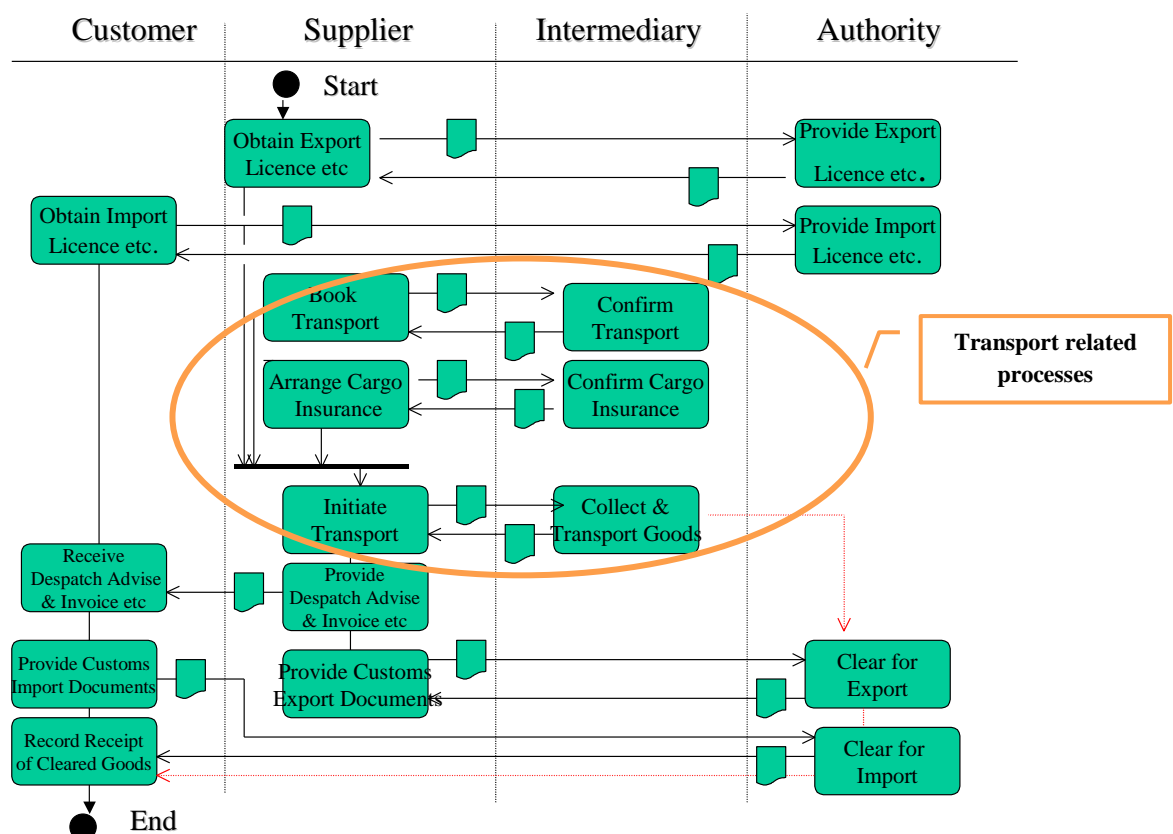
registration, worthiness certificates etc.) transport service providers also interact with relevant authorities (e.g. Ministry of transport) and various licensing and certification agencies.

### 3.2 Transport-related processes in single window environment

Identification of the scope of transport-related stakeholders involved at national and cross border level, is necessary in order to recognize transport-related processes and documents in the complex international trade and transport environment. Analysis of identified processes and opportunities for trade and transport facilitation may indicate that some of the processes could be significantly streamlined using single window facilities.

Transport-related processes under “ship” process activities, presented in simplified form, could identify three major groups: a) booking transport; b) providing cargo insurance, and c) transport (including forwarding and cargo handling services).<sup>34</sup>

**Figure 5: Simplified Activity Diagram – Ship (transport organized by supplier)**



Source: UNCEFACT, 2003, BPAWG Reference Model of the International Supply Chain p.17 (Author: C Clark)

<sup>34</sup> UNCEFACT, 2003, (Author: Colin Clark), BPAWG Reference Model of the International Supply Chain,;  
<http://www1.unece.org/cefact/platform/download/attachments/9666570/International+SupplyChainReference+Model2003.doc?version=1>

Transport-related processes could be analysed in detail with regard to business area (e.g. B2B, port or regulatory area). They depend on mode of transport, terms of delivery and other specifics agreed in the contract between customer and supplier, and/or settled in the contract for transport. They also depend on various national / cross border regulatory requirements and may differ from country to country.

### B2B Transport/Logistics area

Booking the transport, providing cargo insurance and transport processes are taking place in transport/logistics business area, which includes B2B interactions between main transport-related stakeholders, suppliers and customers.

Depending on the terms of delivery<sup>35</sup> booking of the transport could be organized by: supplier and/or customer. Transport could be booked with carrier or with freight forwarder and it may be organized via warehouse/logistics centre. Transport could be organized and/or booked for several stages:

- pre-carriage (outward/local/domestic);
- main carriage (including carriage in transit);
- on-carriage (inward/local/domestic).

Transport could be organized in single transport mode such as: maritime/deep sea transport (FCL or LCL)<sup>36</sup>; inland waterways transport; air transport; road transport; railway transport or as multi modal.

More detailed transport-related business process activities in the B2B area include:

- request / provide information on availability for booking transport:
  - request schedule / provide schedule (e.g. for scheduled maritime/deep sea carriers; air lines) or
  - request availability / notify availability;
- pre-book transport (provisional booking) / verify provisional transport booking;
- organize (book) pre-carriage;
- book (main) transport services / transport service verify transport booking;
- confirm/issue shipping information including: date, time, place where the consignment should be collected and any special arrangements/handling requirements; transport contract instructions (e.g. Bill of Lading instructions for maritime transport);

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<sup>35</sup> e.g. International Chamber of Commerce (ICC) Incoterms Rules. More information available on ICC website: <http://www.iccwbo.org/products-and-services/trade-facilitation/incoterms-2010/the-incoterms-rules/>

<sup>36</sup> Full Container Load (FCL) or Less Than Container Load (LCL)

- prepare packing list, other documents that have to accompany the goods during the transport;
- provide dangerous goods (GHS/HAZMAT) information (to customer and transport service provider);
- announce dispatch;
- provide and sign transport documents (transport contract) (including e.g. Bill of Lading for maritime transport) / charge for transport services;
- collect consignment and confirm receipt of goods for transport;
- transport the goods (including transit where appropriate);
- request status of the transport information / provide status information (to supplier / customer) (cargo tracking);
- announce arrival;
- financial and banking processes relevant for transport (e.g. B/L processing in negotiating/issuing bank and communication between banks and parties concerned from private sector);
- organize / initiate on-carriage transport;
- issue release note / sign release note / release the goods;
- confirm arrival;
- issue receipt advise / accept receipt advise;
- close the transaction.

Several other business process activities could be added such as activities for containers handling and processes via warehouse/logistics centres. For different modes of transport business processes could be adjusted in accordance with specifics of each mode of transport (e.g. adding specific business process activity for booking/releasing wagon in railway transport). ISCM details several scenarios of B2B logistics business area presented by mode of transport.<sup>37</sup>

### Port-related area

Transport-related processes could be analysed with focus on port area (e.g. airports, seaports, dry-ports / border crossings). That will mainly include interactions between suppliers and customers; main transport-related stakeholders; port authorities and port service providers (e.g. in seaports: stevedore services, container park,

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<sup>37</sup> UNECE, 2010, ISCM Process Models (Buy-Ship-Pay) Version 2010A. Accessible at: [http://www1.unece.org/cefact/platform/download/attachments/9666570/ISCM\\_ProzessModell\\_BSP2010A.zip?version=1](http://www1.unece.org/cefact/platform/download/attachments/9666570/ISCM_ProzessModell_BSP2010A.zip?version=1)

pilotage, tugboat operation and mooring services, vessel traffic service and navigation aid). Port-related area of transport processes could also cover information exchange based on regulatory requirements with transport authorities, customs and other government agencies.

Port-related area process activities vary substantially from country to country and from port to port and therefore analysis of port-related process activities should be adjusted for each particular case. To present more generic transport-related business process activities in the port area, this study builds on identified logistics processes based on Port of Melbourne Model<sup>38</sup> and the WCO example of the taxonomy of services.<sup>39</sup>

Such transport-related business process activities in port area include:

- arrange port services (e.g. through shipping agent in seaport);
- book main transport and organize pre-carriage (e.g. land transport to the sea port);
- deliver / collect empty container for loading;
- load the goods into container;
- obtain clearance to transport goods/container to the port (e.g. clearance to carry in the cargo to the sea port);
- transport the goods/container to the port (pre-carriage);
- other port outbound services (e.g. warehousing, tally services, fumigation services),
- obtain outbound regulatory clearance; (e.g. with customs, maritime authorities);
- load the goods/container on the transport means (e.g. load container onto ship / stevedore services);
- issue and sign transport documents (transport contract) (e.g. Bill of Lading for maritime transport / charge for transport services;
- charge for outbound port handling services;
- advice departure to the port/transport authorities;
- arrange and initiate exit from the port services (e.g. pilotage, tugboat operation and mooring services for maritime transport);
- despatch departure from the port;

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<sup>38</sup> Red Wahoo, 2005, Logistics Processes in the Port (Based on the Port of Melbourne Model), <http://www1.unece.org/cefact/platform/download/attachments/9666570/Port+Business+Processes-POM.xls?version=1>

<sup>39</sup> WCO Compendium, 2011, How to Build Single Window Environment – (Volume 1: p.27-29)

- main transport of the goods (e.g. deep sea shipping);
- despatch arrival at the port;
- obtain inbound regulatory clearance; (e.g. with customs, maritime authorities);
- arrange and initiate entry to the port and related services (e.g. request for berthing, pilotage, tugboat operation and mooring services);
- unload / store the goods/containers (e.g. unload the containers from the ship / stevedore services);
- other port inbound services (warehousing, handling for transshipment, tally services);
- complete regulatory clearance (e.g. with customs)
- organize on-carriage (e.g. land transport from sea port);
- charge for port handling services;
- obtain clearance to transport goods/container from the port (e.g. clearance to carry out the cargo from the sea port);
- transport the goods/container from the port to the destination (on-carriage);
- unload container and manage the empty container.

Each of the process activities could be analysed further, going in details for specific cases, which will identify documents and information exchanged among various stakeholders.

### Regulatory area

In addition to export and import regulatory processes, there are several transport-related processes in the regulatory area that mainly involve requirements of customs, transport authorities (e.g. maritime authorities), environment protection authorities; security/immigration-related authorities.

Such transport-related process activities regarding requirements in regulatory area include:

- conveyance reporting (e.g. transport means entry/departure reporting; request for vessel berthing);
- pre arrival / advance regulatory reporting (e.g. advanced cargo manifest to customs);
- cargo manifest declaration on exit (export) from the country;
- cargo manifest declaration on entry (import) to the country;
- cargo manifest declaration for goods in transit (including transshipment);



- cargo permits for regulatory requirements on specific types of goods (e.g. trans-frontier movement of waste; dangerous goods etc.)
- security screening;
- immigration control;
- financial and banking processes relevant for transport (e.g. B/L processing in negotiating/issuing bank and communication between banks and parties concerned from public sector);
- releasing the cargo (after completed regulatory clearance);

Again, each of the process activities in regulatory area could be analysed further, taking in account national regulations, international conventions, specific mode of transport, and going into details for specific type of goods and cases specific documents and information exchanged among various stakeholders.

### Fundamental elements of international transport

In addition to transport-related processes in the regulatory area with respect to each particular transport operation, there are several transport-related processes regarding general regulatory preparation, licensing and certification to ensure fundamental elements of international transport which include:

- registration of transport means, inspections and worthiness certification by national authorities, by different modes of transport, e.g.:
  - road transport vehicles registration, roadworthiness certification, certification approval for vehicles carrying certain dangerous goods;
  - registration of aircrafts, airworthiness certification;
  - registration of vessels/ships, seaworthiness certification, etc.;
- insurance of transport means by different modes of transport, e.g.:
  - third party insurance for vehicles in international road transport
  - maritime insurance (insurance of the vessels); insurance/financial security in respect of civil liability for oil pollution damage for ships in maritime transport)
  - aviation insurance (insurance of the aircrafts);
- licencing professionals to operate transport means by different modes of transport, (e.g. road transport vehicle drivers; locomotive engineer; ship captain and officers; air pilots); training certification for drivers of vehicles carrying dangerous goods;
- providing visa for professional transport means operators and crew;
- providing transport/transit permits and licences to operate on specific routes (by different modes of transport).

Analysing transport-related processes by different business area, makes the overall process more manageable, focuses on dominant processes and legacy systems already reducing necessity for major interventions, and might provide smooth transition to redesigned business processes for optimal implementation in different types of single window systems. However, as we could notice from process activities described above, some of the activities often overlap and intersect in different business areas. Therefore even if transport-related processes are analysed and covered with single window systems separately in different business areas they have to be considered as part of larger picture with possible future integration in overall single window environment.

Instruments for business process analysis, briefly presented in part 2.4 above such as UNNExT (2012) “Business Process Analysis Guide to Simplify Trade Procedures,”<sup>40</sup> are valuable tool in the process of development transport related single windows services as well. Business process analysis may also be helpful to identify overlapping and intersecting of business processes, which may lead to integration of transport-related requirements within customs/port centric single windows and/or further development of fully integrated single window environment.

### 3.3 Transport-related documents and paperless environment

#### Types of transport-related documents

Guidelines for application on UNLK for trade documents identify four families of documents corresponding to following sectors/areas:

- Commercial transaction sector documents (relevant for commercial parties in the production, sale and purchase phases of a transaction);
- Payment sector documents (relevant for bank requirements and payment);
- Transport and related services documents (relevant to the physical international transport of goods, including insurance);
- Official controls documents (relevant to government authorities to control the international goods flows – e.g. customs transit declaration).

Analysis of transport and other related services documents shows that numerous documents and information are shared among various stakeholders. UNLK clusters transport related documents as documents for: forwarding and cargo handling, transport and insurance documents. Forwarding and cargo handling documents include instructions from customers to forwarders; goods receipts; advice documents; authorizations and other administrative documents. Transport documents could be contract documents (including documents that evidence a contract of

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<sup>40</sup> UNESCAP/UNECE/UNNEXT, 2012, Business Process Analysis Guide to Simplify Trade Procedures. Accessible at: <http://unnex.t.unescap.org/pub/tipub2558new.asp>

carriage), such as: air waybills, bills of lading, rail and road consignment notes. Other types of transport related documents could be receipt documents; contents documents (e.g. cargo and freight manifests); administrative and legal documents (e.g. road list, freight invoice) and notification documents (e.g. booking confirmation, arrival /delivery notice).

The layout and the content of many of the transport-related documents are based on national regulations. Some of the forms for the documents have a background in international conventions, recommendations and other instruments.

Despite the fact that many transport-related documents have same background and a lot of them have same or similar data included, in practice data requirements still differ from document to document (e.g. although there are international recommendation for standardization, B/Ls have many differences in practice). The need for further harmonization of transport related documents still remains important challenge in order to enable efficient translation of paper-based documents to electronic messages that could be exchanged through single window facilities.

Overview of transport-related documents including details on UNLK classification of transport and related services documents, international conventions and recommendation regarding transport documents including IMO FAL Convention standardized forms are presented in Annex 1 of this Study.

#### Frequency and scope of participation in transport-related document exchange

International supply chain process activities often involve repetitive submission and exchange of the same documents, which include transport-related documents as well. Under a United Nations Development Account (UNDA) 2013 project enhancing information exchange in international supply chains has been studied.<sup>41</sup> The review of the key documents exchanged in international supply chain, shows that: bill of lading, customs declaration, export license, import license, and packing list have highest frequency of exchange among the various stakeholders involved. During a full cycle of international supply chain, the bill of lading could be exchanged up to 55 times. Documents with a lower frequency of exchange (e.g. certificate of origin, certificate of insurance, purchase order), are exchanged between 1 to 3 times during the entire supply chain cycle.

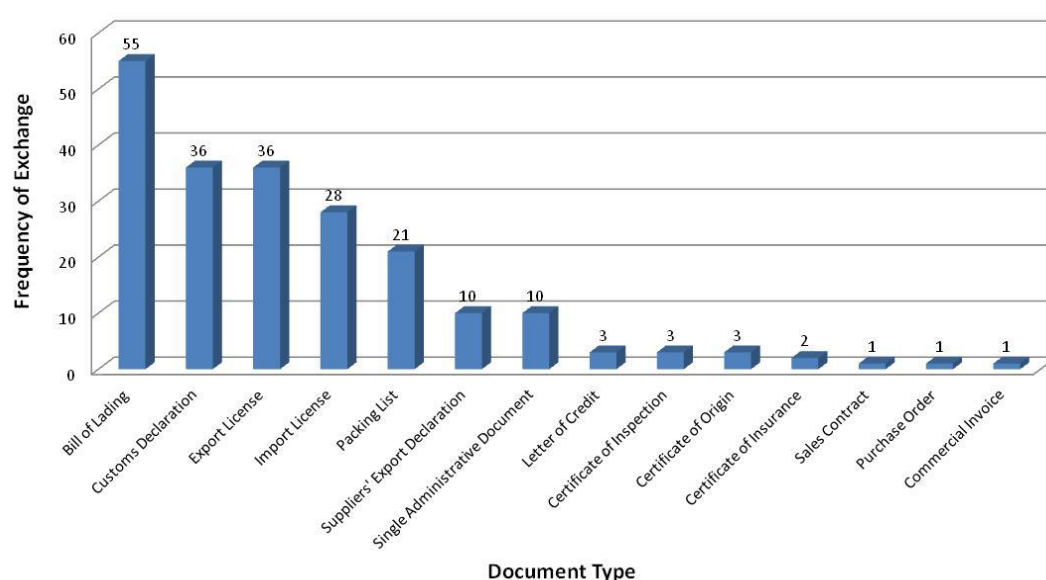
The UNDA 2013 information exchange project analysis shows that automation of international supply chain documents could be particularly beneficial for frequently exchanged documents (e.g. to avoid duplication of effort, reduce errors,

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<sup>41</sup> UNDA (7-th tranche), 2013, Strengthening the Capacity of Developing and Transition Economies to link to Global Supply Chains through the reduction of trade obstacles; Roadmap to Enhancing Information Exchange in International Supply Chains. Accessible at: [http://www.unece.org/fileadmin/DAM/trade/TF\\_JointUNRCsApproach/GlobalSupplyChains\\_UNDA7th\\_Tranche\\_Study.pdf](http://www.unece.org/fileadmin/DAM/trade/TF_JointUNRCsApproach/GlobalSupplyChains_UNDA7th_Tranche_Study.pdf)

and increase efficiency of information exchange). Automation of lower frequency documents may be also useful when there is a high frequency of transactions (e.g. purchase orders per week, month) with possibility to reuse some of data elements.

**Figure 6: Exchange Frequency of Documents in International Supply Chain**



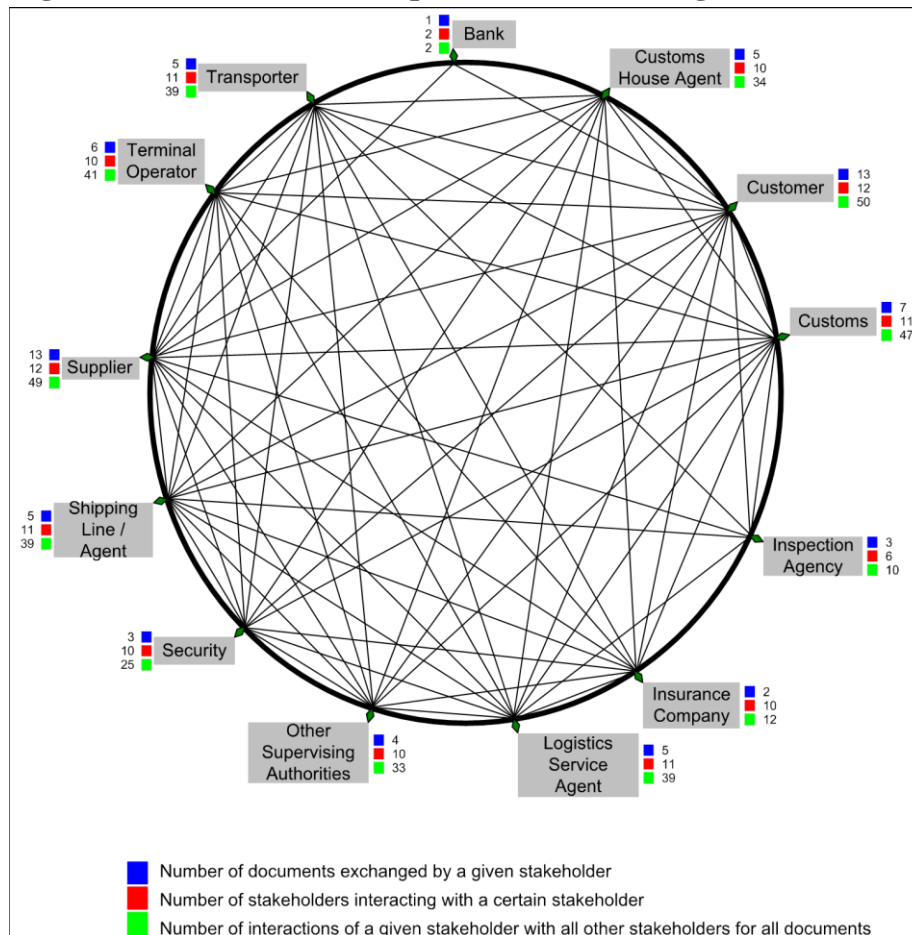
Source: UNDA (7-th tranche), 2013, Strengthening the Capacity of Developing and Transition Economies to link to Global Supply Chains through the reduction of trade obstacles; Roadmap to Enhancing Information Exchange in International Supply Chains.

The UNDA 2013 review presents that different stakeholders exchange variety of international supply chain-related documents more or less frequently. Suppliers and customers share higher number of documents (13 documents). Transport related stakeholders (e.g. transporters, shipping lines/shipping agents, terminal operators, logistics service agents) usually share 5-6 documents.

The number of stakeholders with whom a given stakeholder exchanges information is fairly constant (around 10-12), with exception of the banks and the inspection agencies which, exchange documents with much less stakeholders. The intensity of the interaction in terms of information exchange (participation in document exchange) varies among stakeholders. Customers/suppliers, customs/supervising authorities and transport related stakeholders participate intensively in the supply chain information exchange. For example transporters, shipping lines/shipping agents, terminal operators and logistics service agents usually have a total of 39-41 interactions during a full cycle of international supply chain. The UNDA 2013 project analysis is based on model of single buyer / supplier relationship. Since in real-life circumstances buyers usually deal with multiple suppliers and customers respectively; and other stakeholders interact with multiple buyers / suppliers, it could be expected that intensity of document exchange is even higher.

High frequency of exchanged transport-related documents and high intensity of interactions among transport-related stakeholders suggest that there is a huge potential for trade and transport facilitation that could be achieved with replacement of paper based documents with their electronic versions and introduction electronic information exchange through information exchange platforms.

**Figure 7: Stakeholder Participation in the Exchange of Documents**



Source: UNDA (7-th tranche), 2013, Strengthening the Capacity of Developing and Transition Economies to link to Global Supply Chains through the reduction of trade obstacles; Roadmap to Enhancing Information Exchange in International Supply Chains.

UNDA 2013 project identifies that typically there are more than 100 separate data elements required across the set of international supply chain documents and a significant overlap in the information provided has been noticed. Several same or similar data elements have to be exchanged multiple times among different stakeholders and sometimes existence of minor variations in the information provided may cause delays and distortion of the supply chain process.

Furthermore the project analysis suggests that international supply chain performance depends highly on ability to provide timely and transparent access to information regarding all supply chain processes to all relevant stakeholders. Therefore it is necessary to search for improved information exchange modes for

facilitated, timely, accurate, and transparent exchange of information between all participants in private and public sector.

Various information exchange platforms (e.g. single windows, port community systems, logistics networks, trade and transport commercial portals) could support exchange information independently, and even better facilitation could be achieved if they could operate in integrated/interlinked manner. Such information exchange platforms could significantly increase efficiency of supply chain information exchange and provide important benefits (e.g. in reduced time and costs) to the stakeholders concerned, particularly for those with very high intensity of information exchange participation.

### Electronic alternatives to paper-based transport-related documents

Various EDI and web based ICT solutions usually provide support for electronic processing of paper based transport documents and electronic exchange of their data elements. The next step of eliminating paper-based transport documents with their digital equivalents and fully paperless electronic data exchange is gradually taking place. Some solutions for electronic transport documents are already available, however, they are not widespread in present transport operations, facing many challenges mainly from legal point of view.

### Examples of electronic transport documents

#### e-Air Waybill (e-AWB)

e-AWB is developed by International Air Transport Association (IATA) and it represents the most important transportation document in air cargo transport. e-AWB eliminates the necessity for a paper based Air Waybill and contributes to increased accuracy, confidentiality and efficiency. In order to implement e-AWB interested airlines and freight forwarders have to:

- sign bilateral or join the multilateral e-AWB agreement,<sup>42</sup>
- ensure IT support for e-AWB e.g.:
  - capability for electronic exchange of AWB and status messages;
  - electronic data archiving;
  - AWB printing (on demand).
- ensure high-quality electronic messages;
- ensure that business processes are adapted to paperless environment (following IATA developed e-AWB functional specifications and recommendations);
- roll out and report using of e-AWB shipments.<sup>43</sup>

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<sup>42</sup> Multilateral e-AWB Agreement (IATA Resolution 672) is accessible on IATA web site: <http://www.iata.org/whatwedo/cargo/e/eawb/Documents/eawb-resolution-672.pdf>



Once the airline or freight forwarder signs the bilateral or multilateral e-AWB agreement and provides other implementation requirements it could start using e-AWB with all other parties to the agreement. The volume of e-AWB is continually growing over the years. The IATA vision is to reach 100% e-AWB on feasible trade lanes by the end of 2018. Current status (August 2015) is 31.7% worldwide penetration of e-AWB.<sup>44</sup> The e-AWB is one of the core elements of IATA e-freight project, which will be presented in next chapter. e-AWB could be linked in single window systems as indicated in the example of Singapore's national single window environment in next chapter.

### e-Bill of Lading and e-Sea Waybill

Bills of lading (B/L) and sea waybills (SWB) are main traditional documents required for carriage of goods in maritime transport. In order to facilitate management of those documents carriers often provide option for electronic data exchange and remote printing of paper-based documents (e.g. on pre-printed bill of lading forms provided by carriers in advance).

Opportunities to develop e-B/L and e-SWB as fully dematerialized electronic equivalent of the traditional paper based documents is determined by their main functions: a) to certify that goods are received for shipment/shipped and b) to evidence a contract of carriage (for both B/L and SWB) and c) to serve as transferable document of title (only for B/L). The most difficult function to replicate in electronic form is the function as the document of title,<sup>45</sup> therefore it is much more easier to develop and use e-SWB than e-B/L.

There are several electronic systems designed to support e-SWB implementation, and some systems, could enable e-B/L solutions, such as: Bolero platform,<sup>46</sup> ESS Docs system,<sup>47</sup> e-B/L Korea Portal (and KTNET registration authority).<sup>48</sup> The systems allowing the transfer of rights over the goods and against the carrier while the cargo is in transit, could replace paper-based documents with exclusive control of an electronic record (e.g. Bolero and KTNET) through a title registry and ESS Docs through limited access to the electronic record.<sup>49</sup>

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<sup>43</sup> IATA six steps to implementing e-AWB: <http://www.iata.org/whatwedo/cargo/e/eawb/Pages/index.aspx>

<sup>44</sup> IATA website: <https://www.iata.org/whatwedo/cargo/e/eawb/Pages/index.aspx> (e-AWB international monthly report - August 2015. Available at: <https://www.iata.org/whatwedo/cargo/e/eawb/Documents/e-awb-monthly-report-r17.pdf>)

<sup>45</sup> Dubovec Marek, The Problems and Possibilities for Using Electronic Bills of Lading as Collateral (December 12, 2005). Arizona Journal of International and Comparative Law, Vol. 23, No. 2, 2006. Available at SSRN: <http://ssrn.com/abstract=2135246>

<sup>46</sup> More information is available on Bolero website: <http://www.bolero.net/products/electronic-bill-of-lading>

<sup>47</sup> More information is available on ESS Docs website: <http://www.essdocs.com/edocs/electronic-bills-of-lading>

<sup>48</sup> More information is available on e-B/L Korea website <https://www.eblkorea.or.kr:8020>

<sup>49</sup> Miriam Goldby, 2011, Legislating to facilitate the use of electronic transferable records; A case study: Reforming the law to facilitate the use of electronic bills of lading in the United Kingdom. Accessible at: [http://www.uncitral.org/pdf/english/colloquia/EC/Legislating\\_to\\_facilitate\\_the\\_use\\_of\\_electronic\\_transferable\\_records\\_-\\_a\\_case\\_study.pdf](http://www.uncitral.org/pdf/english/colloquia/EC/Legislating_to_facilitate_the_use_of_electronic_transferable_records_-_a_case_study.pdf)

The e-B/L is generally not in use in international transit, despite some examples of e-SWB and non-negotiable B/L, which use is becoming more visible. Traditional paper based documents are dominant in maritime transport not only because some traders and banks prefer to deal with traditional documents, or because lack of commercial practice, security concerns and unwillingness to support e-B/L, but mainly due to limited legal jurisdiction for e-documents.<sup>50</sup>

Benefits for traders, shipping agents and other stakeholders from the use of e-SWB and e-B/L include accelerated/simplified processes; time and costs reductions and eliminated delays (e.g. from late arrival of traditional B/L at destination); automatic notifications and improved visibility.

International instruments that endeavour to address some of the issues for developing and using electronic transport documents and certificates in maritime transport include: United Nations Convention on contracts for the international carriage of goods wholly or partly by sea (the “Rotterdam Rules” – which are still not in force),<sup>51</sup> IMO Guidelines for the use of electronic certificates,<sup>52</sup> and CMI Rules for electronic bills of lading.<sup>53</sup>

#### Electronic consignment note in railway transport

The COTIF Convention (CIM)<sup>54</sup> and the SMGS Agreement<sup>55</sup> provide legal bases for electronic exchange of consignment notes data. Provisions for electronic CIM consignment note are based on equal treatment with paper-based document from functional point of view.<sup>56</sup> SMGS Agreement defines that consignment note may be produced in electronic form, based on agreement between the railway and the consignor.<sup>57</sup>

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<sup>50</sup> Dubovec Marek, The Problems and Possibilities for Using Electronic Bills of Lading as Collateral (December 12, 2005). *Arizona Journal of International and Comparative Law*, Vol. 23, No. 2, 2006. Available at SSRN: <http://ssrn.com/abstract=2135246>

<sup>51</sup> United Nations, 2008, Convention on Contracts for the International Carriage of Goods Wholly or Partly by Sea (the “Rotterdam Rules”). Accessible at: [http://www.uncitral.org/uncitral/en/uncitral\\_texts/transport\\_goods/2008rotterdam\\_rules.html](http://www.uncitral.org/uncitral/en/uncitral_texts/transport_goods/2008rotterdam_rules.html)

<sup>52</sup> IMO, 2014 (FAL.5/Circ.39/Rev.1), Guidelines for the use of electronic certificates. Accessible at: <http://www.imo.org/OurWork/Facilitation/docs/FAL%20related%20nonmandatory%20instruments/FAL.5-%20Circ.39%20Rev.1.pdf>

<sup>53</sup> Comité Maritime International (CMI), 1990, Rules for electronic bills of lading. Accessible at: <http://comitemaritime.org/Rules-for-Electronic-Bills-of-Lading/0,2728,12832,00.html>

<sup>54</sup> Convention concerning International Carriage by Rail of 9 May 1980 as amended by the Vilnius Protocol of 3 June 1999 (the ‘COTIF Convention’), Appendix B (Uniform Rules concerning the Contract of International Carriage of Goods by Rail — CIM). Available at: <http://www.cit-rail.org/en/rail-transport-law/cotif/>

<sup>55</sup> Соглашение о международном грузовом железнодорожном сообщении (СМГС) (Agreement on International Goods Transport by Rail (SMGS). Available on: [http://osjd.org/doco/public/ru/?STRUCTURE\\_ID=5038&layer\\_id=4581&id=885](http://osjd.org/doco/public/ru/?STRUCTURE_ID=5038&layer_id=4581&id=885)

<sup>56</sup> In accordance with Article 6 paragraph 9 of Appendix B of COTIF Convention.

<sup>57</sup> In accordance with Article 14 and Article 15 paragraph 4 of the SMGS Agreement.



Under the activities for unification of Euro-Asian rail freight transport a common CIM/SMGS consignment note has been produced which links transport regimes under COTIF/CIM and SMGS.<sup>58</sup> Ongoing work on the electronic CIM/SMGS consignment note and development of legal, functional and technical specifications is expected to support paperless transport in the future.<sup>59</sup>

Proposed amendments on COTIF Convention Appendix B (CIM) favour consignment note and accompanying documents established in the form of electronic data and provide clarifications on processing the electronic consignment note.<sup>60</sup> However in order to avoid unintended consequences there are several issues that have to be addressed in advance such as: to enable simplified procedure for customs transit with electronic transport document and to ensure that legal basis and procedures are in place for electronic versions of accompanying documents (e.g. sanitary and phytosanitary certificates).<sup>61</sup>

### Electronic consignment note in road and multimodal transport

Road transport traditionally relies on paper based transport documents that confirm existence of the contract of carriage (e.g. CMR consignment note).<sup>62</sup> The second additional Protocol to the CMR Convention, which entered into force in 2011, establishes a legal framework and standards for implementation of electronic consignment note (e-CMR).<sup>63</sup>

Like other cases of electronically shared transport documents, expected advantages from e-CMR usage include: reduction of administrative burden and faster information processing and information exchange, secure data exchange and authentication, resolved limitations of paper based documentation (e.g. delays from corrections of errors, loss of documentation, multiple documents burden), which should ultimately lead to time saving and cost reductions.

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<sup>58</sup> OTIF, 2014, Revision Committee 25 Session, Work on the unification of Euro-Asian rail freight transport law. Accessible at:

[http://www.otif.org/fileadmin/user\\_upload/otif\\_verlinkte\\_files/04\\_recht/03\\_CR/03\\_CR\\_25\\_2014/CR\\_25\\_5-1\\_e\\_Information\\_Unification\\_Eurasian\\_freight\\_railway\\_law.pdf](http://www.otif.org/fileadmin/user_upload/otif_verlinkte_files/04_recht/03_CR/03_CR_25_2014/CR_25_5-1_e_Information_Unification_Eurasian_freight_railway_law.pdf)

<sup>59</sup> CIT Info, No.3 June 2014, Erik Evtimov, Latest news on the electronic CIM/SMGS consignment note.

Accessible at: [http://www.cit-rail.org/media/files/public/CIT-Info\\_2014/3-2014\\_EN.pdf](http://www.cit-rail.org/media/files/public/CIT-Info_2014/3-2014_EN.pdf)

<sup>60</sup> OTIF, 2014, Revision Committee 25 Session, Partial revision of Annex B (CIM UR). Accessible at:

[http://www.otif.org/fileadmin/user\\_upload/otif\\_verlinkte\\_files/04\\_recht/03\\_CR/03\\_CR\\_25\\_2014/CR\\_25\\_5\\_e\\_Partial\\_revision\\_CIM.pdf](http://www.otif.org/fileadmin/user_upload/otif_verlinkte_files/04_recht/03_CR/03_CR_25_2014/CR_25_5_e_Partial_revision_CIM.pdf)

<sup>61</sup> European Union, 2014, Council Decision (2014/669) of 24 June 2014 establishing the position to be adopted on behalf of the European Union at the 25th session of the OTIF Revision Committee as regards certain amendments to the Convention concerning International Carriage by Rail (COTIF) and to the Appendices thereto (OJ L 293, 9.10.2014),. Accessible at: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014D0699&from=EN>

<sup>62</sup> In accordance with United Nations Convention on the contract for the international carriage of goods by road (CMR) (1956). Accessible at: [http://www.unece.org/fileadmin/DAM/trans/conventn/cmr\\_e.pdf](http://www.unece.org/fileadmin/DAM/trans/conventn/cmr_e.pdf)

<sup>63</sup> Additional Protocol to the Convention on the Contract for the International Carriage of Goods by Road (CMR) concerning the Electronic Consignment Additional Protocol to the CMR concerning the electronic consignment note (e-CMR) (2008). Accessible at: <http://www.unece.org/fileadmin/DAM/trans/conventn/e-CMRe.pdf>

However presently the e-CMR has very limited impact on road transport due to the fact that to date only nine countries have ratified/accessed the Additional Protocol<sup>64</sup> and due to other concerns, including: legal issue implications with national legislation with regard to contracts for carriage; practical implementation uncertainties; different levels of preparedness of various stakeholders; the need for harmonization of technical standards for electronic signatures and authentication.

International supply chain usually includes transport with several modes of transport, covered with different liability rules under various international and national legislations. Instead dealing with several carriers and intermediate service providers (using multiple transport documents), traders could opt to deal with single multimodal transport operator, who will organize transport under single transport contract. Multimodal transport operators (e.g. forwarding agent or large sea carrier) in this case have to arrange all other subcontractors.

Multimodal transport is not covered with an international convention, and it has to be regulated on national/regional level including options for using electronic multimodal transport documents. For example ASEAN Framework on Multimodal Transport introduces electronic signature on the multimodal transport document if that is consistent with the laws of the country where the document is issued.<sup>65</sup> Some practical solutions for processing of electronic multimodal transport documents have been tested (e.g. electronic FIATA multimodal Bill of Lading).<sup>66</sup>

EU e-Freight project promotes a design of electronic multimodal waybill based on analysis of number of existing transport documents in different modes of transport. The findings show that information content of the documents analysed is “practically identical to that of a (sea) waybill.” The main difference - the legal status of the document - could be addressed independently from the information content. Developed model under this project is flexible to support complex transport chain with several modes of transport, as well as simple single modal transport.<sup>67</sup>

### Advantages of transport-related electronic documents

Automation of transport-related processes and providing electronic alternatives to paper-based transport-related documents enables: reduced time and costs for booking transport services; streamlined preparation and faster exchange of transport-related documents/(documents data); timely receiving of various status

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<sup>64</sup> United Nations Treaty Collection database (last accessed 27.05.2015). Available at: [https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg\\_no=XI-B-11-b&chapter=11&lang=en](https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XI-B-11-b&chapter=11&lang=en)

<sup>65</sup> Article 4 paragraph 4 of ASEAN Framework on Multimodal Transport (2005), Accessible at: <http://fiata.com/about-fiata/fiata-documents/digital-efbl.html>

<sup>66</sup> FIATA web site news (2014), FIATA and essDOCS open their digital casket for global distribution. Accessible at: <http://fiata.com/media/press-releases/2014/30-july.html>

<sup>67</sup> e-Freight project, 2012 (authors: Tom Cane, Sven Mattheis, George Tsoukos, Caralampo Focas, Ioannis Koliousis), The e-Freight Multimodal e-Waybill. Accessible at: [http://www.efreightconference.com/uploadfiles/papers/efreight2012\\_submission\\_34.pdf](http://www.efreightconference.com/uploadfiles/papers/efreight2012_submission_34.pdf)

reports and other relevant transport-related information; easier and more reliable document processing at destination.

Electronic information exchange is more convenient for the stakeholders; it expedites providing necessary information in advance, enables automated control of documents and minimizes delays in various transport-related process activities, including delays at ports. Electronic data exchange could also contribute to increased accuracy and security of transactions, which could improve overall efficiency.

This chapter has identified a range of transport-related requirements, which could be covered in single window environment in various ways. Presently transport documentation is dominantly paper based, and in the cases where electronic transport related documents are introduced, they are not necessarily linked to relevant single window facilities. Findings about main transport documents are showing that only introduction of e-AWB is currently progressing relatively well, while introduction of e-B/L, e-consignment notes and e-multimodal documents are facing serious challenges.

Electronic conveyance reporting is becoming standard around the world; supported with introduction of sophisticated IT systems in customs, transport related authorities and ports; however port related operations are still heavily depended on paper-based documents. Multiple governmental, public and private IT systems are not always interlinked with efficient port single windows and port community systems, and therefore rekeying of same or similar data elements from different transport related documents is often required.

Introduction of e-customs and customs/trade centric single windows does not always covers customs transit and linkages with port single windows and port community systems are often missing. Cross-border connectivity and international single window systems are still in early stages of development.

Accordingly, potentials for enhancing single window environment are high and there are several examples how the countries around the world are beginning to implement transport related requirements in their single window systems, which will be presented in number of case studies elaborated in the next chapter. Summary of transport-related single windows is presented in Chapter 5 of this Study.

# Chapter 4 Single Window case studies

## 4.1 National Single Windows

### National Single Window facilities in Republic of Korea

There are several comprehensive and well-developed single window facilities and information systems in Republic of Korea, which cover different aspects of international trade and transport. Various single window services are available to trade and transport operators through:

- port community single window of Korea Logistics Network Corporation (KL-NET Corp.);
- national trade single window - uTradeHub of the Korea Trade Network Corporation (KTNET); and
- single window module of UNI-PASS Korean Customs e-clearance system.

#### KL-NET port related services and port community single window

Korea Logistics Network Corporation (KL-NET Corp.),<sup>68</sup> connects logistics stakeholders, public and government institutions in Republic of Korea and provides wide range of port related B2G and B2B services with objective to enhance national maritime industry competitiveness. B2G services are included in YES U-Port national port community system of Ministry of Oceans and Fisheries.

**YES U-Port system** is collaborative project of Korean Government and private sector (KL-NET and other participants) which aims to upgrade shipping and port-logistics industry by development and integration of shipping and port-logistics information systems, such as:

- information management systems and services (e.g. Port-Management Information Systems (Port-MIS); port community single window and Shipping and Port-Internet Data Center (SP-IDC));
- cargo and vessel management systems, such as: real time tracking systems (Vessel Monitoring System (VMS); General Information Center on Maritime Safety and Security (GICOMS); Global Cargo Tracking System (GCTS));
- disaster recovery system;
- security and safety service (e.g. Port Security System (PSS)).<sup>69</sup>

Yes U-Port services support B2G electronic data submission including: vessel entrance/departure notice; port facility request (entering a dock/undocking declaration, towage application); cargo declaration; passenger/crew declaration;

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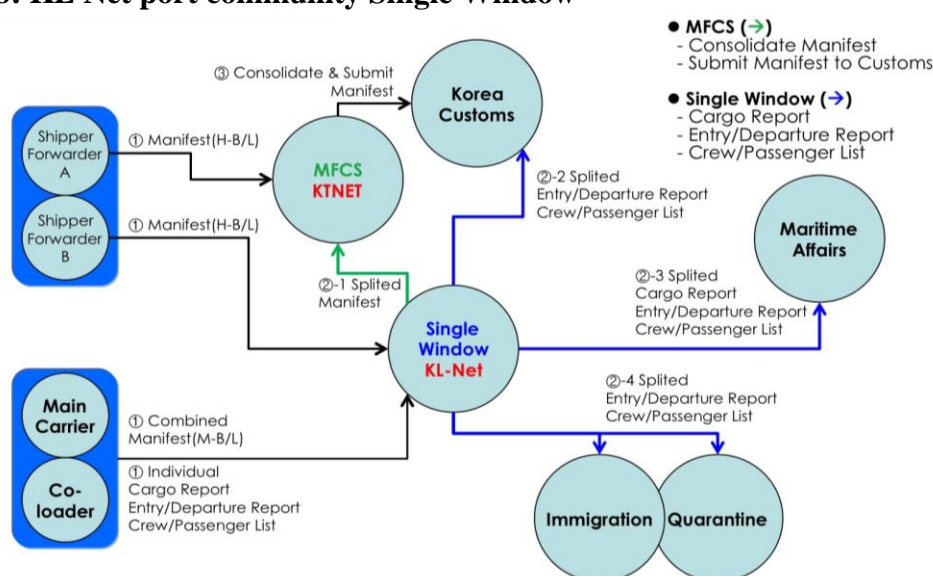
<sup>68</sup> KL-Net was established in 1994, invested by Korean Government and major logistics companies and privatized in 2002. KL-Net is the exclusive operator of all Korean ports and provides total package solutions for port logistics industry. Additional information on KL-Net are available on KL-Net website [www.klnet.co.kr](http://www.klnet.co.kr)

<sup>69</sup> Republic of Korea, Ministry of Oceans and Fisheries, 2014, Yes! uPort Brochure. Accessible at: [http://www.yesport.go.kr/images/main/YES\\_UPORT\\_CAT\\_ENG.pdf](http://www.yesport.go.kr/images/main/YES_UPORT_CAT_ENG.pdf)

import/export cargo manifest; cargo transport request, truck allocation; dangerous goods declaration/inspection. Business sector stakeholders (e.g. shipping agents, carriers, shipping lines) using B2G services are able to submit relevant electronic documents to government and public authorities (e.g. Korean Customs, Ministry of Justice, Ministry of Oceans and Fisheries, port authorities).

**Port community single window** offers services generally to main carriers and co-loaders for single submission of: combined master B/L; individual cargo reports; entry/departure reports; and crew/passenger lists. KL-Net single window facility receives relevant entries, splits them accordingly and then distributes relevant data elements to corresponding authorities (e.g. Korean Customs, maritime affairs, immigration and quarantine authorities) as presented in Figure 8.

**Figure 8: KL Net port community Single Window**



Source: KL-Net, July 2015 presentation

KL-Net port community single window interacts with KTNET Manifest Consolidation System (MFCS) and manifest data are being exchanged between the two systems. Since only KTNET is authorized to submit manifest data to the Korean Customs Service, manifest processed at KL-Net single window systems are distributed to the KTNET MFCS for further consolidation and submission to the customs (as presented in the Figure 8 above). By linking two different systems (KL-Net port community single window and KTNET MFCS), stakeholders have opportunity to use, the system of their choice in order to fulfil regulatory requirements without need to access both of them.

Port community single window has been developed on the grounds of “Integrated Logistics Informatization” e-Government initiative launched in 2003, and Business Processes Reengineering (BPR) / Information Strategy Planning (ISP) project for National Logistics Information System focused on export/import logistics, which was executed in 2003-2004. The work on port community single window was guided by Task Force on National Logistics Informatization with participation of

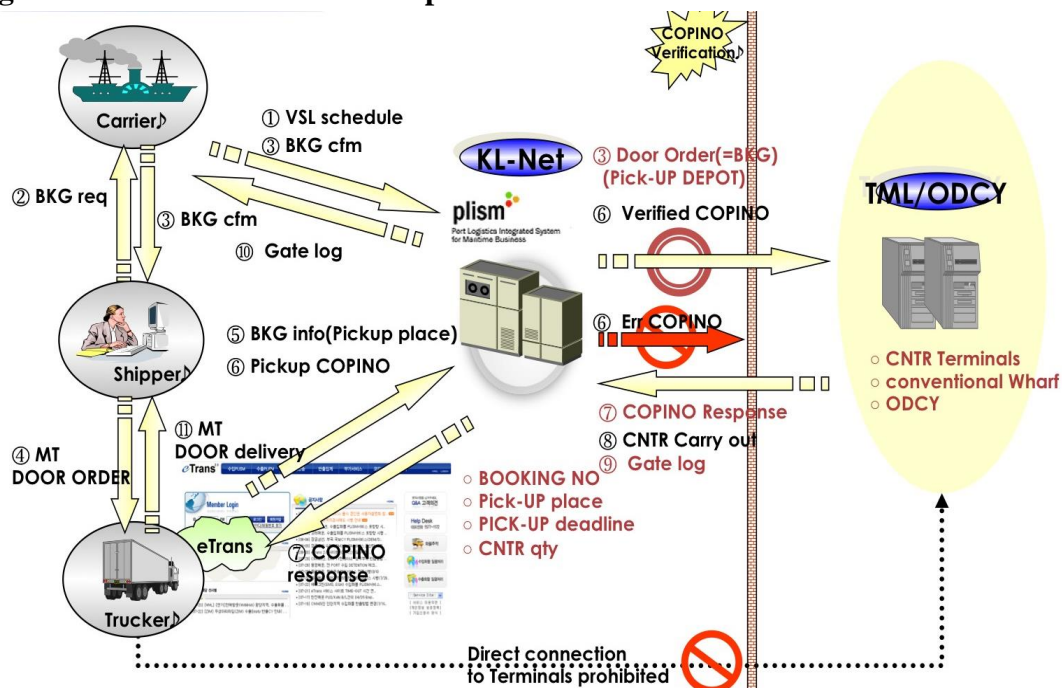
Ministry of Land, Transport and Maritime Affairs, Customs and Korea Communication Commission. Port community single window was implemented as a component of Integrated Logistics Information System project in several phases from 2004 to 2007.

Port community benefits from one-stop port service provided by KL Net single window because electronic documents (e.g. combined master B/L; individual cargo reports; entry/departure reports; and crew/passenger lists) have to be submitted only once, and multiple data entries to government agencies and port authorities are no longer required. This facility maximizes data flows with exchange of simplified and standardized information, which reduces port clearance delays. Increased level of cooperation and exchange of information amongst government agencies strengthens their administrative and enforcement capacity as well.

One-stop service with regard to port activities among logistics related stakeholders such as shipping companies, forwarders, consignees and shippers, terminal operator, container yard, tally company and trucking companies is supported with Port Logistics Integrated System for Maritime Business (PLISM).

**PLISM** is web based system developed by KL-Net that enables paperless sharing of information with regard to vessel operation, container shipment/delivery, transshipment, gate carry in/out information, loading and discharging information, pickup/return reservation, etc. Part of PLISM service processes with regard to maritime exports including empty container picking up and full container returning services are presented in Figure 9 below.

**Figure 9: KL Net PLISM service processes**



Source: KL-Net, July 2015 presentation



PLISM contributes to improvement of port operations and reduces: documentation handling per vessel from 13 hours to 3 hours, terminal re-handling costs for about 60 per cent, phone call inquiry about container inbound and return place for more than 50 per cent, as well as paperwork in general.<sup>70</sup>

KL-Net port community network with various B2G and B2B services interlinks over 4,000 customers including government departments (e.g. Korea Customs Service, Ministry of Oceans and Fisheries, Korea Immigration Centre, Korea Centres for Disease control, Maritime D/G inspection centre); public institution association (e.g. Korea Terminal Authority, Maritime Pilot's association, Korea Marine Pollution Response Corp, Korea Ship Owner's association); all 30 international container terminals including about 60 container yards; carrier freights forwarders; transporters; and other logistics related companies.<sup>71</sup>

Port community systems in Republic of Korea are increasing efficiency of port-logistics services, improve port-logistics productivity, and provide higher quality service, which enhance competitiveness of Korea logistics industry. It is estimated that U-Port on-line government and civil services, and paperless sharing of information contribute to cost reduction of US\$24 million per year.<sup>72</sup>

#### KTNET uTradeHub national trade single window

The KTNET uTradeHub is an on-line portal that enables paperless trade infrastructure for management of entire trade cycle.<sup>73, 74</sup> Services provided with uTradeHub include relay of B2B commercial documents (e.g. purchase order, invoices, tax bill), licensing and certification (e.g. e-licenses and e-certificates of origin, freight insurance), trade financing (e-negotiation and e-letter of credit), customs clearance (e.g. import/export clearance, duty draw back), logistics and cross border interactions. The uTradeHub also serves as e-documents repository, provides safe storage of trade information and enables reuse of data.

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<sup>70</sup> Additional information on PLISM are available at [http://www.klnet.co.kr/english/service/service3\\_1.html](http://www.klnet.co.kr/english/service/service3_1.html) and KL-Net Brochure, PLISM accessible at, <http://www.klnet.co.kr/english/img/down/PLISM.pdf>

<sup>71</sup> KL-Net, July 2015 presentation

<sup>72</sup> APEC, 2013, Best practices in developing seaport electronic information system: The Korean case. <http://www.apec-tptwg.org.cn/new/E-Linkages%20for%20Ports/6.%20Project%20Presentations/Topic%20Presentations/World's%20Best%20Practice%20%20Prof%20Paul%20TW%20Lee.pdf>

<sup>73</sup> KTNET was established in 1991 and backed by public – private cooperation (e.g. Ministry of trade industry & energy (MOTIE), Korean Customs Service (KCS) and Korea International Trade Association (KITA)), with KITA as 100% shareholder.

<sup>74</sup> Additional information on KTNET uTradeHub are available at:

- uTradeHub website <https://www.utradehub.or.kr/>

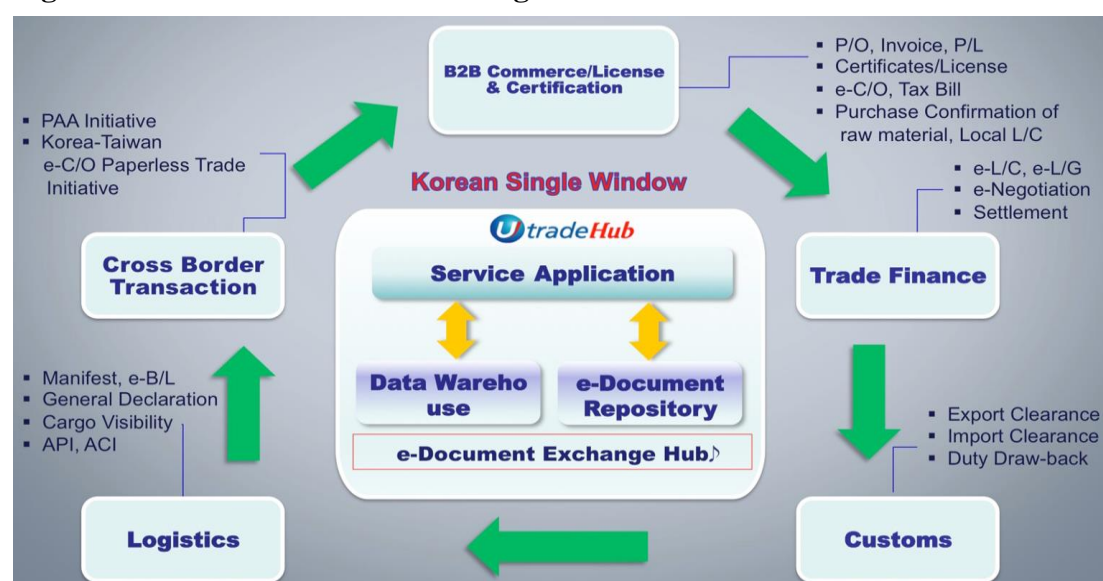
- KTNET, 2014, KTNET and Paperless Trade Brochure. Accessible at: [http://homepage.ktnet.co.kr/KTNET\\_FILE/brochure/file/1378884487000\\_ktnet\\_brochure2013\\_eng.pdf](http://homepage.ktnet.co.kr/KTNET_FILE/brochure/file/1378884487000_ktnet_brochure2013_eng.pdf)

- KTNET, 2011, uTradeHub Brochure: Accessible at: [http://homepage.ktnet.co.kr/KTNET\\_FILE/brochure/file/1356878292382\\_uTradeHub\\_eng.pdf](http://homepage.ktnet.co.kr/KTNET_FILE/brochure/file/1356878292382_uTradeHub_eng.pdf)

- UNNEXT Brief No. 3, 2010, Towards a Single Window Trading Environment – Case of Korea's National Paperless Trade Platform – uTradeHub. Accessible at: <http://unnex.unescap.org/pub/brief3.pdf>

Logistics part of the uTradeHub comprises several transport related features including manifest consolidation. Manifest Consolidation System (MFCS) is uTradeHub component that increase efficiency of transport and logistics related companies. The MFCS integrates cargo information (Master B/L and House B/L from forwarders) required to be reported to Korean Customs Service and supports information sharing on inbound/outbound cargo handling and bonded transportation reporting among logistics companies. Other logistics related services include: e-bill of lading (e-B/L) service that replaces paper based B/L with legal and functional electronic equivalent, e-delivery order (e-D/O) services for consignees; general declaration and arrival/departure reporting for maritime and airline transport.

**Figure 10: Korean national trade single window - uTradeHub**



Source: KTNET Presentation, May 2015, Korean Experience with paperless trade system

uTradeHub links over 94,000 customers that include close to 7,000 customs brokers and logistics related companies (e.g. freight forwarders, bonded warehouse operators, bonded transportation haulers, shipping lines and airlines), with over 460 government agencies and inspections (e.g. customs, immigration, port authorities, tax service offices etc.) and close to 100 financial institutions (e.g. banks and insurance companies).<sup>75</sup> Various B2B, B2G and G2B services are supported with electronic exchange of 620 e-documents.

The uTradeHub services are particularly beneficial for the companies with high volume of operations where the benefits from wide range of value added services and possibilities for interface of their internal ERP systems could contribute mostly for efficient management and cost effective use of the facilities.

uTradeHub supports global paperless trade within framework of Pan Asian e-commerce Alliance (PAA) and other similar multilateral and bilateral initiatives.

<sup>75</sup> KTNET Presentation, June 2015, Paperless trade single window



Services for cross border exchange of e-documents include facilities (e.g. Automated Manifest System – AMS) for submission of maritime/air cargo reports, required by foreign authorities prior to shipment.

Savings and economic benefits gained through the positive effect of paperless trade supported with uTradeHub are estimated US\$5.42 billion annually due to the labour cost reduction, transportation/communication cost reduction, trade auxiliary expenses reduction, reduction in bank charges, paper and other expenses, and improvement in productivity.<sup>76</sup>

### Single Window of UNI-PASS Korean Customs System

The single window module of UNI-PASS is integrated in the internet clearance portal of Korean Customs. Single window is one of the main modules of the UNI-PASS. The UNI-PASS services provided to import/export businesses, customs brokers, forwarders, shipping companies, airline companies and other parties involved in trade and transport are focused on import/export customs clearance, import/export cargo management and cargo tracking.

The use of UNI-PASS single window module is voluntary and provides free of charge services to the business community. UNI-PASS single window module supports import/export customs clearance and enables effective information sharing among 17 organizations (e.g. Korea Food and Drug Administration, National Fisheries Products Quality Inspection Service, National Plant Quarantine Service, National Veterinary Research and Quarantine Service, Korea Pharmaceutical Traders Association etc.) covering 33 documents related to import/export formalities.<sup>77</sup>

Even though majority of small and medium companies are directly using free of charge UNI-PASS single window facilities for customs clearance, business community is also using: uTradeHub single window facilities of the of the KTNET, and port and logistics services of KLNET which provide paperless coverage of various trade and logistics procedures and wide range of value added services.

The case study of national single window facilities in Republic of Korea confirms that that several single window facilities could efficiently coexist at national level. Several similar services may be offered to trade and transport stakeholders through different systems that run on different business models, each of them focused on different group of stakeholders. Some stakeholders may prefer services of port centric systems and logistics network; other may favour wide range of value added services; while those who are only occasionally involved in international trade transactions may be satisfied with minimal services provided.

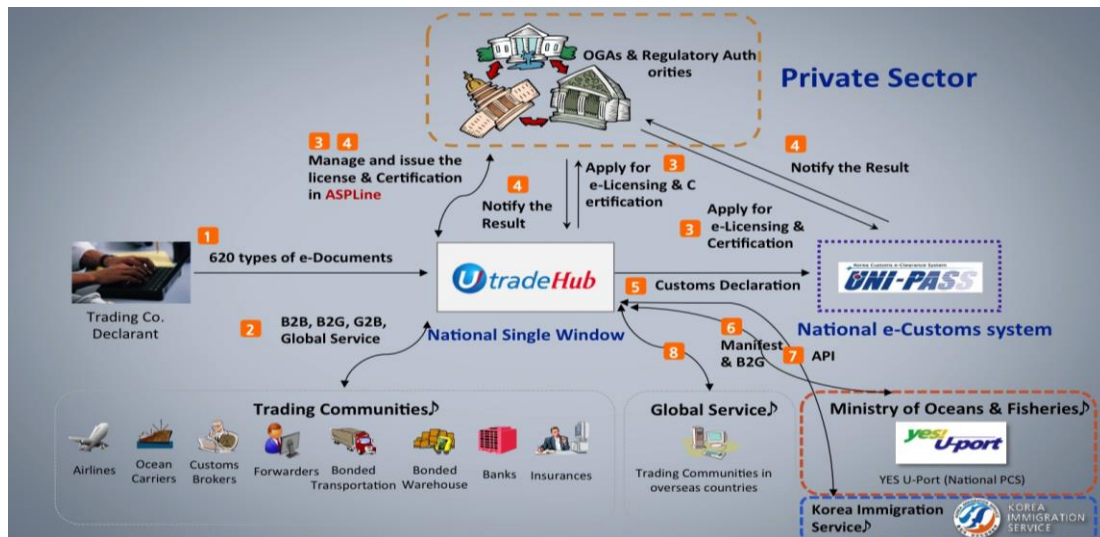
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<sup>76</sup> KTNET, 2011, uTradeHub Brochure: Accessible at:  
[http://homepage.ktnet.co.kr/KTNET\\_FILE/brochure/file/1356878292382\\_uTradeHub\\_eng.pdf](http://homepage.ktnet.co.kr/KTNET_FILE/brochure/file/1356878292382_uTradeHub_eng.pdf)

<sup>77</sup> Korea Customs Service, July 2010, Republic of Korea Single Window Case. Available at UNECE SW Repository [http://www.unece.org/fileadmin/DAM/cefact/single\\_window/sw\\_cases/Download/Korea\\_Customs.pdf](http://www.unece.org/fileadmin/DAM/cefact/single_window/sw_cases/Download/Korea_Customs.pdf)

Korean example shows how several interlinked single window facilities and different systems tailored to better adjust specific needs of different stakeholders could interact together and offer customized single window services. Yes U-Port, with port community single window, and uTadeHub national single window, as well as uTradeHub and UNI-PASS e-customs single window are partially linked to enable logical integration and reduce the need for multiple interaction with different systems (e.g. Manifest Consolidation System; e-Licensing).

**Figure 11: Interlinked Single Window environment in Republic of Korea**



Source: KTNET Presentation, May 2015, Korean Experience with paperless trade system

One of the characteristics of the Korean experience are wide spread opportunities to use electronic documents in B2G and B2B interactions that strongly supports single window functionality. Centralized trade platform (KTNET) and national logistics network (KL Net) support paperless transport and logistics services, which can be used for many transport related documents (e.g. cargo manifest; individual cargo reports; entry/departure reports; crew/passenger lists; e-B/L; e-D/O). Further development of single window environment requires continuous efforts to facilitate stakeholders' acceptance of paperless options; to improve and enhance data re-use and efficiency of integrated/interlinked services; and to strengthen cross-border and international cooperation.

## Singapore's National Single Window Environment

Singapore's single window system - TradeNet is one of the global pioneers in establishing single window environment. TradeNet, which is presently interlinked with wider TradeXchange platform, together with other advanced critical information systems (e.g. Marinet of Maritime and Port Authority of Singapore (MPA), PORTNET – a B2B port community solution, Cargo Community Network (CCN)) contribute to Singapore's top rankings as logistics hub with ease of trading.<sup>78</sup>

TradeNet was developed in 1989 to improve Singapore's competitiveness with use of IT solutions. Development of TradeNet has a background in government-backed initiatives for trade facilitation. The TradeNet Steering Committee guided the working subcommittees following the single window approach for "one eForm - one submission, one interface and one process". Supporting development of TradeNet, various government agencies have reduced the 20 forms used into a single electronic form for nearly all trade regulatory processes in Singapore.<sup>79</sup>

TradeNet system, operated by Singapore Network Services Pte Ltd (SNS)<sup>80</sup> (now known as CrimsonLogic Pte Ltd), was launched in 1989. It provides a single window service for electronic submission of permit applications to whole-of-Government trade regulation agencies (all relevant competent authorities, including Singapore Customs and their 36 controlling units.)<sup>81</sup>

TradeNet has been upgraded over the time, providing better functionalities and improved connectivity solutions. Subsequently, TradeNet was interlinked with TradeXchange platform, after the latter was introduced in 2007. TradeXchange was established as a private-public partnership (PPP) project with CrimsonLogic. TradeNet and TradeXchange are operated by CrimsonLogic. The TradeXchange project is led by Singapore Customs, the Economic Development Board, the Infocomm Development Authority of Singapore, and SPRING Singapore.<sup>82</sup> CrimsonLogic operates the TradeXchange and TradeNet network infrastructure and services and collects fees from the users and beneficiaries for the services provided, in accordance with the PPP.

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<sup>78</sup> WB Group - Doing Business website: <http://www.doingbusiness.org/data/exploretopics/trading-across-borders>

<sup>79</sup> Source: Jonathan Koh, 2010, UNNExT, Brief No. 02, March 2010, Towards a Single Window Trading Environment: Best Practice in Single Window Implementation: Case of Singapore's TRADENET. Available at: <http://unnex.unescap.org/pub/brief2.pdf>

<sup>80</sup> SNS was established by four key agencies as shareholders: STDB (now IES) (55%), Port of Singapore Authority (PSA) (later corporatized as PSA Corporation Ltd) (15%), Civil Aviation Authority of Singapore (CAAS) (15%), and Singapore Telecoms (later corporatized as Singapore Telecommunications) (15%) – (UNNExT, Brief No. 02, March 2010)

<sup>81</sup> Singapore Customs website: Highlight on Competent Authorities (CAs) procedures. Available at [http://www.customs.gov.sg/leftNav/trad/TradeNet/Highlights+on+Competent+Authorities+\(CAs\)+Procedures.html](http://www.customs.gov.sg/leftNav/trad/TradeNet/Highlights+on+Competent+Authorities+(CAs)+Procedures.html)

<sup>82</sup> Additional information on TradeXchange are available at: <http://www.tradexchange.gov.sg/tradexchange/content/abouttradexchange.html>

TradeXchange is a neutral and secure trade platform that facilitates the electronic exchange of information within the trade and logistics community. TradeXchange/TradeNet users can subscribe to the value-added services (VAS) offered by the TradeXchange partners.

TradeXchange partners are frontend value-added software providers who specialise in certain software solutions (e.g. port operations management; supply chain management; logistics and freight management). The different VAS providers took advantage of the network connectivity enabled by TradeXchange and offer their multiple services to the trade and logistics community.

TradeXchange platform provides a single interface for access to some critical systems (e.g. Cargo Community Network (CCN) and PORTNET). The community can optimise their business processes and better interface their in-house systems (e.g. ERP, TMS) with TradeXchange for increased efficiency and data reuse. At the backend of TradeNet is eCustoms<sup>83</sup> information system and information systems of other competent authorities.

The interface of TradeNet with TradeXchange enables re-use of B2B data for B2G exchanges such as for permit applications. Shippers will also be able to obtain their approved permits immediately and reconcile with their backend enterprise systems for control/verification. Permit applications have to be submitted for import, export and/or transshipment of certain goods that are subject to the control of relevant Competent Authorities (CAs). After approval, the sender will receive a permit-approved message that can be printed as Cargo Clearance Permit (CCP).<sup>84</sup>

In addition to B2G information exchange, TradeXchange provides a range of B2B services to logistics service providers; ocean carriers; importers and exporters; local buyers and sellers; insurance companies, and financial institutions. These services include: trade permit preparation; permit return; access return; marine cargo insurance; eFreight; data@source; electronic certificate of origin preparation; trade finance.<sup>85</sup>

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<sup>83</sup> A suite of backend system supporting end-to-end Singapore Customs' regulatory functions, such as, registration; revenue management; inventory control management; pre-clearance, clearance and post clearance audit

<sup>84</sup> Detailed information on TradeNet operation is available in the Singapore Customs website:  
<http://www.customs.gov.sg/leftNav/trad/TradeNet.html>

<sup>85</sup> An overview of TradeXchange services is available at:  
<https://www.tradexchange.gov.sg/tradexchange/content/services.html>

### **Box 8: Singapore's Marinet system**

The Maritime and Port Authority of Singapore (MPA)<sup>86</sup> provides Marinet e-services for electronic port clearance to the Singapore shipping community. Marinet facilitates port clearance formalities for vessels and allows for: electronic submission of e-declarations (e.g. General Declaration for vessels arrival/departure); e-certificates, e-approvals; craft licensing; and e-billing/payment and e-shipping services. Shipping information exchanged through Marinet enables faster clearance and processing of port and shipping documents.<sup>87</sup>

### **Box 9: Singapore's PORTNET system**

The PORTNET port community system handles electronic data for vessels and containers passing through PSA Singapore Terminals.<sup>88</sup> PORTNET system consolidates and synchronizes the transactions and information from all relevant stakeholders in the port and logistics processes.

PORTNET's key features include: online ordering of port services; vessels declaration; berth application; stevedoring services; yard crane handling services; pilots, tugs and water-boat services; labelling/monitoring/fumigation services for dangerous goods (DG) cargos; container handling and information exchange about container shipment/facilitates interaction across multiple parties; hauliers' functions; electronic delivery order and delivery processing; container store and release orders.<sup>89</sup>

PORTNET is integrated with other PSA IT solutions such as the Cargo D2D (for sending electronic shipping orders to carriers); Haulier Community System (for fleet optimisation and sending handling instruction to the port); EZShip and ALLIES (for connecting vessel and allocating vessel space); TRAVIS (for business reporting and management tool); PORTNET Mobile (for accessing real time information via mobile devices).<sup>90</sup>

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<sup>86</sup> The MPA regulates and licenses port and marine services and manages vessel traffic in the Singapore port. Additional information on MPA is available at: <http://www.mpa.gov.sg>

<sup>87</sup> Detailed information on Marinet e-services is available at: <https://marinet.mpa.gov.sg/index.jsp>

<sup>88</sup> The Port of Singapore Authority was corporatized as PSA Corporation in 1997. PSA is the port operator designated to operate several container terminals in Singapore. Additional information is available at: <https://www.singaporepsa.com>

<sup>89</sup> Detailed information on PORTNET services is available at: <https://www.portnet.com/home>

<sup>90</sup> PSA Products <https://www.portnet.com/WWPublic/products.html>

### **Box 10: Singapore's Cargo Community Network (CCN)**

The CCN is Singapore's provider of cargo community system solutions for electronic communication between airfreight industry stakeholders (e.g. airlines, logistics service providers, ground handling agents, customs and other government authorities).

CCN integrated services provide: collaboration and connection of airfreight stakeholders including exchange of data from the source and further data re-use; management of business processes and information flows; compliance with customs and other regulatory requirements and airfreight industry standards.

CCN products include:

- CCNhub - integrated collaboration platform for easy worldwide connectivity that features: flight schedule and availability requests; electronic bookings; allotment management and booking; track and trace; air waybill stock management and printing; FWB management and consolidated manifest management;
- host-to-host gateway - that automatically retrieves data from in-house systems meant for submission to the relevant parties; and provides that the corresponding replies from the other parties are deposited back into in-house systems as well;
- TradeNet frontend solution - for connection to the Singapore Customs and other regulatory agencies and submission of permit declarations. This solution enables data reuse for seamless processing of cargo manifest declaration;
- eAWB - paperless environment for electronic airway bill that increases efficiency and provides cost-savings;
- IT solutions for cross-border information exchange with customs authorities in other countries e.g.: Canada, China, India, Indonesia, Bangladesh, Philippines, USA and European Union for compliance with their relevant regulatory requirements (e.g. air conveyance reporting, advance manifest information, entry summary declaration);
- advanced management IT solutions - including business performance analytics; web-based shipment tracking; electronic payment and invoicing.

Developing innovative logistics solutions CCN strives to enable seamless information exchange with goal to further simplify business processes, so the stakeholders in the airfreight industry could maximize their efficiency and productivity.<sup>91</sup>

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<sup>91</sup> Detailed information on CCN products and services is available at <http://www.ccn.com.sg>



**TradeXchange Permit preparation** service connects well with the TradeNet single window service for electronic submission of permit applications. This service enables the exchange and re-use of commercial data (e.g. from invoices, packing lists, shipping instructions) between exporters/importers and freight forwarders. The data will be extracted from in-house systems (e.g. ERP system) of the exporters/importers and automatically populated to their forwarders/declarants' TradeNet frontend software for more efficient and accurate declaration. .

**Figure 12: TradeXchange Permit Declaration Flow**



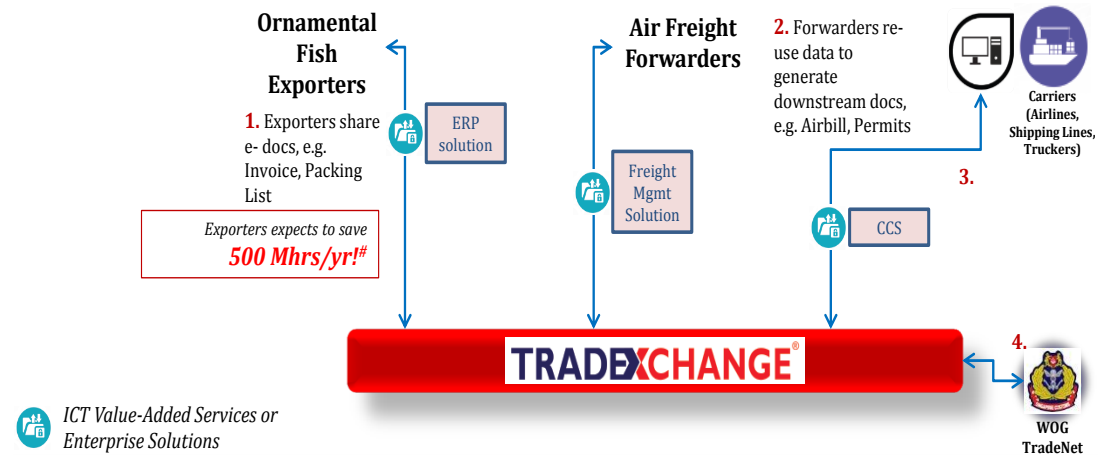
Source: Edwin Wu, CrimsonLogics, 27 August 2015 TradeXchange Presentation

Submission of paper-based documents (e.g. invoices, packing lists) to the freight forwarders is no longer necessary and they will have to make only few additional entries to the prepopulated electronic forms. This service reduces time pressure to move high volumes shipment and labour-intensive processes to prepare suitable permit application. In addition it increases data quality and compliance with regulatory requirements.

**TradeXchange Permit Return** is another connected service that provides shippers with an electronic copy of approved cargo clearance permit (CCP) (e.g. as PDF or XML file via e-mail, secure file transfer protocol (SFTP) or web-service) immediately upon approval. This service provides immediate CCP information to the shipper solving any issues with possible delays; enables shippers to better manage/reuse CCP reference files/data in their in house systems; and reduces workload of the declarants.

**TradeXchange eFreight** service is designated for sharing data between shippers and freight forwarders. Shippers (exporters) may connect their internal systems (e.g. ERP solutions) with TradeXchange and share relevant data (e.g. from invoices, packing lists) with their freight forwarders for freight booking and preparation of downstream documents (e.g. airway bills).

**Figure 13: TradeXchange - eFreight example and support for compliance with advance export declaration requirements**



Source: Singapore Customs, August 2015, Presentation on Integrating transport requirements through a SW

eFreight services together with permit preparation services support compliance with the advance export declaration requirements of Singapore Customs. These services provide data capture from the source and efficiently reuse the data for preparation of commercial and regulatory related documents. It is estimated that TradeXchange services significantly contribute to time saving for freight forwarders operations (up to 40% for airway bills preparation and up to 50% for permit preparation).<sup>92</sup>

Currently eFreight services are available only in air transport where the pressure for faster turnaround time is higher and where transport documentation (e.g. AWB) is greatly harmonised which is not the case in maritime transport.

**Marine Cargo Insurance** is another TradeXchange B2B service that enables freight forwarders to apply for cargo insurance based on pre-arranged cover insurance with insurance companies. Using this service the applicant can prepare and submit required data. For standard cases, the insurance company automatically provides approval, and the applicant can promptly print the insurance certificate. This insurance concept is applicable for all modes of transport. This service significantly reduces operational costs and provides up to 90% time saving.<sup>93</sup>

Singapore's TradeNet single window services have reduced the cost and turnaround time for the preparation, submission and processing of permit declaration and have contributed to accelerated clearance of cargo.

<sup>92</sup> Singapore Customs, August 2015, Presentation on Integrating transport requirements through a Single Window

<sup>93</sup> TradeXchange website: <https://www.tradexchange.gov.sg/tradexchange/content/services-mc.html>



**Figure 14: TradeNet Benefits**

Key Indicator	Before TradeNet	After TradeNet
<ul style="list-style-type: none"> <li>• Processing time/permit</li> <li>• Submission of documents</li> </ul>	<ul style="list-style-type: none"> <li>• 4 hrs to 2 – 7 days</li> <li>• Multiple submission</li> </ul>	<ul style="list-style-type: none"> <li>• 10 minutes</li> <li>• Single document through a single interface</li> </ul>
<ul style="list-style-type: none"> <li>• Number of documents</li> <li>• Trade documentation fees</li> </ul>	<ul style="list-style-type: none"> <li>• 3 – 35 documents</li> <li>• US\$6.25/document*</li> </ul>	<ul style="list-style-type: none"> <li>• 1 document</li> <li>• US\$1.80/application*</li> </ul>

Source: Jonathan Koh, 2010, UNNExT, Brief No. 02, March 2010, Towards a Single Window Trading Environment: Best Practice in Single Window Implementation: Case of Singapore's TRADENET.

The case study of Singapore's national single window environment presents an example of regulatory single window closely connected with B2B platform for electronic information exchange. Trade and logistics community can use TradeNet and TradeXchange services accessing through different frontend value added software in preferred area of interest (e.g. port operation, supply chain management; logistics and freight management). Interactions between traders and freight forwarders can be optimized with links to their internal IT systems.

TradeXchange B2B services, interlinked with TradeNet single window, have further enhanced productivity and boost efficiency providing many benefits to trade and transport-related stakeholders (ocean carriers, forwarders, and logistics service providers). Greater data reuse and data integration enable streamlined and automated preparation of trade and shipping documents. Efficient electronic data exchange through TradeXchange reduces turnaround time and save manpower costs.<sup>94</sup>

Other critical systems (e.g. Marinet, PORTNET, CCN focused on port/airport formalities) complement TradeNet and TradeXchange services, however they essentially run as standalone systems; though some of them as VAS TradeXchange partners provide single interface access. There is likely potential for further facilitation from interconnection of presently detached critical systems in single window environment; however, demand for such integration presently is fairly limited (e.g. customs authorities are not processing cargo manifests and that information remains only in CCN / PORTNET systems without a need to link the systems in order exchange cargo manifest information).

Singapore's single window facility and extended B2B platform as well as other critical systems are covering number of transport related documents and information with electronic data exchange. Services for: import/export and transshipment permit applications; permit preparation; eFreight solutions (freight booking, preparation of airway bills); and cargo insurance are included in single window environment.

<sup>94</sup> TradeXchange estimated savings - more than \$6.5 million manpower savings to date and more than 1 million man hour to date (<https://www.tradexchange.gov.sg/tradexchange/content/services.html>)

## Thailand's National Single Window

Trade and transport facilitation in Thailand is supported by various ICT solutions including e-Customs system and closely connected National Single Window (NSW). Thailand NSW is operated by Thailand Customs Department and fully funded by the Thai Government.

Customs information systems have been upgraded continuously following several evolution steps starting from customs EDI services. Transformation towards paperless customs environment began in 2006 with development of web based e-Customs system based on ebXML messaging standards and introduction of legal and operational requirements for digital signatures.<sup>95</sup> First integrated NSW was introduced in 2008 and upgraded in 2011 to provide improved opportunities for information exchange (e.g. single data submission) and to take into consideration possibilities for cross-border data exchange.

The objective of Thailand NSW is to facilitate import, export and logistics supply chains in Thailand. Special attention is provided to international cross-border transactions in the context of ASEAN regional integration and other cross-border facilitation initiatives and free trade agreements. Establishing national single window environment in Thailand aims to promote cross-border paperless trading and reduce national logistics cost, which should ultimately enhance national competitiveness.

Thailand NSW offers exchange of electronic information in relation to import, and export regulatory requirements, among government authorities and business communities. Presently 36 government agencies and trading communities are involved in paperless information exchange. That includes transport related authorities such as: Department of Land Transport, Airports of Thailand, Marine Department and Port Authority. The Customs Department and other permit issuing agencies are connected to the NSW through the secure Government Information Network (GIN). Trading communities including transport related stakeholders may access Thailand NSW through secure network via web service or value-added network services (VAN/VAS).

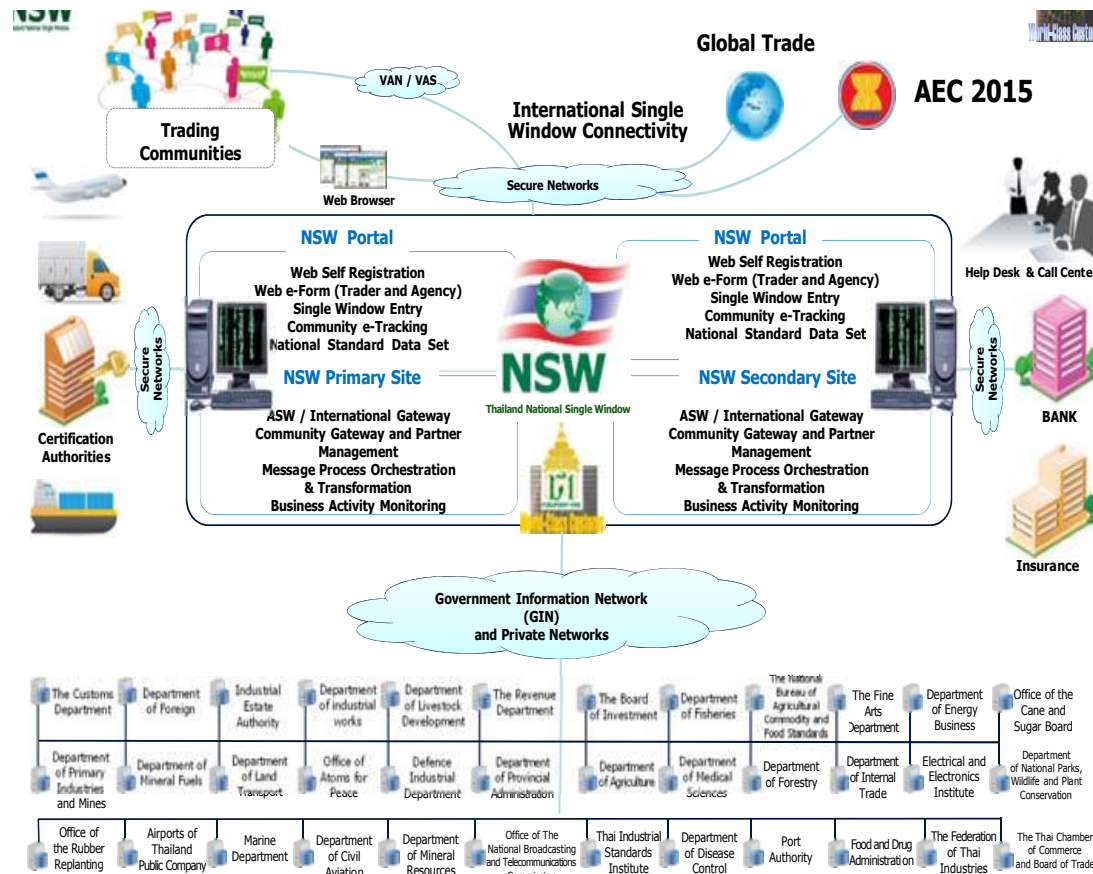
Thailand NSW covers about 660 customs stations nationwide (e.g. customs houses, container yards, inland container depots, free zones, export processing zones, warehouses, seaports and airports). Services provided by Thai NSW include: e-Import, e-Export, e-Manifest, e-Payment, and e-Warehouse that support paperless environment for carrying out wide range of customs operations.

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<sup>95</sup> Sinmahat Kiatjanon, UNNExT, Brief No. 08, August 2012, Towards a Single Window Trading Environment: Developing a National Single Window for Import, Export and Logistics in Thailand (p.2). Available at: <http://unnex.unescap.org/pub/brief8.pdf>

e-Customs and NSW in Thailand support many customs and regulatory processes. In transport related domain manifest processing is finalized. Sea/air/land cargo manifest declaration can be submitted through NSW by web application, and their processing is supported by IT systems. Cargo release notifications from the customs to the forwards can also be exchanged electronically. NSW supports exchange and processing of RFID declaration for movement of goods between warehouses/free zones and sea ports/airports.

**Figure 15: Implementation of Thailand National Single Window**

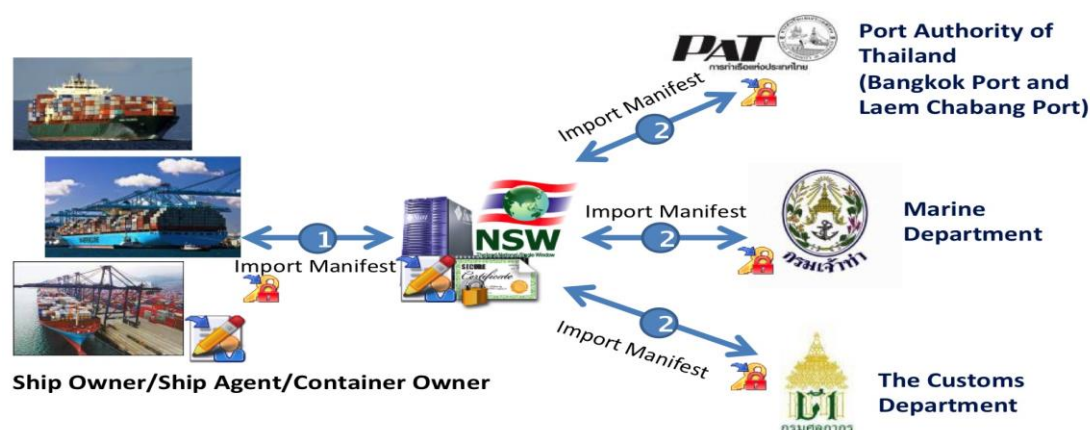


Source: Thai Customs Department, 20 August 2015, Presentation on Thailand NSW and ASEAN Single Window

**Single entry form for restricted goods** is NSW service in relation with legislation that imposes various restrictions for bringing in the country different types of dangerous and restricted goods. For such goods carriers/importers should obtain a license from relevant authorities (e.g. Department of Industrial Work, Food and Drug Administration, Department of Livestock Development, Department of Agriculture, Office of Atoms for Peace). Thai NSW provides a service for submission of single entry form for restricted goods to the relevant authorities. After a license being issued the system provides license information as paperless G2G message. Later, when the import declaration for the goods concerned is lodged via NSW to the Customs Department, information on the license obtained will be connected with the declaration.

**NSW import manifest submission** service enables single submission of import manifest data in port related formalities. Ship owners, ship agents and container owners could use NSW services to submit harmonized data of import manifest only once, and then the system will automatically transfer relevant data to three different authorities: Port Authorities of Thailand (e.g. Bangkok Port), Thai Marine Department and Thai Customs authorities.

**Figure 16: Single Submission of Import Manifest in Thailand NSW**



Source: Thai Customs Department, 20 August 2015, Presentation on Thailand NSW and ASEAN Single Window

**RFID e-seal tracking** is related to customs modernization efforts in Thailand and initiatives to provide balance between trade facilitation measures for compliant traders and effective customs control. Electronic Seal (e-Seal) public-private collaboration project was initiated as Secure Free Zone project with objective to facilitate movements of bonded goods among free trade zones, export processing zones and airports in Bangkok area. Secure free zone project has offered successful paperless solution for secure movement of bonded goods, and provided savings in terms of time and operational costs. E-Seal project evolved and improved over the time. New solutions were developed and the options for use of NSW e-seal services with included e-tracking have been extended.

Benefits from introduction of paperless customs solutions and NSW with regard to streamlined customs formalities, reduction of number of customs interventions and documents required, decrease of cargo clearance intervention time and turnaround time per declaration are substantial as shown in the figure below. Logistics savings costs as result of e-Customs solutions and NSW are estimated to about US\$ 1.5 billion annually.<sup>96</sup>

<sup>96</sup> Sinmahat Kiatjanon, UNNExT, Brief No. 08, August 2012, Towards a Single Window Trading Environment: Developing a National Single Window for Import, Export and Logistics in Thailand (Table 2, p.6). Available at: <http://unnex.unescap.org/pub/brief8.pdf>

**Figure 17: Cargo Clearance through ICT and NSW Development in Thailand**

Customs Clearance	Before 1998	1998 - 2007	2008 - 2011
Customs intervention	6-8 steps	2-4 steps	0 step (green) 1 step (red)
Document requirement	5 copies	1-3 copies	0 copy (green) 1 copy (red)
Intervention time	3-10 days	½ - 1 day	0 hour (green) 0.5-1 hour (red)
Turn around time (per declaration)	3-10 days	10- 30 minutes	95% < 5 minutes

Source: Sinmahat Kiatjanon, UNNExT, Brief No. 08, August 2012, Towards a Single Window Trading Environment: Developing a National Single Window for Import, Export and Logistics in Thailand (Table 2, p.6). Available at: <http://unnex.unescap.org/pub/brief8.pdf>

**e-Transit** module has been developed as one of the NSW services, however presently this service is basically not employed and further enhancement of e-transit is being considered. The reason behind this is the fact that current transit regime in Thailand is mainly based on paper-based customs transit documents in accordance with bilateral arrangements with neighbouring countries (e.g. the MOU on the movement of perishable items from Thailand through Malaysia to Singapore, and the bilateral agreement between the government of Thailand and Lao PDR on Road Transport). Greater Mekong Subregion (GMS) customs transit systems under Cross-Border Transport Agreement (CBTA), which is also paper-based system is essentially not in use, since traders prefer to use bilateral arrangements. Presently new individual customs transit application for paperless ASEAN customs transit is being developed under EU supported project, scheduled to be piloted in 2016 between Malaysia, Singapore and Thailand.<sup>97</sup>

#### Port related systems and linkages with Thailand NSW

The development and management of major international ports in Thailand (e.g. Bangkok Port and Laem Chabang Port) falls under responsibility of the Port Authority of Thailand (PAT).<sup>98</sup> In addition to port expansions and infrastructural improvements, PAT is modernizing port ICT systems including promoting One Stop Port-service and e-Port services for port related stakeholders (customs brokers, shipping agents, freight forwarders, and terminal operators). E-Port services include: Container Terminal Management System (CTMS); e-Gate (automatic gate system); e-Tariff; e-Manifest (EDI); e-Hazardous; e-Doc (real-time transfers of e-documents and e-forms between service providers and the port authority); e-Pay (accounting and billing services); and electronic services for Vessel and Cargo Management System (VCMS).<sup>99</sup>

<sup>97</sup> ASEAN Regional Integration Support by the EU (ARISE), <http://arise.asean.org/>

<sup>98</sup> Port Authority of Thailand (PAT) is a public state enterprise under the general supervision of the Ministry of Transport and Communications. <http://www.port.co.th/sitenew/en/index.php>

<sup>99</sup> Port Authority of Thailand web site; e-Port: <http://www.port.co.th/sitenew/en/index.php#>

Development and implementation of E-Port services main ports is intensified in recent years. For example the RFID technology is being used to increase efficiency and support logistics service providers from 2011, and e-Gate at Bangkok Port and an e-Toll at Laem Chabang Port are implemented in 2012.<sup>100</sup> For further efficiency improvements linkages with e-Customs system and National Single Window (NSW) system are being developed.<sup>101</sup>

Thailand is still not a signatory of Montreal Convention (MC99) or Montreal Protocol (MP4), however support for introduction of e-AWB is provided, and e-AWB is presently open to some pilot airlines and freight forwarders.<sup>102</sup> E-AWB is regarded as future of air-cargo industry and with increased use of e-AWB future linkages with single window services could be expected.

The case study of Thailand's NSW presents developing single window environment, where customs centric single window system is well established with connection to other relevant authorities. E-Port services are implemented independently while developing linkages among port related systems with e-Customs and NSW (e.g. single submission of import manifest) to increase efficiency of port management. Options for B2B interactions are still limited and not interlinked with NSW facility. Potential enhancements of single window services (e.g. in part of customs transit, exchange of booking and loading information) are being considered.

Current services of Thailand NSW relevant to transport related stakeholders (e.g. carriers, ship owners, shipping agents, container owners) include: single entry form for restricted goods, single submission of import manifest, cargo release notification, submission of container list and RFID e-seal tracking.

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<sup>100</sup> Thailand Board in Investment web site: <http://www.boi.go.th/index.php?page=seaports>

<sup>101</sup> Port Authority of Thailand; Annual Report 2014; Available at: <http://www1.port.co.th/AnnualReport/en/2014/AnnualReport2014.pdf>

<sup>102</sup> Several Thailand based forwarders are piloting transition to e-AWB using services of Worldwide Information Network (WIN) or TIFFA EDI application, ezyCompliance, powered by UPLIFT, a cargo community platform developed by Kale Logistics (<http://airfreight-logistics.com/2015/06/latest-news/information-technology/tiffa-and-kale-support-e-awb-implementation-in-thailand>; <http://airfreight-logistics.com/2015/08/articles/sector-spotlight/blazing-a-trail-for-e-awb-in-thailand-trans-air-cargo-partners-with-win>; <http://airfreight-logistics.com/2015/06/articles/movers-shakers/saving-the-world-one-e-airway-bill-at-a-time>)



## 4.2 Transport oriented single windows

### EU Maritime National Single Windows

Many European ports have advanced information systems for support of port operations and port management however interoperability between them is lacking in most of the cases. Some smaller ports do not have adequate ICT infrastructure and some of the processes are still paper based. EU e-Maritime initiative promotes the use of advanced information technologies for doing business in maritime transport sector, in order to address the challenges of complex maritime transport procedures and improve managing of increased maritime traffic.

Legal background for introduction of EU maritime Single Windows obliges the EU Member States to accept the fulfilment of reporting formalities in electronic format and their transmission via a single window no later than 1 June 2015.<sup>103</sup> This means that paper based reporting, including electronic submission of scanned images of paper-based documents, will no longer be acceptable.

EU maritime National Single Window Guidelines define National Single Window (NSW) as: “an environment for collection, dissemination and exchange of vessel reporting information with a structured and commonly defined data structure, rules and management of access rights, which are in accordance with relevant international, national and local legal requirements.”<sup>104</sup>

EU maritime NSWs have to be linked with information systems, which already exist such as: EU SafeSeaNet (SSN)<sup>105</sup>, national e-Customs systems, and other port systems (e.g. port single windows). Those linkages should provide that all information is reported once and made available to various competent authorities and the EU Member States and maximize the benefits for the NSW users.

The main objectives of EU maritime NSW are to:

- offer a facility for data providers (e.g. ship master, owner, operator or agent) to electronically submit information on reporting formalities;
- distribute/give access to information to relevant authorities (e.g. maritime, port, security, waste, border control, customs, health, and other authorities depending on national legislation)

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<sup>103</sup> Article 5(1) Directive 2010/65/EU of the European Parliament and of the Council of 20 October 2010 on Reporting Formalities for Ships Arriving In and/or Departing From Ports of The Member States and Repealing Directive 2002/6/EC (OJ L283/1, 29.10.2010) Accessible at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:283:0001:0010:EN:PDF>

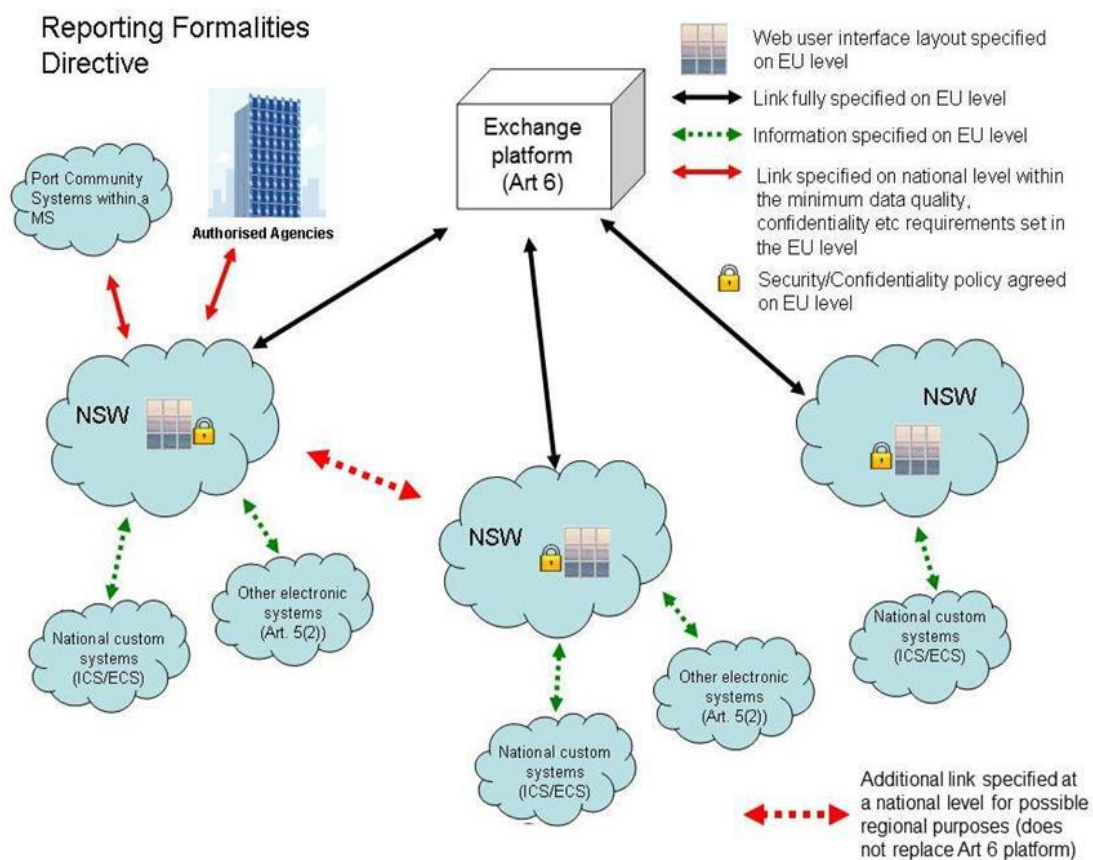
<sup>104</sup> European Commission, Directorate D – Logistics, maritime & land transport and passenger rights, 2015, National Single Window Guidelines (Final version 17 April 2015), (Part 2.1, p.6). Accessible at: <http://www.annamsw.eu/component/zoo/item/eu-nsw-guidelines-april-2015.html?Itemid=176>

<sup>105</sup> SafeSeaNet (SSN) is a vessel traffic monitoring and information system, established in order to enhance: maritime safety; port and maritime security; marine environment protection; efficiency of maritime traffic and maritime transport. SSN is centralized platform that links together maritime authorities from across Europe and supports information data exchange on ships, ship movements, and hazardous cargoes. More information is available on European Maritime Safety Agency (EMSA) web-site: <http://www.emsa.europa.eu/ssn-main.html>

- provide interoperability with SafeSeaNet (SSN) and enable relevant information exchange with other Member States as well as interoperability with other national systems (e.g. e-Customs).

Taking in consideration unique requirements and conditions in each EU Member State, national architecture of the NSW could be defined in various ways depending on: the way how maritime NSW and information systems of the relevant agencies are linked; the level of integration between SSN and NSW solution (e.g. NSW that integrates the national SSN functionalities or separate national SSN component linked electronically to the NSW), and legacy systems included in NSW (e.g. port community systems and port single windows).

**Figure 18: NSW Conceptual Model**



Source: European Commission, Directorate D – Logistics, maritime & land transport and passenger rights, 2015, National Single Window Guidelines (Final version 17 April 2015). (Figure 1, p.11)

The general maritime NSW configuration should cover several information flows:

- from data providers to the NSW for electronic submission of information on reporting formalities and from NSW to the data providers for receiving decisions of relevant authorities;
- from NSW to the relevant authorities for distribution of the received information and from relevant authorities to NSW for submission of their decisions; and
- exchange of relevant information between Member States via the SSN system.



NSW should cover business processes regarding electronic collection and exchange of data, and it should support the decision-making process mainly for ship clearance, even though information provided through NSW may also support other clearance processes (e.g. immigration and customs cargo clearance). NSW should provide the receipt of pre-arrival/departure notifications on reporting formalities and request for ship clearance to enter or leave a port.

Operating environment for development of NSW for maritime transport and linking legacy systems differs significantly from country to country and from port to port. For example some countries have extended national SSN applications, which provide the central National System for ship reporting (e.g. Norway) and some have national SSN applications closely linked to Port Systems (e.g. UK).<sup>106</sup>

At EU level there are differences in national e-Customs applications and availability to link e-Customs solutions with national transport related systems or with port systems. There are also various examples of port community systems and port single windows with differences in the scope that they cover, which may lead to different transition paths for integration of port systems in maritime NSWs.

Therefore there is no single and definitive solution how to establish maritime NSW and EU Member States are developing their own maritime NSWs adapted to their national specifics. EU NSW Guidelines provide a basic outline of the main issues that need to be considered, identify standards and specifications for elements that have to be harmonised, highlight some of the best practices and available tools (e.g. NSW prototype), and suggest the steps that have to be taken for developing the NSW and providing interoperability.

Additional information on EU maritime national single windows, including: EU projects that support development of e-Maritime single windows; reporting formalities in e-maritime single windows; main e-maritime single window features; maritime national single window prototype; and maritime single window under wider EU e-freight and e-maritime initiatives are presented in Annex 2 of this Study.

EU maritime NSW is an example of initiative that enhances paperless environment and maritime transport single window services. The initiative supports maritime interoperability among group of countries, while taking in consideration national specifics in the case of integrated regional environment. Even though the initiative is focused on single window services for ship clearance; it also strongly advocates linkages to other systems (e.g. EU-maritime safety and security systems e-customs, immigration.)

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<sup>106</sup> eMAR Project, 2014, D4.5 Specification of National Single Windows – Part 1- EU Maritime Single Window development (Deliverable 4.5) (Author: Takis Katsoulakos) (p.18-20). Accessible at: [http://www.emarproject.eu/uploadfiles/D4.5%20National%20Single%20Window%20Part%201\\_Final%20Published\\_V0.1.pdf](http://www.emarproject.eu/uploadfiles/D4.5%20National%20Single%20Window%20Part%201_Final%20Published_V0.1.pdf)

## IATA's e-freight

IATA e-freight programme launched in 2006 supports a vision for 'building and implementing an end-to-end paperless transportation process for the air cargo industry where paper documents are replaced with the exchange of electronic data'.<sup>107</sup> The programme involves carriers (airlines), freight forwarders, ground handlers, shippers/consignees and customs authorities.

E-freight capability aims to establish paperless environment for the air cargo transport, which used to have more than 30 paper documents exchanged among different stakeholders (e.g. invoice, packing list, certificate of origin, dangerous goods declaration, master air waybill, house waybill, house/flight/transfer manifest, import/export/transit declaration, customs release notes, etc.). The ambitious goal to enable electronic information exchange for both, B2B and B2G interactions; where paper documentation is not required anymore; depends on various legal, regulatory, technical and business process components, on national and global level.

Global Air Cargo Advisory Group recommends a three-pillar roadmap to a 100 per cent end-to-end e-freight approach:

- Pillar I - creation of "e-freight route networks" by linking Customs and other regulators and providing paperless environment for electronic regulatory documents (e.g. goods and cargo customs declarations for export/import);
- Pillar II - digitization of air waybill (to e-AWB) and other core documents in air transport industry (e.g. House Manifest (to e-HM); Consignment Security Declaration (to e-CSD); Flight Manifest (to e-FM)) for removing paper based documents in airport-to-airport connectivity;
- Pillar III – digitalization of core commercial documents (e.g. invoice and packing lists, house airway bill) and removing pouches for commercial documents transported by the airlines together with the freight, for door-to-door connectivity, which links shippers and consignees.<sup>108</sup>

One of the first steps towards the e-freight vision was replacing AWB, which represents the contract of carriage between the 'shipper' (e.g. forwarder) and the 'carrier' (airline) with e-AWB. Legal background for use of electronic instead of paper AWB is provided by the Montreal Protocol 4<sup>109</sup> or Montreal Convention

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<sup>107</sup> IATA, 2015, e-freight fundamentals, (IATA web site, last accessed 15.06.2015): <https://www.iata.org/whatwedo/cargo/e/efreight/Documents/e-freight-fundamentals.pdf>

<sup>108</sup> Source: IATA, 2013, e-freight Handbook (v4.0) (p.11-21): <http://www.iata.org/whatwedo/cargo/e/efreight/Documents/e-freight-handbook.pdf>

<sup>109</sup> Additional Protocol No. 4 to Amend Convention for the Unification of Certain Rules Relating to International Carriage By Air Signed At Warsaw on 12 October 1929, As Amended By the Protocol Done at the Hague on 28 September 1955, Signed at Montreal on 25 September 1975 – (Additional Protocol No. 4 To The Warsaw Convention), (in force in 1988). Accessible at: <http://www.jus.uio.no/im/air.carriage.warsaw.convention.montreal.protocol.4.1975/doc.html>

1999.<sup>110</sup> In order to be able to use e-AWB, the same convention has to be applicable in both origin and destination country (or they need to have equivalent national legislation regarding the use of electronic air waybills). International Civil Aviation Organization (ICAO) keeps the current lists of parties to air law treaties including the parties to the Montreal Protocol 4 and Montreal Convention 1999.<sup>111</sup>

The e-AWB replaces the AWB with electronic messages (for each transport operation) based on agreement signed between shipper/forwarder and the airline, which introduces e-AWB (signed only once). There are two kinds of agreements that the interested parties could sign:

- bilateral agreement – e.g. based on IATA's Model Agreement in accordance with Recommended Practice 1670,<sup>112</sup> or
- multilateral agreement – based on IATA Resolution 672.<sup>113, 114</sup>

Both types of agreements refer to the conditions of contract set forth in IATA Resolution 600i and to the cargo receipt (which may be requested by the shipper and produced by the carrier) with layout set in accordance with IATA Resolution 600g.

When due to regulatory, operational, or other constraints e-AWBs cannot be used and paper AWBs have to be issued, airlines could offer a 'Single Process' to the freight forwarders. Under the Single Process the airline determines if the paper AWB needs to be produced and it could print the paper AWB on behalf of the freight forwarder, using the electronic data received from freight forwarder.<sup>115</sup>

IATA e-freight electronic messages are supported with two standards: Cargo Interchange Message Procedures (Cargo-IMP) or Cargo-XML as the new alternative standard to Cargo-IMP. From 2015, IATA and the aviation industry will discontinue support for Cargo-IMP, which will be ultimately replaced by Cargo-XML.<sup>116</sup> IATA has developed practical toolkit, focused on Cargo-XML, to support developing open and flexible XML applications for automating electronic transactions or messages.<sup>117</sup>

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<sup>110</sup> Convention for the Unification of Certain Rules for International Carriage by Air - Montreal, 28 May 1999, (in force in 2003). Accessible at: <http://www.jus.uio.no/im/air.carriage.unification.convention.montreal.1999/>

<sup>111</sup> ICAO list of parties to the Montreal Protocol 4, accessible at: <http://www.icao.int/secretariat/legal/List%20of%20Parties/MP4EN.pdf> and

ICAO list of parties to the Montreal Convention 1999, Accessible at: <http://www.icao.int/secretariat/legal/List%20of%20Parties/Mtl99EN.pdf>

<sup>112</sup> IATA, 2012, Recommended Practice 1670 - Carriage Of Cargo Using Electronic Data Interchange (EDI). Accessible at: <https://www.iata.org/whatwedo/cargo/e/eawb/Documents/rp1670-june2012-web.pdf>

<sup>113</sup> IATA, 2013, Resolution 672 – Form of Multilateral e-Air Waybill Agreement. Accessible at: <http://www.iata.org/whatwedo/cargo/e/eawb/Documents/eawb-resolution-672.pdf>

<sup>114</sup> Multilateral e-AWB agreement joining status presently have 84 airlines, operating on 4693 airports and 2095 freight forwarders with 4354 affiliates. IATA web site: <http://www.iata.org/whatwedo/cargo/e/eawb/Pages/multilateral.aspx> (accessed on 26 May 2015)

<sup>115</sup> IATA, Guideline for e-AWB Single Process. Accessible at: <http://www.iata.org/whatwedo/cargo/e/eawb/Documents/eawb-single-process-guideline.pdf>

<sup>116</sup> IATA web site: <https://www.iata.org/publications/Pages/cargo-imp.aspx> (accessed 16 June 2015)

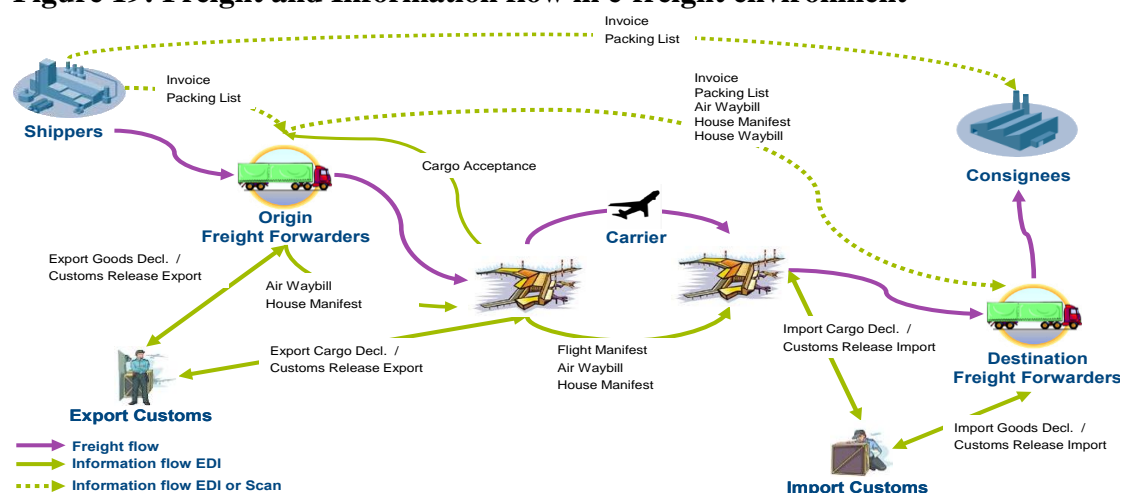
<sup>117</sup> IATA Cargo-XML Toolkit: <https://www.iata.org/publications/Pages/cargo-xml-messaging-toolkit.aspx>

e-AWB functionality is already live in several airports in Asia-Pacific and around the world. e-Freight matchmaker tool provide information based on data published by the airlines/forwarders on e-freight capability, including e-AWB capability on import, export, transit and transshipment.<sup>118</sup> Annex 3 of this study provides overview countries by region where e-freight capability is reported already live, including corresponding e-AWB status.

In accordance with e-freight objectives to replace core paper documents with electronic data exchange, IATA supports digitalization and automation of business processes with several functional specifications for: e-AWB (shipment record); e-freight; transit/transshipment/direct shipment; freight forwarders/carrier/ground handlers/customs brokers communication; origin and destination freight forwarders communication; e-CSD (consignment security declaration); e-house manifest.<sup>119</sup>

In order to support e-freight development IATA e-freight Handbook examines to-be business process and related core documents, as well as the flow of information, and standards for electronic messages in an e-freight environment. Various scenarios of the physical flow of goods/cargo as the information flow between the different stakeholders involved in the airfreight supply chain are considered (e.g. with regard to shipment consolidation, brokerage activities and the role the freight forwarder.)<sup>120</sup>

**Figure 19: Freight and Information flow in e-freight environment**



Source: IATA, 2013, e-freight Handbook (v4.0) (p.48)

Different methods and standards are available for the exchange of electronic messages in e-freight environment. Forwarders that have their own in-house ERP systems with e-AWB functionalities may integrate their systems with the IT systems of the carriers or airport cargo community systems (CCS). e-AWB web portals (e.g. portals set up by the carriers or CCS) may offer e-AWB services to other stakeholders that do not have advanced internal IT systems. ICT solutions may provide extended

<sup>118</sup> IATA the StB Matchmaker: <https://matchmaker.iata.org/efReport>

<sup>119</sup> Functional specifications are available on IATA web-site: <https://www.iata.org/whatwedo/cargo/e/pages/materials.aspx>

<sup>120</sup> Source: IATA, 2013, e-freight Handbook (v4.0) (Chapter 3 Business Process and Standards (BPS) Supporting e-freight p.37-78): <http://www.iata.org/whatwedo/cargo/e/efreight/Documents/e-freight-handbook.pdf>

functionalities, such as mail notifications, integration with other related functionalities (e.g. e-pouch), access to cargo receipt and printing e-AWB paper copies. Practical implementation of e-freight solutions could be achieved with one-to-one communication links or with integration platform connection.

Advanced Cargo Community Systems (CCS) at major international airports support e-freight concept and often provide possibilities to freight forwarders and carriers to electronically exchange air cargo information. CCS stakeholders can check flight schedules, make reservations, transfer air waybills, and track shipment status through the system. Extended functionalities of CCS may provide links with customs information systems and IT systems of other authorities. Examples of Cargo Community systems are presented in Annex 4 of this Study.

IATA e-freight concept with main focus to remove paper documents from air freight supply chain and replace them with electronic messages has different mandate from single window concept, which provides single entry point for exchange of relevant documents and information among the stakeholders involved. However both concepts could complement each other and have common objectives to harmonize, and speed up operating processes; provide advance information and more security.

Development of extended single window environment could benefit from IATA e-freight initiative. E-AWB and other related electronic documents and information could be more easily utilized and linked with various single window services. Such services may support creation of e-AWB and other e-freight documents based on B2B data exchange (e.g. from data entries in related invoices, packing lists). Furthermore electronic manifests could be automatically created by reusing data elements from e-freight messages, which will streamline and simplify communication to customs and other authorities at the airports. Linkages between cargo community systems and IT platforms, which support e-AWB, with single window systems are becoming visible at some airports around the world and that trend could be expected to continue in the future, having in mind that integrated services may increase efficiency of airfreight operations.

### 4.3 Customs transit systems in e-customs and SW environment

#### UNCTAD ASYCUDA

United Nations Conference on Trade and Development (UNCTAD) has developed popular customs management system ASYCUDA, which provides great support for customs modernization and computerization around the world. Latest version of ASYCUDA World offers state of the art technological solutions, it is web based, and it takes into consideration international standards and best practices (e.g. ASYCUDA data on cargo manifests, bill of lading, transit customs declarations fully comply with WCO Data model).<sup>121</sup>

##### **Box 11: ASYCUDA - Automated SYstem for CUstoms DAta**

- Handles manifests and customs declarations, accounting procedures, customs transit and suspense procedures;
- Takes into account the international codes and standards developed by ISO, WCO and UN;
- Can be configured to suit the national characteristics of individual Customs regimes, National Tariff and legislation;
- More than 90 countries have adopted the ASYCUDA programme, there are 51 operational projects, including 7 regional and interregional projects;
- Current versions of software
  - a) ASYCUDA World: Internet client-server, 100% Web-based, Any devices (PCs, PDAs, Mobile Phones, Tablet PCs..), communication via Web, Internet & Intranet, data exchange using EDIFACT and XML, Built-in PKI, electronic signature etc.
  - b) ASYCUDA++: Client-server, PCs under Microsoft Windows, communication via TCP/IP protocol, data exchange using EDIFACT.

Source: UNCTAD ASYCUDA web site: <http://www.asycuda.org/default.asp>

ASYCUDA is customs centric information system used by many other stakeholders in the processes related to customs clearance, including carriers and their agents, port authorities, customs agents, trade operators, ministries and government agencies, banks and financial institutions. ASYCUDA is able to communicate with information systems of other stakeholders within the country or cross-border when compatibility is established (e.g. compliance with WCO data model).

As we have highlighted earlier, process of entry/exit into the customs territory and particularly customs transit procedures are the issues with higher relevance from transport point of view. ASYCUDA standard cargo and customs transit functionalities offer computerization and electronic data interchange of cargo manifest and customs

<sup>121</sup> About the WCO data model; ASYCUDA web site (last accessed 07.06.2015): <http://www.asycuda.org/datamodel.asp>

transit declarations. That includes support for paperless declarations (e.g. electronic signature) and adding attached electronic versions of accompanying documents (if enabling national legal framework is provided). ASYCUDA automates customs transit control and monitoring functions.

ASYCUDA World ability to communicate through XML messages offers possibilities to the users (which have their own information systems where waybills are captured), to re-use those data (e.g. by XML messaging) and generate a new cargo manifest/transit declaration from their waybills. ASYCUDA data could be also re-used. For example customs transit declaration could be generated from export declaration or from previous customs transit declaration or data from customs transit declaration could be used to generate waybills.<sup>122</sup> ASYCUDA World enables integration of relevant images into ASYCUDA transit documents (e.g. scans of driving license, vehicle registration; transport/transit licences).

Control and monitoring of customs transit movements is achieved with exchange of electronic messages between customs office of departure and customs office of destination. Electronic customs transit declaration is automatically transmitted from the office of departure to the office of destination upon verification of transit documents. When the cargo arrives at the customs office of destination, customs authorities could retrieve electronic version of the transit documents from the customs transit ASYCUDA module (re-keying of data is not needed) and proceed with transit formalities. Once the destination office confirms the end the customs transit procedure in the ASYCUDA system, an electronic message is generated and returned back to the office of departure. Then the customs transit operation is automatically closed and the transit guarantee could be released.

ASYCUDA provides full integration of customs transit procedures with other customs clearance process and formalities. ASYCUDA customs transit modules interact with other ASYCUDA modules and IT systems, which enables guarantee management; linkages/discharging of previous/subsequent customs clearance formalities (e.g. warehousing); risk analysis and risk management.

ASYCUDA World could support single window environment and e-government solutions with electronic licencing functionality. Using web services for standard interface with external services and direct trader input to submit data, ASYCUDA World enables development of single window system where the users will have online access to all relevant ministries and agencies to electronically submit applications for different permits/ licenses/authorizations. In similar way like with customs transit declarations, the users have opportunity to generate application from XML formats of their own information systems, and could attach scanned images of supporting documents in the application.

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<sup>122</sup> UNCTAD, 2011, Technical Note No. 21, ASYCUDA



### **Box 12: Rwanda electronic Single Window**

The Rwanda electronic Single Window (eSW) system integrated with ASYCUDA World is implemented at all Customs offices. The system supports computerized customs operations processing, exemption processing by Rwanda Development Board, quality inspection for imported goods, warehousing and cargo handling, health licensing for imported medicines/medical equipment and authorizing imports for agricultural produces by Rwanda Agricultural Board. All Clearing agencies, airlines using e-Cargo manifest, pharmacies and depots have access to use the system.<sup>123</sup>

Rwanda eSW is linked with regional customs transit guarantee (RCTG) to insure effective control for debiting and crediting the transit guarantee. It also supports management of entry and exit cards for foreign registered vehicles, vehicles registration form and e-payment for imported vehicles. Electronic information exchange has been established between Rwanda eSW and neighboring, Kenya Revenue Authority system (SIMBA), Kenya Port Authority and Uganda Revenue Authority (ASYCUDA World), in order to streamline transit movements and clearance of the goods.<sup>124</sup>

### **Box 13: Gibraltar Integrated Customs Information System**

Gibraltar Integrated Customs Information System (ICIS) based on the ASYCUDA, provides single electronic access point where the users can electronically lodge customs declarations, including applications for certificates, licenses and/or authorizations. All ICIS e-documents such as cargo manifest, passenger declarations, customs transit declarations, import declarations, export declarations, licenses, authorizations, certificates, are integrated with each other.

ICIS supports selectivity/risk-management/profiling parameters of other control agencies (e.g. health, food & veterinary, environment etc.). Customs documents could be identified using barcodes, supported with automatic processing for customs related transactions such as: automatic confirmation of arrival at destination, automatic discharge, automatic confirmation of exit.<sup>125</sup>

ICIS e-CPS (Crew, Passengers, Stores) functionalities enable pre-arrival notification of vessels to Border Guards, Customs Department, Port Authority marina. Vessel operators (shipping agents, yacht owners) submit electronic e-CPS form only once via Single Window to fulfill all reporting requirements of all border control agencies. The form has harmonized information related to: management of vessel details and vessels list; management of voyage details; management of crew and passengers list; and management of effects ineligible for relief from customs duties and taxes.<sup>126</sup>

<sup>123</sup> Process and Procedures for Rwanda Electronic Single Window, Rwanda Revenue Authorities web site (last accessed 07.06.2015): <http://www.rra.gov.rw/spip.php?article921>

<sup>124</sup> Rwanda Electronic Single Window Website (last accessed 07.06. 2015): <https://sw.gov.rw>

<sup>125</sup> Single Window – Interagency Business Processes, HM Customs Gibraltar web site (last accessed 07.06.2015): <http://www.hmcustoms.gov.gi/portal/interagency.jsf>

<sup>126</sup> Integrated border management in Gibraltar, implementation of electronic clearance procedure for vessels arriving in / departing from Gibraltar. Accessible at: [http://www.asycuda.org/wnfiles/integrated%20border%20management%20in%20gibraltar\\_1.pdf](http://www.asycuda.org/wnfiles/integrated%20border%20management%20in%20gibraltar_1.pdf)

Existing ASYCUDA electronic documents templates could be amended to develop documents adjusted to national requirements (e.g. with regard to technical control of vehicles, waste transport). Ministries and agencies concerned will receive applications through ASYCUDA electronic licensing module, make evaluation, verify compliance and issue permits/licenses/authorizations where applicable conditions have been met.

ASYCUDA capability to exchange data with external information systems of other stakeholders, offers a possibility to introduce integrated border/transit management. Providing and sharing pre-arrival data, performing multiagency risk management and handling control activities among customs and other government agencies are the functions that could be supported by ASYCUDA World, which will streamline border and transit processes.

ASYCUDA World technical design may cover cross-border exchange of messages, which could enable extension of national customs transits and support for introduction of regional systems. Cross border data exchange may be organized in various forms. For example: with introduction of intermediate database at the border without direct connection between databases of the neighboring countries; through centralized regional ASYCUDA customs transit system; through decentralized communication of national ASYCUDA customs transit modules or other customs information systems; via internet cloud.

#### **Box 14: Jordan Single Window and automated clearance**

Jordan Customs has introduced single window and automated clearance of goods backed by ASYCUDA World and several other systems, such as: electronic transit monitoring and facilitation system, integrated gate control systems for control of entry/exit from customs depots using electronic cards, CCTV systems and X-ray cargo inspection systems. Deployment of ASYCUDA World facilitates submission of manifests, customs transit and customs clearance, risk management, and management of other formalities related with clearance of goods.<sup>127</sup>

Partner government agencies included in single window collaboration involve: Jordan Customs, the Ministry of Agriculture, Jordan Food and Drug Administration, Jordan Standards and Metrology Organization, Ministry of Environment, Jordan Telecom and Nuclear Regulatory Commission. Jordan Customs is examining and planning options for electronic data sharing between Jordan and neighbouring countries, including Syria, Saudi Arabia, Iraq and Qatar, such as intermediate border database and cloud computing, which may provide additional facilitation and security of regional transit.<sup>128</sup>

<sup>127</sup> MCC/USAID, 2009, Jordan Customs Administration Final Report. Available at: [http://pdf.usaid.gov/pdf\\_docs/PNADT538.pdf](http://pdf.usaid.gov/pdf_docs/PNADT538.pdf)

<sup>128</sup> UNECE, Trade Facilitation Implementation Guide, Case Stories: Customs Modernization of Jordan (last accessed 07.06.2015): <http://tfig.unece.org/cases/Jordan.pdf>

Implementation of ASYCUDA project is usually part of broad technical assistance programme for customs modernization. Latest version of ASYCUDA software and updated functional and technical documentation is provided by UNCTAD free of charge, and the country will have the ownership and licenses for using the software. However the process for implementation of ASYCUDA include wide range of activities, such as comprehensive, training, prototyping, testing, piloting, roll-out and integrating ASYCUDA with other customs information systems and information systems of other stakeholders.

In addition the process will probably have to be extended to data harmonization, document simplification, business process reengineering, as well as legal and technical adjustments to enable electronic data exchange, single window and paperless solutions components. UNCTAD also offers technical assistance in some of the implementation activates for non-profit costs.

Despite some concerns over inflexibility and difficulties to develop customized solutions, when implementation challenges are properly addressed, ASYCUDA based solutions with single window functionalities have great potential to increase efficiency of customs procedures including transit. Automated handling the phases in customs clearance and facilitated coordination among all stakeholders involved in ASYCUDA single window environment could make customs formalities easier and faster to comply with, eliminate the errors from multiple processing of documents and reduce delays. Those advantages may contribute to streamlined procedures, reduction of customs clearance and transit time and lower related costs, which is beneficial for traders, transports and authorities as well.

### **European New Computerized Transit System (NCTS)**

European transit systems are often regarded as one of the most successfully and efficiently managed customs transit systems. There are several European transit systems, however two main customs transit systems are: Community and common transit system. The Community transit systems covers customs transit movement of goods within EU and common transit system is applicable for customs transit formalities between the Community and the EFTA countries and between the EFTA countries themselves.

The European transit systems are managed with the New Computerised Transit System (NCTS), which offers some of the most advanced paperless transit solutions regionally implemented. The NCTS represents a tool for management and control of the customs transit and it provides harmonized operating environment for electronic data exchange among economic operators, customs offices, national customs administrations and EU. The NCTS has supported transformation of Community and common transit from paper based to paperless customs transit solutions.

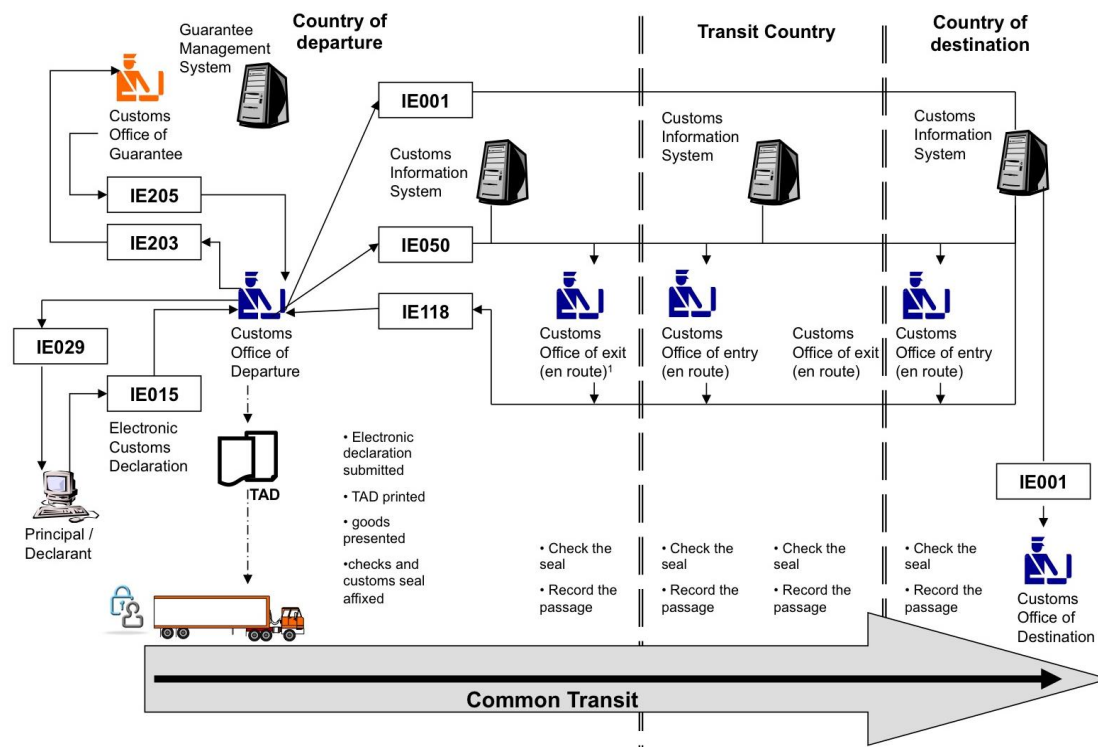
Application of the common transit procedures is characterized with Single electronic customs transit declaration; and exchange of electronic messages with respect to each step of customs transit procedure, including pre-arrival information automatically distributed from customs office of departure to customs offices of transit and customs office of destination. Using electronic messages through NCTS is laid down as a standard procedure. Use of paper based customs transit declaration is allowed only in exceptional circumstances.

NCTS is implemented with national NCTS application. On national level NCTS application has to be linked with the GMS (Guarantee Management System), as well as with other parts of national customs information systems including risk management systems. All national NCTS applications are connected through Common Communications Network/Common Systems Interface (CCN/CSI), which enables exchange of data among information systems of the European Commission, and other national NCTS applications.

The electronic customs transit declaration is based on Single Administrative Document (SAD). Rules for the electronic customs transit declaration and other electronic messages, common data sets and format of the data messages, are defined in various technical specifications developed by European Commission and provided by national customs authorities. Simplifications of regular customs transit procedure include: comprehensive guarantee or guarantee waiver; authorised consignor/consignee. Details on NCTS and European transit systems are presented in ESCAP paperless transit Study and Guide.

**Figure 20: Common Transit Procedure managed with NCTS**

(at the Customs Office of Departure and Customs Offices of Transit)



NCTS enables electronic submission and processing of customs transit declarations through connected national customs information systems, however the NCTS is not covering other regulatory requirements on entry or exit. EU does not have specific legislation for establishing regulatory single window on EU level. EU decision on paperless environment for Customs and trade requires Member States and the Commission to endeavour to establish and make operational a framework of single window services.<sup>129</sup>

Many EU countries do not have national single window facilities since legacy systems of customs and other authorities are already efficiently linked. Some customs single windows in EU are developed at national level focused on different national and EU legislation. Options to provide interoperability between different national single windows in EU Member States for the standards agreed on EU level are being explored and discussed.<sup>130</sup> For example EU project on Common Veterinary Entry Document (CVED) is one of the first steps towards EU Single window program.<sup>131</sup> The concept of EU customs single window has been tested, by providing links between some of the EU national customs systems and European TRAdE Control and Expert System (TRACES).<sup>132</sup>

There is possibility to link national NCTS applications with national single window facilities (even though usually that is not a case in many EU countries). Anyway NCTS interlinked with customs and other national systems provides seamless paperless exchange of customs transit information between departure customs office, transit customs offices and customs office of destination along the countries involved in transit operations. The system improves efficiency of transit, by reducing the time for customs formalities, enables automated and faster release of guarantee, and decreases high-costs related with inefficient handling of paper-based documents and lengthy cross-border procedures. In the same time the system contributes for increased security and better visibility of customs transit operations.

#### 4.4 Single Window concept and cross-border connectivity

Single Window concept is not limited only to national level and single submission of data and information could be extended internationally at cross-border level. Some national single window facilities support global information exchange with foreign governments and service providers. Submission of cargo and other logistics information to/from foreign countries is already provided in some single window systems (e.g. in national single windows of Korea as presented above).

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<sup>129</sup> Article 4 (6) of European Parliament and the Council Decision No 70/2008/EC of 15 January 2008 On a Paperless Environment For Customs And Trade.

<sup>130</sup> European Commission, 2015, Evaluation of the electronic customs implementation in the EU. Accessible at: [http://ec.europa.eu/taxation\\_customs/resources/documents/customs/policy\\_issues/electronic\\_customs/ecust\\_evaluation\\_final\\_en.pdf](http://ec.europa.eu/taxation_customs/resources/documents/customs/policy_issues/electronic_customs/ecust_evaluation_final_en.pdf)

<sup>131</sup> European Commission, DGTAXUD, 18 July 2014, 3(2014) 2098530, 2013 E-Customs annual progress report

<sup>132</sup> TRACES newsletter 3/2014: [http://ec.europa.eu/dgs/health\\_food-safety/dyna/enews/enews.cfm?al\\_id=1514](http://ec.europa.eu/dgs/health_food-safety/dyna/enews/enews.cfm?al_id=1514)

Regional single window initiatives and international visibility projects are also emerging despite the fact that challenges to provide efficient and legally valid cross-border electronic exchange and to develop international single window could be substantial.

### **Pan Asian e-Commerce Alliance (PAA)**

Pan Asian e-Commerce Alliance (PAA)<sup>133</sup> is a regional alliance of paperless trade service providers that supports cross border connectivity. PAA was established in 2000 by three e-commerce providers from Hong Kong China, Singapore and Chinese Taipei and presently has 11 members from China, Chinese Taipei, Hong Kong SAR China, Indonesia, Japan, Republic of Korea, Macau SAR China, Malaysia, Philippines, Singapore and Thailand.<sup>134</sup>

According to its Charter PAA aims to promote and provide secure, trusted, reliable and value-adding IT infrastructure and facilities for efficient global trade and logistics, that includes:

- secure and reliable transmission of trade and logistics documents, with mutual recognition of digital certificates issued by members' Certification Authorities (CA);
- inter-connection of network services to provide e-Commerce transaction application services;
- creation of Pan-Asian portal for B2B connection and communication.

PAA comprehensive legal framework that includes PAA certification authority recognition agreements, Club agreement, subscribers agreements, and interconnection agreement aims to ensure legality of electronic transactions.

Pan Asian Certificate Policy Authority, established by PAA, provides framework for mutual recognition of public key infrastructure (PKI) adopted by PAA members, including mutual recognition of corresponding certification practice statements and certificates. Certification Authorities could be recognized based on common certification policy and PAA certification procedure. They are certified by Policy Authority as PAA certification authorities with PAA certification authority recognition agreement.

All subscribers registered as PAA Club members are bound by the terms and conditions of the PAA Club Agreement. The PAA Club Agreement regulates relations among all subscribers and between each subscriber and each PAA service provider. The PAA Club Agreement is addressing: ownership of data messages/electronic records; translation and conversion of data messages/electronic

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<sup>133</sup> Additional information on Pan Asian e-Commerce Alliance (PAA) are available on <http://www.paa.net>

<sup>134</sup> Present PAA Members are: CIECC - China, Trade-Van Chinese Taipei, TradeLink – Hong Kong SAR, EDI-I – Indonesia, NACCS – Japan, KTNET – Korea, TEDMEV - Macau SAR, Dagang Net – Malaysia, InterCommerce – Philippines, CrimsonLogic – Singapore, CAT Telecom – Thailand. (PAA website <http://www.paa.net> last visited 10.08.2015)



records; structure of data messages and electronic records; member registration; rights and responsibilities of subscribers; confidentiality; security and data privacy.

PAA Club Agreement is referenced in PAA subscriber agreements between subscribers and PAA service providers, appointed as the subscriber's agent to join the subscriber as a party to the PAA Club Agreement. With interconnection agreements service providers are recognized as PAA service providers in accordance PAA Club Agreement provisions. Interconnection agreements also detail the terms and conditions for the electronic transfer of data messages/electronic records between the PAA members; and implementation of related procedures.<sup>135</sup>

More than 340,000 organizations have access to PAA services, which covers almost all active trading enterprises in Asian market.<sup>136</sup> PAA services, related to secure cross border document and data interchanges could include:

- B2B document exchange (e.g. purchase order, advance shipment notice, packing list, commercial invoice, delivery order, shipping order);
- electronic Certificate of Origin exchange (e.g. between Republic of Korea and Chinese Taipei), advanced cargo manifest information (e.g. Japan AFR cargo manifest);
- Cargo Visibility Service.

The PAA promotes cross-border paperless information exchange, trying to flag and address challenges and difficulties encountered such as: acceptance of electronic documents by local governments; limited geographical coverage of PAA's services; slow implementation and technical gap among the countries.<sup>137</sup> The PAA enhances opportunities to extend single window B2B or B2G services on cross border level.

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<sup>135</sup> UNNExT Brief No. 9, August 2013, Towards An Enabling Environment for Paperless Trade - Pan Asian e-commerce Alliance (PAA): Service providers join forces to enable cross-border paperless trade. Accessible at: <http://unnex.unescap.org/pub/brief9.pdf>

<sup>136</sup> Information from Press Centre from April 2015 available at <http://www.paa.net/?p=807>

<sup>137</sup> UNNExT Brief No. 9, August 2013, Towards An Enabling Environment for Paperless Trade - Pan Asian e-commerce Alliance (PAA): Service providers join forces to enable cross-border paperless trade. Accessible at: <http://unnex.unescap.org/pub/brief9.pdf>

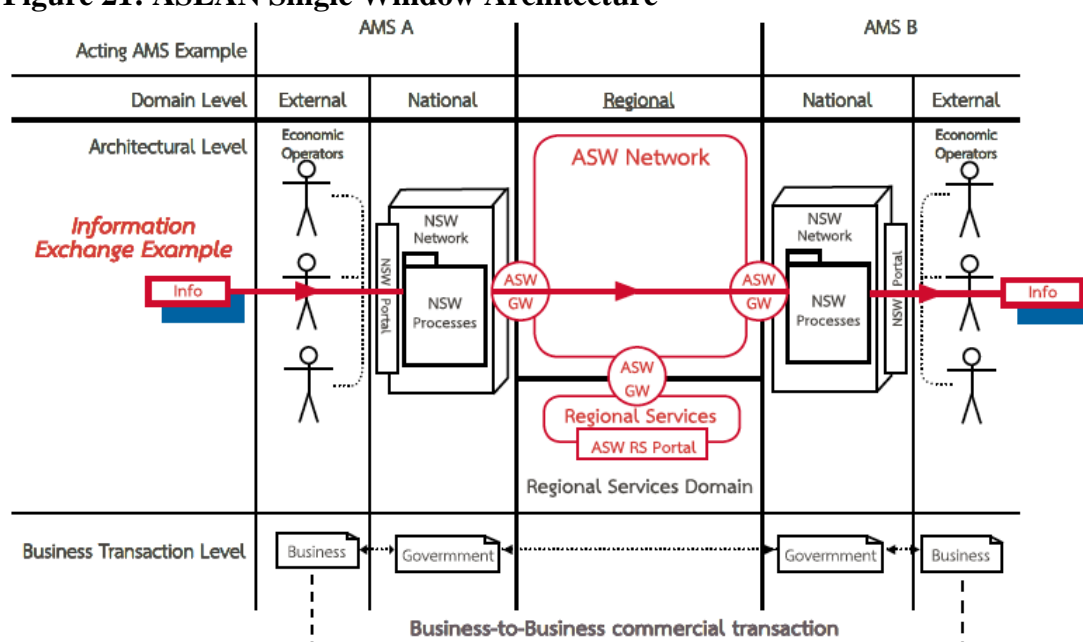


## ASEAN Single Window and ASEAN Customs Transit System

Introduction of ASEAN Single Window (ASW) and ASEAN Customs Transit System (ACTS) are among key elements for support of ASEAN Economic Community that aims to: bring regional economic integration; create single market and production base; and enable free movement of goods across ASEAN region. Foundations of ASW are set by its legal background: the Agreement to Establish and Implement the ASEAN Single Window<sup>138</sup> signed in December 2005 and the Protocol to Establish and Implement the ASEAN Single Window<sup>139</sup> signed in December 2006.

ASW is one of the first regional single window initiatives that connects and integrates National Single Windows (NSWs) established by ASEAN Member States. The main objective of ASW environment is to expedite and facilitate cross-border cargo clearance within ASEAN by enabling electronic exchange of relevant documents and data through the NSWs. Presently several ASEAN Countries have already developed and implemented NSW systems and others are working in that direction. ASW has been piloted and currently supports the regional exchange of the intra-ASEAN certificate of origin (ATIGA Form D) and ASEAN Customs Declaration Document (ACDD).<sup>140</sup>

**Figure 21: ASEAN Single Window Architecture**



Source: UNNExT Brief No. 13, May 2015, Towards An Enabling Environment for Paperless Trade - ASEAN Single Window: A Regional Single Window for ASEAN Connectivity.

<sup>138</sup> <http://www.asean.org/communities/asean-economic-community/item/agreement-to-establish-and-implement-the-asean-single-window-kuala-lumpur-9-december-2005-2>

<sup>139</sup> <http://www.asean.org/archive/23084.pdf>

<sup>140</sup> ASEAN Single Window website information available at: from ASEAN Single Window web site: <http://asw.asean.org>. Last accessed on 11.08.2015

ASW architecture is being developed on the grounds of distributed model that consists of NSWs of ASEAN Member States (AMS), connected through regionally developed ASW Gateway application and secure ASW network. Interaction of NSWs is supported by centralized regional services (e.g. storage and management of common reference data and tracking transaction statistics). Trade data and information exchanged between economic operators and government agencies are maintained, owned and retained only in the national domain of respective AMS.

Once the ASW infrastructure is fully developed, the ASW could support introduction of new services that may include transport and logistics related electronic exchange among ASEAN countries. ASW in future could support electronic exchange of transport related documents, which will further streamline cross-border movements. After necessary data harmonization such electronic data exchange might include information on packing lists, freight booking and confirmation, as suggested with business processes analysis conducted in 2013.<sup>141</sup>

### **Box 15: ASEAN Customs Transit System (ACTS)**

The regional ACTS is based on ASEAN Framework Agreement on the Facilitation of Goods in Transit, from 1998,<sup>142</sup> and its Protocol 7: Customs Transit System, signed in February 2015.<sup>143</sup> The Protocol 7 provides legal basis for implementation of ACTS and defines the core elements such as single paperless customs transit declaration and regulated guarantee system.

The design of ACTS is expected to offer electronic data exchange for each step in application of ACTS. The electronic messages include exchanges between traders and national customs authorities (e.g. submission of electronic transit declarations) and electronic communication between various customs offices in all countries related to each particular transit operation (e.g. anticipated arrival record, anticipated transit record, notification for crossing frontier, arrival record, control results).

Customs authorities will exchange transit related messages using their individual ACTS applications installed at national level and connected through the ASEAN closed secure network. IT solutions for implementation of ACTS are expected to be developed by 2016 with EU supported project and tested later between Malaysia, Singapore and Thailand.<sup>144</sup> In future national ACTS applications could also be linked with national single windows.

ACTS has a potential to: increase efficiency for dealing with cross-border movements; streamline regional transit; reduce border delays; lower transport costs; and strengthen risk management; provided that implementation challenges are successfully addressed.

<sup>141</sup> UNNExT Brief No. 13, May 2015, Towards An Enabling Environment for Paperless Trade - ASEAN Single Window: A Regional Single Window for ASEAN Connectivity. Accessible at: <http://unnex.unescap.org/pub/brief13.pdf>

<sup>142</sup> ASEAN web site: <http://www.asean.org/communities/asean-economic-community/item/asean-framework-agreement-on-the-facilitation-of-goods-in-transit-2>

<sup>143</sup> ASEAN web site: <http://agreement.asean.org/media/download/20150505101259.pdf>

<sup>144</sup> ASEAN Regional Integration Support by the EU (ARISE), <http://arise.asean.org/>

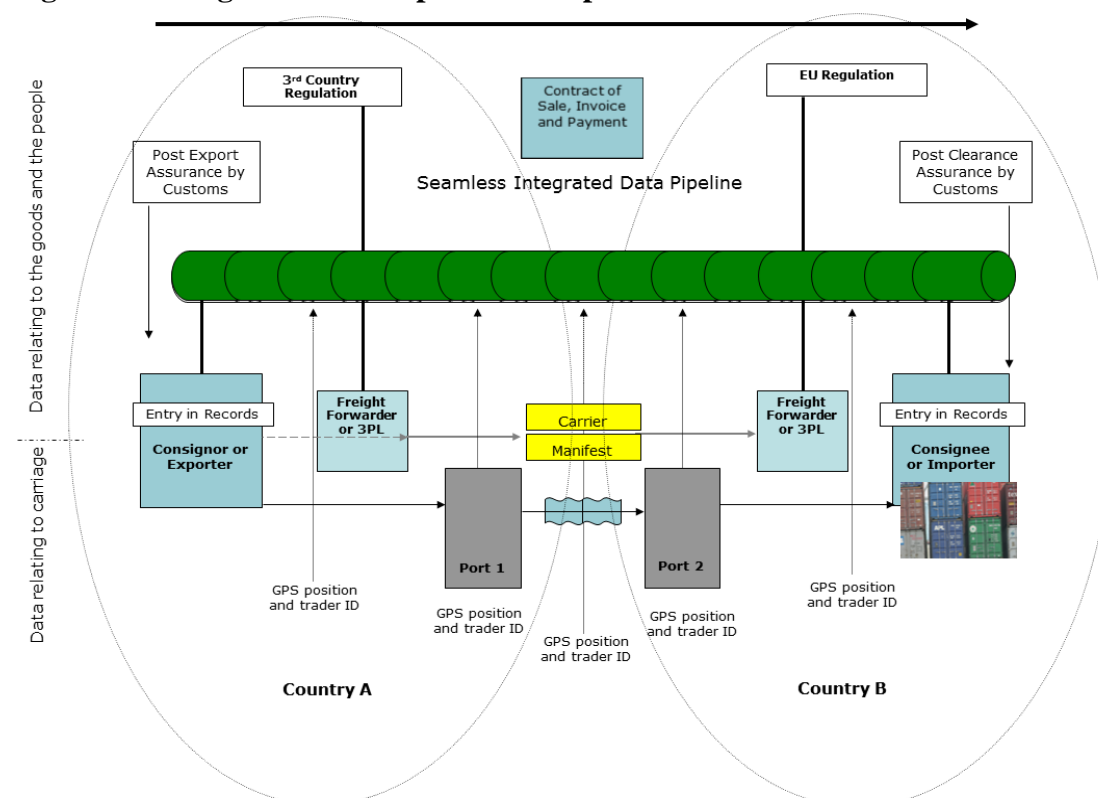
## Data Pipeline Concept and integration in Single Window environment

Data pipeline concept promotes a model for web-based IT infrastructure that enables seamless integration of all data elements from all the different sources in the supply chain at the point when the consignment is completed.<sup>145</sup>

The concept of integrated data pipeline is based on two core principles:

- gathering and sharing original trade data by authorized parties in supply chain using piggybacking principle, that enables re-use of available business data and data flows and
- identification of synchronization points when the information has to be available to the parties concerned.<sup>146</sup>

**Figure 22: Integrated Data Pipeline concept**



Source: Overbeek et al., 2011, adapted from Hesketh, 2010

<sup>145</sup> Data pipeline concept for facilitating the operations in the supply chain was originally introduced by David Hesketh and Frank Heijmann:

- David Hesketh, World Customs Journal, vol. 4, no. 2, pp. 3-20, September 2010 "Weaknesses in the supply chain: who packed the box?". Available at: <http://www.worldcustomsjournal.org/media/wcj/-2010/2/Hesketh.pdf>

- Eveline van Stijn, David Hesketh, Yao-Hua Tan, Bram Klievink, Sietse Overbeek, Frank Heijmann, Markus Pikart, Tom Butterly; Global Trade Facilitation Conference 2011, Connecting International Trade: Single Windows and Supply Chains in the Next Decade; Discussion Paper: The Data Pipeline. Available at: [http://www.unece.org/fileadmin/DAM/trade/Trade\\_Facilitation\\_Forum/BkgrdDocs/UNPaper\\_DataPipeline.pdf](http://www.unece.org/fileadmin/DAM/trade/Trade_Facilitation_Forum/BkgrdDocs/UNPaper_DataPipeline.pdf)

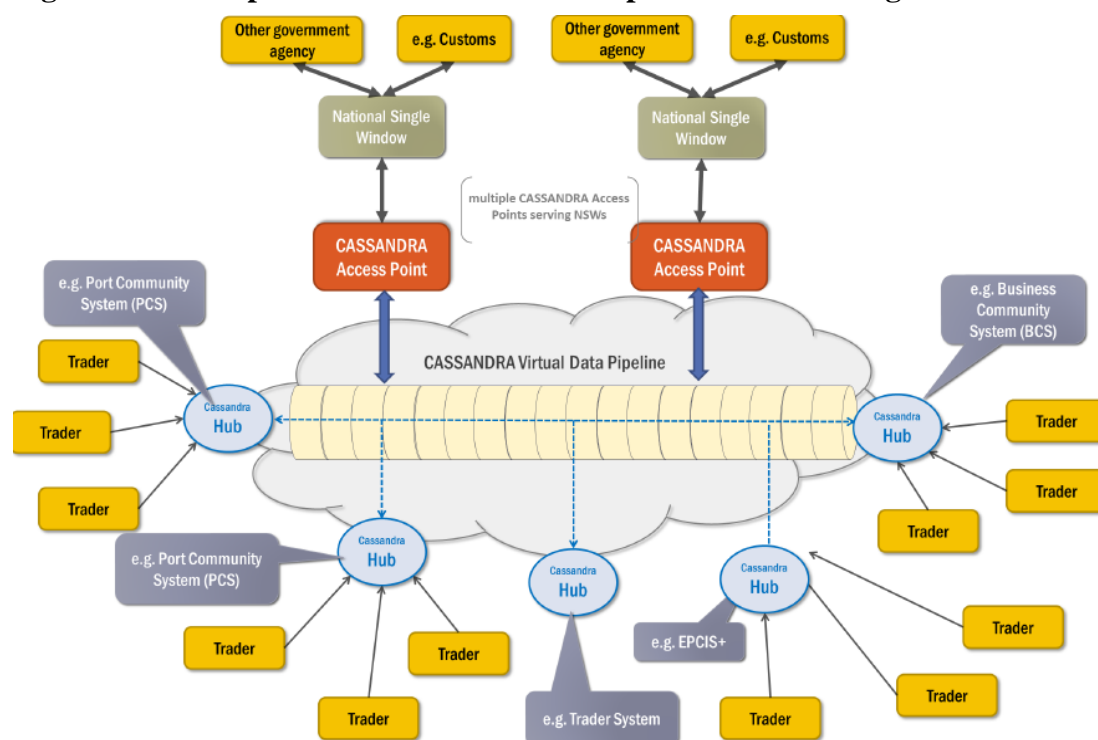
<sup>146</sup> Eveline van Stijn, David Hesketh, Yao-Hua Tan, Bram Klievink, Sietse Overbeek, Frank Heijmann, Markus Pikart, Tom Butterly; Global Trade Facilitation Conference 2011, Connecting International Trade: Single Windows and Supply Chains in the Next Decade; Discussion Paper: The Data Pipeline. Available at: [http://www.unece.org/fileadmin/DAM/trade/Trade\\_Facilitation\\_Forum/BkgrdDocs/UNPaper\\_DataPipeline.pdf](http://www.unece.org/fileadmin/DAM/trade/Trade_Facilitation_Forum/BkgrdDocs/UNPaper_DataPipeline.pdf)

The data pipeline could be fed with data elements from different documents (e.g. delivery order, contract, packing list, shipping note, dispatch note, transport document, etc.), as well as with data from electronic tracking of containers. Supply chain stakeholders and relevant authorities should be able to access appropriate data in accordance with relevant regulation of the parties concerned.

Data pipeline concept relies on data sharing between various electronic systems related to supply chain (e.g. business community systems, port community systems, logistics systems, transport management systems, ERP systems) and data capturing of necessary data by relevant authorities (e.g. customs authorities). Exchange of relevant information could be achieved by using different technologies and approaches, such as cloud computing technology, and developing various interfaces (e.g. data sharing interface, data capturing interface, logistics service interface).<sup>147</sup> Integrated data pipeline should enable present systems to be upgraded in future to systems, which are able to interact and provide better visibility of international supply chain with accurate, reliable and timely information.

The data pipeline innovative concept was tested with EU CASSANDRA Project Data focused on improving security through supply chain visibility.<sup>148</sup>

**Figure 23: Concept of CASSANDRA Data Pipeline and SW integration**



Source: CASSANDRA Project, 2013, D3.4 – Single Window Specification (Deliverable 3.4). Figure 4-1(p.33)

<sup>147</sup> CASSANDRA Project, 09 October 2013, D3.4 – Report – Single Window Specification (Deliverable 3.4). Accessible at: [http://www.cassandra-project.eu/userdata/file/Public%20deliverables/Cassandra%20D3.4%20-%20FINAL%20-%20Single%20window%20Specification\\_Update.pdf](http://www.cassandra-project.eu/userdata/file/Public%20deliverables/Cassandra%20D3.4%20-%20FINAL%20-%20Single%20window%20Specification_Update.pdf)

<sup>148</sup> Information on EU Commission's project CASSANDRA - Common Assessment and Analysis of Risk in Global Supply Chains (CASSANDRA) are available at <http://www.cassandra-project.eu>

With CASSANDRA project Living Labs existing information platforms have been investigated with objective to demonstrate the innovative data pipeline concept and to develop project products in a real-life context (e.g. in trade lanes between Asia and Europe).<sup>149</sup> Project research and Living Labs have provided numerous findings, which indicate the impact and stakeholders benefits from data pipeline concept (e.g. efficiency gains, landed cost reductions, supply chain redesign, efficiency in warehousing activities, better transport planning), however it has also identified huge diversity and number of challenges (e.g. lack of stakeholder engagement, reluctance to share data, differences in maturity level etc.)<sup>150</sup>

Information sharing of data pipeline concept can be integrated with single window environment. The data pipeline could provide the proper interface mechanism that will allow government authorities (e.g. customs and other regulatory authorities) to retrieve and utilize data from various supply chain related systems through national single windows and to exchange relevant data across national single windows when applicable.

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<sup>149</sup> e.g. With Living Lab Asia-Europe several trade lanes have been included: Yantian/China–Felixstowe/UK; Shanghai/China–Rotterdam/Netherlands; Penang/Malaysia–Venlo/Netherlands, Singapore–Rotterdam/Netherlands - CASSANDRA Project, 31 May 2014, D4.1 Cassandra – WP400 – Asia-NL/UK trade lane Living Lab report (Deliverable 4.1). Available at: <http://www.cassandra-project.eu/userdata/file/Public%20deliverables/Cassandra%20-%20D4.1%20-%20FINAL%20EU%20-Asia%20Living%20Lab%20Report.pdf>

<sup>150</sup> CASSANDRA Project, 30 May 2014, D9.1 Cassandra Final Report (Deliverable 4.1). Available at: <http://www.cassandra-project.eu/userdata/file/Public%20deliverables/Cassandra%20D9.1%20Final%20report.pdf>

# Chapter 5      Transport-related Single Window systems

## 5.1      Types of transport-related single window systems

Single windows systems in this study are analysed with regard to their relation to transport and transport requirements. Therefore the reference to “transport-related single window” highlights those single windows, which have some features and services relevant to transport. That does not mean transport-related single window have to be dominantly transport oriented. For example customs centric single window with features relevant for transport (e.g. paperless customs transit) could be also considered as transport-related single window.

Main characteristics of transport-related single window system are transport related services provided to transport-related stakeholders for support of their business processes. Such transport related services could be part of regulatory, operational and business requirements. Transport related services include modalities for electronic exchange of transport related documents/information as discussed earlier in Chapter 3 and presented in selected case studies in Chapter 4. In a complex international trade and transport environment, with different areas of interest; unlike stages of development among different stakeholders; and unique national and regional specifics, it is understandable that different types of single windows have emerged.

Analysis of single window environment in this chapter is done from transport point of view on main area of interest (regulatory, port-related or B2B transport/logistics). Consequently we will address functionalities of:

- regulatory transport-related single window,
- port-related single window, and
- single window extended with transport/logistics B2B components.

Studying transport-related single windows by individual area of interest intends to stress some of their distinctive characteristics. UNNExT stages of single windows evolution<sup>151</sup> suggest that regulatory single windows are expected to first enlarge their area of coverage with port-related services and then with transport/logistics B2B components. However development of single window environment in practice does not always follows expected evolution path (separate single windows may exist in same time e.g. trade/customs centric and port related).

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<sup>151</sup> Briefly elaborated earlier in Chapter 2 of this Study. UNNExT, 2012, Single Window Planning and Implementation Guide. Accessible at: <http://unnex.t.unescap.org/tools/implement-guide.pdf>

## Regulatory transport-related single windows

Regulatory single windows are often present as customs centric information systems, which provide single entry point for submission of standardized data in the process of customs clearance. That covers information exchange with customs authorities and other regulatory authorities responsible for issuing various, permits, licences and authorization that might be required in customs clearance processes (e.g. for export, import, and transit).

Transport-related single windows in regulatory area may include services of:

- conveyance reporting, and verification of compliance with rules and regulations regarding transportation means (e.g. temporary admission, requesting/presenting transport/transit permits, registration and worthiness certificates, transport means insurance);
- declaring cargo on entry/exit/transit, and reporting specific types of goods and/or requesting/presenting related permits/authorizations (e.g. for dangerous goods, trans-frontier movement of waste, live animals etc.);
- providing information on professionals that operate transport means / crew and compliance with immigration and professional standards required.

Regulatory single windows, which are addressing requirements presented above, could be recognized as regulatory transport-related single windows. Cargo reporting on entry and exit is one of the requirements often covered with existing single windows (cargo manifest modules are usually included in national single windows). Even though transport-related stakeholders are involved in reporting the cargo on entry/exit, for subsequent import/export processes their role is limited (importers, importers or their agents/representatives, have the main role in import/export clearance process).

In the case of transit regulatory requirements (e.g. for temporary admission of transport means, submitting transit customs cargo declarations, providing transport permits/insurance) or transshipment requirements the role of transport-related stakeholders is more relevant. Similar regulatory requirements are repeated in each of the countries involved in a transit operation, which makes overall cross-border movement more cumbersome. Transit/transshipment regulatory requirements also have different impact on different modes of transport. Road international transit, which may involve several countries with significant regulatory differences, is most vulnerable to the burden of repetitive transit regulatory requirements. Regulatory transport-related single windows that include paperless transit solutions systems might substantially improve effectiveness of international transit.



ESCAP Study on paperless transit (2015) and related training manual Guide on paperless transit (2015) examine in detail general principles of paperless transit and documents existing operational paperless transit systems (e.g. European New Computerized Transit System (NCTS) and European common transit procedure and several country experiences with paperless transit). Paperless transit systems could function well in single window environment, as well. Examples of regulatory single windows where transit functionality is included are presented in previous chapter.

Cargo reporting on entry/exit; customs transit clearance; conveyance reporting; and reporting specific types of good on entry/exit/transit are increasingly being included in regulatory single window systems, however the rest of the regulatory transport/transit requirements are rarely taking part in existing single windows.

For example immigration/border control agencies are traditionally responsible for immigration regulatory requirements (e.g. passport and visa control for professional transport means operators and crew). Even in the case when immigration/border control agencies and customs authorities have established mechanisms for information sharing (e.g. list of crew/passengers; intelligence information sharing), immigration control reporting is not necessarily taking part in the regulatory single window environment. However there are examples of “single authority model” based on integrated controls at border crossings that may offer transit facilitation in such cases (e.g. at some border crossings in Finland, the Customs is responsible for first line border checks for truck traffic on behalf of immigration, phytosanitary and veterinary authorities).<sup>152</sup>

Transferring responsibilities among government agencies in order to reduce the number of government agencies involved; and to avoid complex multi-agency processes; is in line with single window concept. The reduction of the agencies present at border crossings could be implemented for verification and control of various fundamental requirements for international transport (e.g. registration of transport means, worthiness certification, insurance or transport means, transport permits, licensing or professional operators). In addition to the transfer of responsibilities, regulatory single windows could also be supported with shared databases and exchange of information on fulfilment of fundamental transport requirements. Enabling automated verifications and controls in single window environment could streamline border border-crossing procedures and reduce possible delays.

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<sup>152</sup> B&S Europe, 2012; and HTSPE Limited, 2013; Study on Common Border Crossings Points Management between Schengen Area and Russia/Belarus

### Port-related single windows

In order to improve their services in competitive economic environment, ports are increasingly investing in infrastructure and information systems. Bottlenecks in port operations may appear if port-related business processes rely heavily on paper based documents, traditional communications methods (fax, phone calls), and e-mail communication. Processing of paper-based documents in such cases is inefficient and burdensome, and visibility of port operations could be poor. Same or similar documents/information may be required by different port-related stakeholders, and the same data elements will have to be re-entered in their information systems from paper-based documents.

#### **Box 16: The main benefits of port-related single windows**

- higher operational efficiency and speed regarding port processes;
- increased productivity;
- reduction of costs;
- improved customer service and customer relations;
- ports are becoming more attractive to existing and potential users;
- easier access to pertinent data, and interaction between community members;
- eliminated same data replication;
- improved control, data quality and integrity;
- improved logistics procedures' know- how inside the port community;
- better efficiency and quality of the entire logistic supply chain and the sustainability of the regional freight transport.

Source: Based on D. Tsamboulas, P. Moraiti, A.M. Lekka, 2011, Port Performance Evaluation for Port Community System Implementation (Paper for 2012 TRB 2012 Annual Meeting)

Port-related single windows are developed with main objective to facilitate complex and diverse operations at ports with number of stakeholders, various processes and documents/information required. Port centric single windows may have several main components, which include:

- port operations management;
- transport (e.g. maritime) regulatory clearance and other regulatory clearance (e.g. customs clearance);
- B2B interactions among port community members.

Port authorities/operators; transport related ministries, customs and other agencies responsible for regulatory control at ports; and many large participants from business community (including transport-related stakeholders that use/work at ports),

usually have their own information systems. Depending on level of territorial coverage, scope of processes, and the extent of IT integration under single window solutions, various options for port-related single windows have been developed.

For example a study focused on inventory of European port single windows (that mainly provide B2G exchanges) and port community systems (that include B2B exchanges), has identified variety of electronic data processing systems used for information exchange among port-related stakeholders which could be named as: Port Single window (PSW), National Single Window (NSW), Single Point of Contact (SPC), Port Community System (PCS), Harbor Authority System (HAS), Cargo Community System (CCS), Harbors Information & Control System (HICS).<sup>153</sup>

International Port Community Systems Association (IPCSA) summarizes a huge range of services and key features of port-related single windows as follows:<sup>154</sup>

- Easy, fast and efficient electronic information exchange, re-use and centralization, available 24/7/365;
- Customs declarations;
- Electronic handling of all information regarding import and export of containerized, general and bulk cargo;
- Status information and control, tracking and tracing through the whole logistics chain;
- Processing of dangerous goods;
- Processing of maritime and other statistics.

Dry ports and land border crossings could be covered with services of customs centric single windows, extended with systems that cover some terminal/port functions (e.g. queue management, container handling). In the part of road transport border crossings ESCAP model on E-border crossing is compatible with single window concept. Typical E-border crossing presented under the vision of the ESCAP model is based on information sharing between the border agencies; use of common or compatible information systems, integration of data into common data exchange platform (border crossing single window), joint use of equipment for automated data collection; and cooperation in documentary checks and border controls.<sup>155</sup>

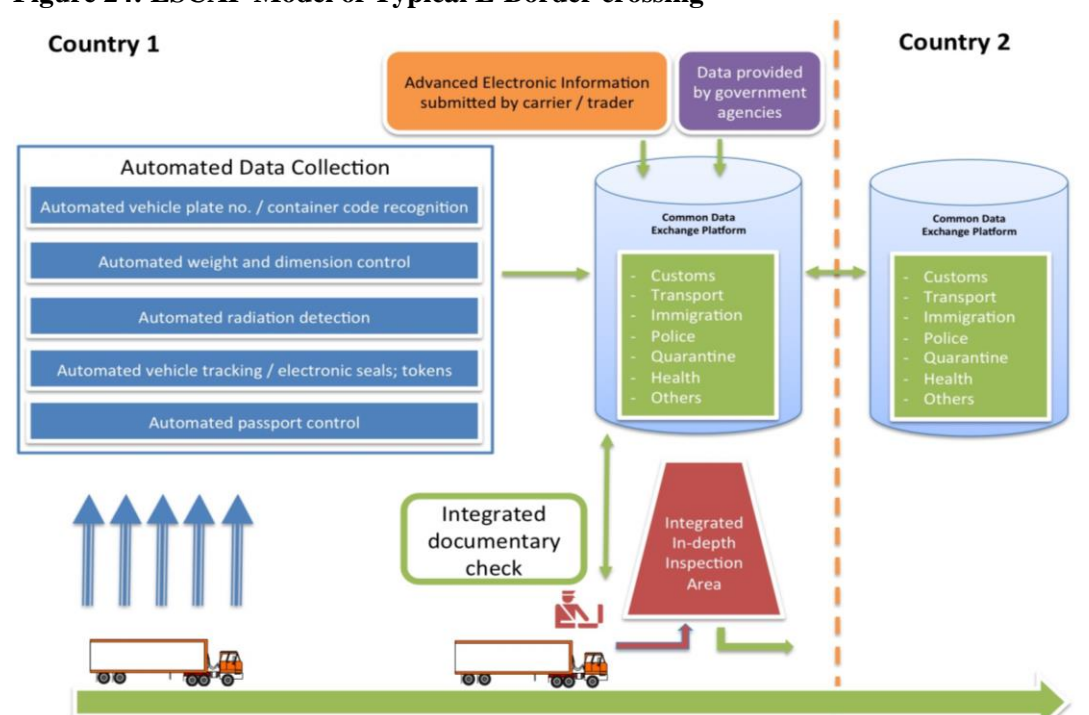
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<sup>153</sup> PORTEL, 2009, (SKEMA Project), Inventory of Port Single Windows and Port Community Systems. <http://www.eskema.eu/DownloadFile.aspx?tableName=tblSubjectArticles&field=PDF%20Filename&idField=subjectArticleID&id=231>

<sup>154</sup> International Port Community Systems Association (IPCSA) web site, PCS Services, <http://www.epcsa.eu/pcs>

<sup>155</sup> ESCAP, 2015, Technical and policy Brief: E-Border Crossing and ESCAP, 2012, Model on Integrated controls at Border Crossings

**Figure 24: ESCAP Model of Typical E-Border crossing**



Source: ESCAP, 2015, Technical and policy Brief: E-Border Crossing (Adapted from ESCAP, 2012, Model on Integrated controls at Border Crossings)

There are several advanced port-related single windows developed in busiest container seaports in Europe and Asia. Advanced cargo community systems with single window functionalities are being developed at major airports. Functionalities of e-border crossings are implemented at some land border crossings over the world as well. Despite the fact that conditions and objectives for developing port-related single window substantially differ from country to country, studying best practices of port single windows and port community systems is important step in single window development in order to benefit from existing relevant knowledge.

### Single windows with transport/logistics B2B components

Regardless if single windows systems have more dominant regulatory or port management components, they could also include important B2B exchanges concerning transport and logistics operations. Extending single windows functionalities and linking regulatory processes / port operations with B2B interactions from wider transport and logistics supply chain domain (e.g. transport booking, preparation of transport documentation, warehousing) may further increase efficiency and reduce the costs.

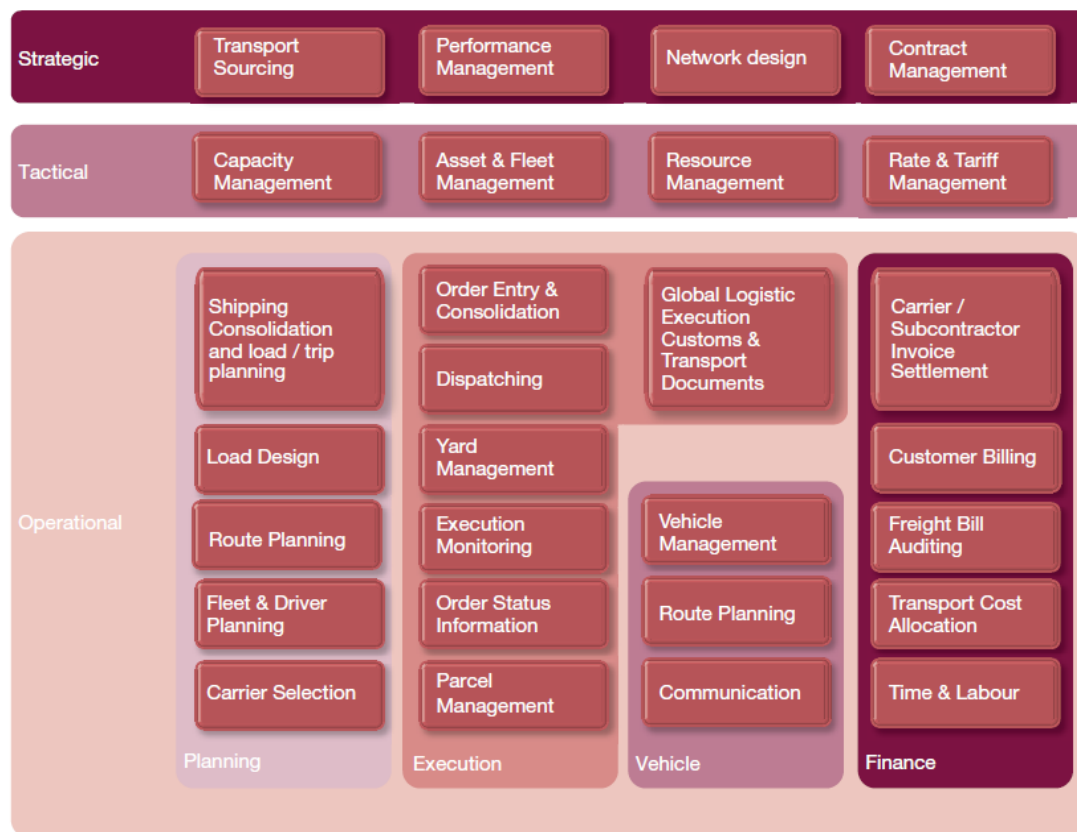
Various transport and logistics portals, networks and ICT solutions have been developed as tools for improvement of efficiency of supply chain operation. Finest EU funded project provides a comprehensive analysis on ICT solutions for collaboration and integration that are currently employed in the transport and logistics

domain.<sup>156</sup> The project identifies and documents capabilities of commercially available supply chain management ICT, such as Enterprise Resource Planning systems (ERP), Supply Chain Management Systems (SCMS), Transportation Management Systems (TMS) and Warehouse Management Systems (WMS).

Transport and logistics ICT solutions provide different functionalities:

- integrated business functions and support for electronic transactions between transport/logistics service providers and their customers (e.g. ERP systems), which may include RFID/GPS tracking;
- supply chain / transport network collaboration, including event-driven web-based services, cloud computing (e.g. SCMS, TMS).

**Figure 25: TMS functional reference model and domains**



Source: CapGemini Consulting, 2011, Transportation Management Report 2011 (Figure 23)

TMS may offer diverse core and additional features on strategic, tactical and operational level. In addition to the core functions (e.g. order management, transport planning and optimization, tracking & tracing, fleet and resource management, and freight charge handling) additional functions may include: stowage planning and optimization, yard management, supply chain event monitoring solutions and

<sup>156</sup> Future Internet enabled optimization of transport and logistics networks (FINEst) project, 2012, Analysis of ICT solutions employed in transport and logistics (Deliverable D1.4). Accessible at: <http://cordis.europa.eu/fp7/ict/netinnovation/deliverables/finest/finest-d14.pdf>

document handling, management of loading equipment and slots, access control, global logistic execution/Customs and transport documents, etc.<sup>157</sup>

Various modules and functions of transport/logistics ICT systems extend their standard capability and provide options for B2B and B2G connectivity and exchange of relevant information and data with other systems of relevant stakeholders including connectivity to single window systems, provided that interoperability is established. Integration and linking transport/logistics ICT systems with single window systems and other related systems could be achieved with standard interfaces, middleware platforms or web-based solutions. Various automation solutions may provide capturing the data from the source, reuse of data, pushing relevant data from transport/logistics systems to other stakeholders systems or single windows or even pulling data directly from traders ICT systems.<sup>158</sup>

Modern ICT solutions such as: Integration as a Service (IaaS) and Software as a Service (SaaS) provide an option for payment for using those services over Internet instead procurement and installing own ICT packages. Such solutions are making collaboration between various private, public and government stakeholders easier offering standardized connectivity, which could be more cost effective.

## 5.2 Integration of transport-related single window systems in single window environment

Information regarding regulatory, port and business areas of interest in practice often overlap. Many data elements exchanged from different documents and for different purposes (e.g. regulatory, port or business related) are same or similar (e.g. data elements for identification of traders, transporter, means of transport, goods). Regulatory and port-related single windows could cover some regulatory requirements (e.g. conveyance reporting to the customs, maritime and port authorities). Very often supply chain process includes more than one mode of transport mode, and again different documents have many same and similar data elements. B2B systems and platforms that support reuse of data could enhance single window services in regulatory and in port domain.

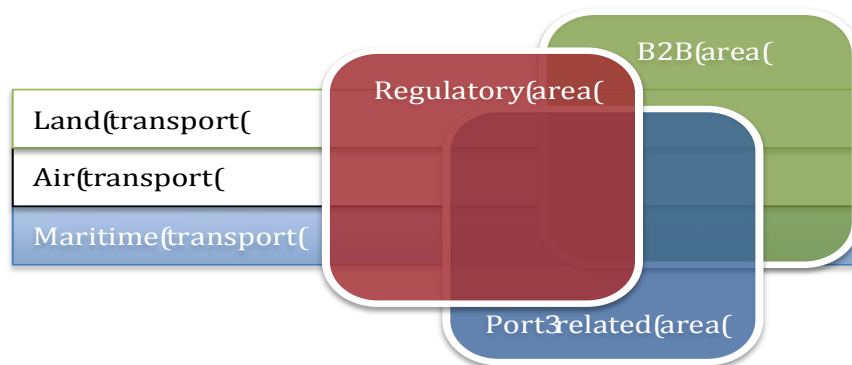
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<sup>157</sup> CapGemini Consulting, 2011, Transportation Management Report 2011. Accessible at: [https://www.capgemini.com/resource-file-access/resource/pdf/Transportation\\_Management\\_Report\\_2011.pdf](https://www.capgemini.com/resource-file-access/resource/pdf/Transportation_Management_Report_2011.pdf)

<sup>158</sup> EU funded project “IT for Analysis and Intelligent Design of e-Government” (ITAIDE) studies the piggybacking principle (reuse of business data for government control purposes) and proposes a shift from a “data push” model, where companies actively submit information to the government, to a “data pull” model, where government pulls necessary information from the business systems of the supply chain partners. For example the project presents “a case of fully integrated software demonstrator in which the messages of the container security devices (*TREC satellite communication devices*) were directly integrated in the SAP back office of Heineken. Furthermore, no export-related data had to be sent by Heineken to the Dutch Customs, because the Dutch Customs had access to the SAP system of Heineken and could retrieve business data about the content and route of the container directly from this database for control purposes. This implementation of the pull model led to a substantial reduction of administrative burden for Heineken as well as for the Dutch Customs.”

Yao-Hua Tan and others, 2010, Accelerating Global Supply Chains with IT-Innovation. Accessible at: [http://www.tbm.tudelft.nl/fileadmin/Faculteit/TBM/Actueel/Agenda/2010/doc/Accelerating\\_Global\\_Supply\\_Chains\\_with\\_IT-Innovation.pdf](http://www.tbm.tudelft.nl/fileadmin/Faculteit/TBM/Actueel/Agenda/2010/doc/Accelerating_Global_Supply_Chains_with_IT-Innovation.pdf)

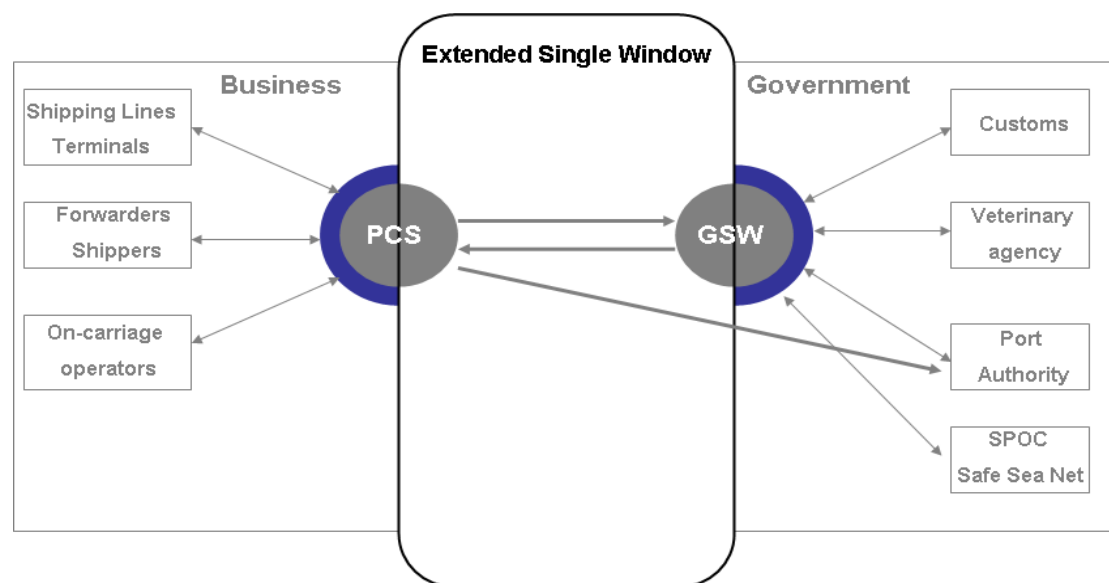
**Figure 26: Overlapping areas of interest/data exchanged in single windows**



Transport-related processes do not exist in isolation, and in order to be managed efficiently they should be addressed as a part of overall international supply chain. Having unconnected multiple single windows, and/or different detached information systems that cover only specific aspects of supply chain process (e.g. trade, transport, logistics, financial) might be feasible option in some point of development; however such option is far from optimal solution for facilitation of international supply chain. Therefore having unconnected and detached systems should be considered as intermediate step, before future interlinking/integration of related systems, which includes transport-related single windows as well.

For example connecting port community system with regulatory single window could create extended single window environment. Operational processes and information exchanged among business community could be linked with regulatory processes and exchanged data could be re-used. In this way port community system might act as gateway to the regulatory single windows.

**Figure 27: Linking Port Community Systems and Regulatory Single Windows**



Source: Richard Morton, International Port Community Systems Association, May 2015, Presentation on Meeting of the Inter American Network of International Trade Single Windows (Red VUCE) "PCS and linkages to Single Windows: New Trends, best practices and challenges ahead"



UNECE, 2013 paper examines trends for collaboration in international trade, and recognizes single windows as a special type of inter-organization information system (IOS), among other collaborative platforms (e.g. e-Commerce, e-Freight, track and trace systems, port community systems, B2B transport/logistics systems, maritime single windows, trade and customs single windows).<sup>159</sup>

### **Box 17: Inter-Organization System (IOS)**

An IOS for international trade is a collaborative and information exchange platform to facilitate the interaction and coordination of a group of stakeholders along the international supply chain.

Specific IOSs (e.g. Single Window or a Port Community System) allow the information providers to lodge standardized information and/or documents related to the specific area of trade covered by the IOS to fulfill the relevant commercial, transport or regulatory requirements.

Source: UNECE, 2013, Trends for collaboration in international trade: Building a common SW Environment.

Proposed concept for common single window environment, with the UNECE 2013 paper on trends for collaboration in international trade, suggests that border formalities and trade regulations could be expanded with commercial, financial and transport-related processes. The concept highlights following main issues:

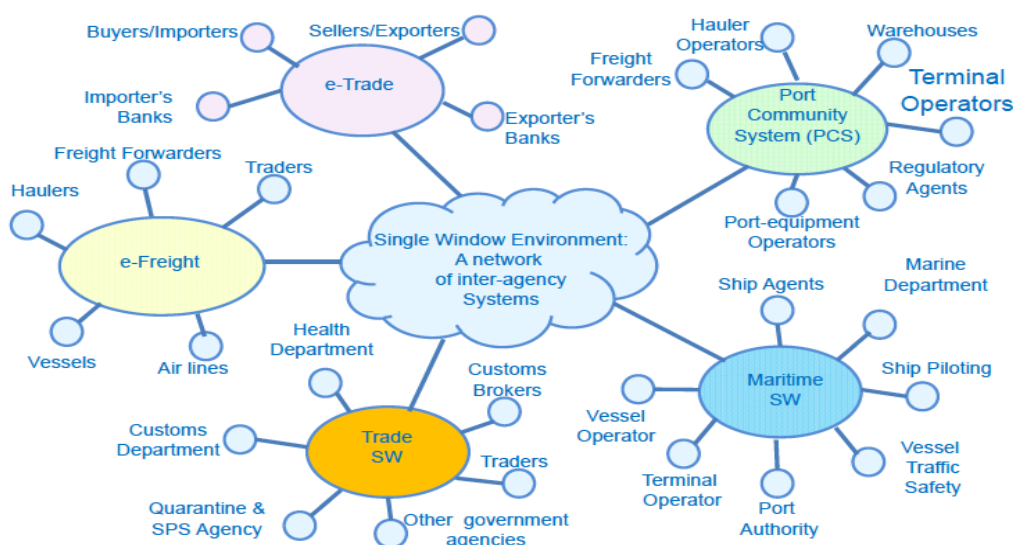
- International supply chain related IOSs (within an economy and globally) should be linked together to allow interoperability and reduce the need for resubmission of similar information to individual IOISs, encourage data sharing and process simplification;
- Clusters of related stakeholders and business processes should provide a natural environment to establish a platform of collaboration between stakeholders. That will improve understanding and development a structure for the IOS systems, needs for interoperability and specific types of interaction among them;
- Interoperability between IOSs may be developed with:
  - centralized solutions – however complexity of such undertaking could bring huge difficulties. With extension of centralized solutions due to necessity for additional diversification, they may become unsustainable, or/and
  - network solutions between two or more decentralized (user-driven) IOSs. This approach can be more flexible, however providing interoperability between autonomous systems/platforms may bring some challenges (e.g. developing framework of standards, standardization of interfaces);

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<sup>159</sup> UNECE, 2013, Trends for collaboration in international trade: Building a common Single Window Environment. Accessible at: <http://www.unece.org/fileadmin/DAM/trade/Publications/ECE-TRADE-411.pdf>

- Separate IOSs (normally developed independently), are expected to evolve and become closer in terms of overlapping stakeholders, data, processes and legal context. Thus, they will have to be eventually interconnected to form national and global networks of collaboration.
- Framework of collaboration that allows developing interoperability of individual IOSs has to be agreed, taking in consideration that IOSs gradually evolve, they have to be demand driven and that efficient connections between specific IOSs should be established.<sup>160</sup>

**Figure 28: Example of networked IOSs in single window environment**



Source: Markus Pikart APTFF (2013) presentation; Towards a common single window environment - Standards and best practice. Accessible at: [http://unnex.unescap.org/tfforum13\\_s4\\_markus.pdf](http://unnex.unescap.org/tfforum13_s4_markus.pdf)

Many countries in Asia and the Pacific region have already developed trade regulatory national single windows (NSW). In some countries these systems are already well advanced, however apart from few exceptions efficient interconnection of NSWs with port management and transport regulatory control systems is still lacking. Connecting existing information systems and re-using data from their source will increase efficiency and transparency of supply chain operations; improve quality of regulatory data and security in general.

### 5.3. Key issues for development of transport-related Single Window system

To develop single window system where some of transport requirements are integrated, it is necessary to provide services beneficial to the transport related stakeholders. Selected transport related processes and documents covered with electronic information exchange under single window services may differ in scope, however several important common issues could be highlighted:

<sup>160</sup> UNECE, 2013, Trends for collaboration in international trade: Building a common Single Window Environment. Accessible at: <http://www.unece.org/fileadmin/DAM/trade/Publications/ECE-TRADE-411.pdf>

#### A. Paper-based counterparts of electronically submitted data/documents should not be required

With transport-related single windows data elements from transport documents, reports and information could be electronically communicated between interested stakeholders. That certainly contributes to early notification; faster processing of documents; streamlined organization of subsequent process activities; and reduced time for transactions. However requesting paper based (printed) version of electronically submitted document should not be required in general, because that undermines paperless facilitation potential. Therefore the legal and practical issues of dealing with electronic documents should be properly addressed.

Transport-related data could be electronically exchanged between various information systems of different stakeholders involved as structured transmissions using EDIFACT<sup>161</sup> messages, or through XML channels, which are more interoperable with different web based platforms. Businesses that have invested in their legacy information systems often continue to use EDIFACT messaging, however newer solutions are usually based on XML exchange format, which could provide more affordable and more flexible internet based solutions. Technological solutions are being developed in order to integrate various software applications and different information systems.

Dematerialization of transport-related documents should include accompanying documents as well (e.g. accompanying documents to electronic customs transit declaration). When the process activities rely on paper-based documentation (regardless if main or accompanying), it will be not possible to achieve advantages that paperless and single window environment could provide.

If full dematerialization of transport-related documents is not permitted than the burden and costs of dealing with paper-based documents will remain. If paper-based documents are still required it will be not possible to redesign business process, which could be major setback for facilitation that might be introduced in paperless and single window environment. The limitation for facilitation applies to exchange of scanned images of the documents as well, due to impossibility to reuse their data elements.

#### B. Electronic exchange of transport-related information is not a simple translation of paper-based transport documents in digital form

Paper-based transport documents have defined layout and information data elements. Replacing the paper-based document with electronically exchanged information should not be understood as creation of digital image (e.g. a scan), or only as a exercise to produce identical digital replica of that document.

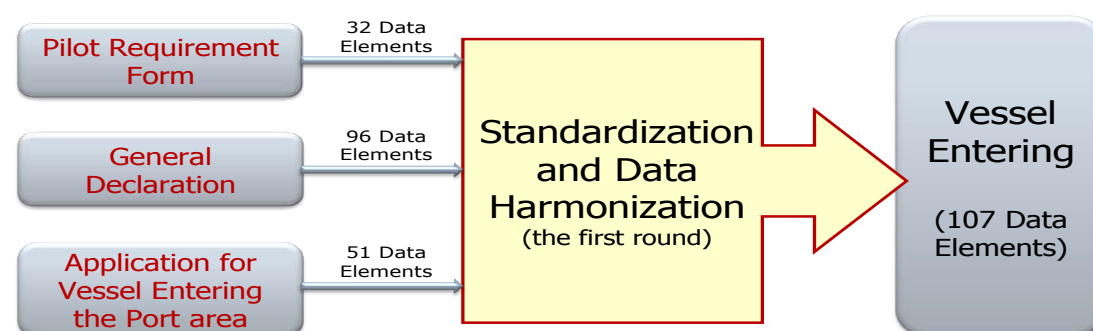
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<sup>161</sup> More information on EDIFACT are available on UNECE website:  
<http://www.unece.org/cefact/edifact/welcom.html>

We should have in mind that the stakeholders exchange among them many documents and information that contain substantial amount of repetitive data elements (e.g. carrier identification, port of departure/arrival, goods information, container number, terms of delivery, etc.). Re-keying the same data elements in various electronic systems is time consuming, represents administrative burden, and increases the risk for mistakes and related delays (e.g. with regulatory clearance, payment).

Data standardization and harmonization under Thailand Single Window e-logistics project shows how submission of several paper-based transport-related documents could be replaced with single electronic transmission. For example the process for “vessel entering to the port area”, covered with three documents to three different stakeholders (Marine Department of Ministry of Transport, Port Authority of Thailand and Pilot’s station at the port), was analyzed in order to create single data entry (Vessel Entering). The relevant vessel entering electronic document could be transferred through national single window to each of the stakeholders concerned as an electronic message/document, which will eliminate repeated data entries for multiple documents and it will reduce the time for processing the documents.<sup>162</sup>

**Figure 29: Data harmonization proof of concept (vessel entering to the port area)**

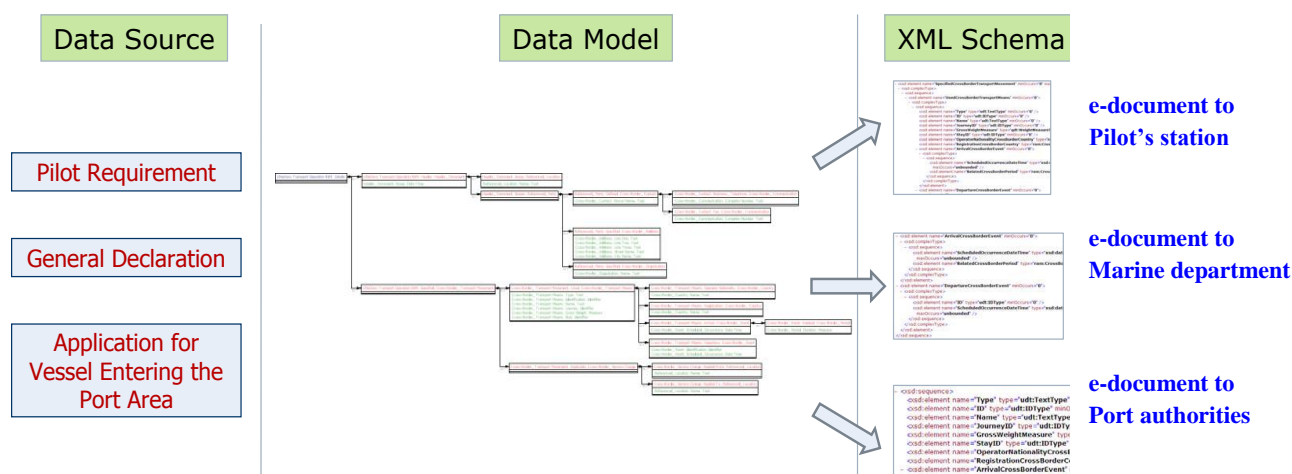


Source: Dr. Somnuk Keretho, Kasetsart University, Thailand, presentation on Single-Window e-Logistics: Policy Initiatives and Projects in Thailand, UNECE/UNESCAP, 2007, Workshop on UNEDocs for Single Window

As result of data harmonization and using XML schema, instead digitalizing several paper based documents single data entry was developed and structured by a data model approach. The single window system, where requirements of different parties are defined, can create and exchange multiple separate electronic documents from the single date set. The documents could be automatically communicated to the relevant stakeholders (e.g. Pilot’s station, Marine Department and Port authority).

<sup>162</sup> Dr. Somnuk Keretho, presentation on Single-Window e-Logistics: Policy Initiatives and Projects in Thailand , UNECE/UNESCAP Workshop on UNEDocs for Single Window, 10-11 Dec 2007, Bangkok, Accessible at: <http://www.efreightproject.eu/knowledge/DownloadFile.aspx?tableName=tblSubjectArticles&field=PDF%20Filename&idField=subjectArticleID&id=304>

**Figure 30: Data harmonization results (vessel entering to the port area)**



Source: Dr. Somnuk Keretho, Kasetsart University, Thailand, presentation on Single-Window e-Logistics: Policy Initiatives and Projects in Thailand, UNECE/UNESCAP, 2007, Workshop on UNEDocs for Single Window

Available technological solutions offer wide range of possibilities for exchange of electronic data and support for single window solutions. The process of standardization and harmonization of data elements from transport-related documents should support creation of integrated sets of data elements, whenever possible. Specific electronic documents transmitted through single window facility to different stakeholders as separate electronic messages, could reduce or eliminate the need to re-key data elements, the processes could be streamlined and simplified.

### C. Associated transport-related business processes should be re-examined taking in consideration opportunities for facilitation

The main reason for dematerialization or transport-related documents and introduction of single window solutions are great opportunities for transport facilitation, which could be achieved by replacing paper-based documents with electronic data exchange through single entry point. When the limitations of paper-based documents are resolved (e.g. the need for physical delivery of a hard copy), new opportunities for organizing business processes might appear. Therefore it is necessary to analyze related business processes and to consider options for redesign in order to gain full benefits from introducing electronic information exchange.

Redesigned business processes may include different organization when processing e-documents, doing controls (e.g. automated documentary controls and verifications), streamlined port services (e.g. due to limited physical interactions with regulatory agencies such as customs), simplified regulatory processes (e.g. due to availability of advanced information/notifications, risk analysis and improved control capability).

Furthermore functionality of exchanged documents and information could be also re-examined in order to confirm their validity. Transport documents should in general retain their main functions (e.g. B/L functions - to certify that goods are

received for shipment/shipped; to evidence a contract of carriage and to serve as transferable document of title - should be valid for e-B/L as well). However certain functions of some documents may become redundant or modified, which is not possible to be considered if the business process are organized using paper-based documents (e.g. if the system is integrated with automated electronic track and trace system then some transport status request/information functions may be replaced with automatic notification by e-mail/SMS).

D. ICT solutions, which are important part of paperless single window environment, should support realization of facilitation objectives

Redesigned business processes and functionality of the electronic documents may depend on ICT solutions employed. New state of the art information systems are offering various possibilities for reuse of data, background verifications, automatic notifications, integration of different applications, electronic data exchange, service-oriented services and event-driven web based services.

Various data exchange methods provide different options for direct communication (point to point), interaction through business networks, access to centralized or distributed systems and web platforms. In the new paperless and single window environment there is no need to continue organizing business processes in the same way as they have been organized previously with paper-based documents, because valuable ICT opportunities for facilitation might be wasted.

Even though recognizing potentials of ICT solutions and understanding of ICT standards is very important, it is crucial to keep in mind that introduction of paperless single window environment is primarily trade and transport facilitation exercise. New options for electronic exchange of transport documents and redesigned business processes under paperless single window environment should respond to the needs and should serve to the trade and transport industry. Therefore trade and transport facilitation objectives should guide adoption of ICT solutions and not the other way around.

In this chapter we have categorized transport related single windows as regulatory; port-related and single windows with extended transport/logistics B2B components. Even though regulatory and port-related single windows have some differences in the area of interest, the efficiency of information exchange could be improved if they are extended with B2B components and if linking/integration of different single windows and related IT systems/networks is nurtured. Some of the key issues for development of transport related single windows are identified such as paperless environment, harmonization and standardization, business processes redesign, and the role of automation in realization of transport related facilitation objectives.



# Chapter 6      Challenges to integrate transport requirements in Single Window environment

The scope of transport-related single windows may considerably differ, having in mind that there are huge number of transport related processes and documents that could be included (as discussed in Chapter 3 of this Study). One of the major issues that has to be addressed in development of transport-related single windows is to identify major bottlenecks related with transport processes and transport related documents (e.g. frequent and repeated exchange of B/L among multiple parties; inefficient organization of port operations; lack of international customs transit options) and opportunities for facilitation with paperless transactions in single window environment.

While developing particular transport-related single window services, various specific challenges could be expected with relation to each individual service provided (e.g. port-clearance, electronic customs transit, submission of electronic transport related regulatory documents, exchange of B2B business/logistics documents, etc.). Despite the differences of challenges that each particular case may have, this chapter identifies and generalizes some of the expected challenges and discusses possible ways to address them.

## 6.1      Coordination behind and across the borders

Development of transport related single window systems requires bringing together carriers; forwarders; and other logistics and cargo handling service providers; with several authorities with whom they interact such as: customs, port authorities, transport-related government authorities and permit issuing agencies as well as with other stakeholders from private sector such as: exporters/importers, consignors/consignees, customs brokers/agents, insurance companies etc. Those various stakeholders have different interests, business objectives and responsibilities. Coordination and collaboration among the stakeholders concerned are some of the most challenging issues that have to be addressed in order to run successful single window project.

Coordination and collaboration towards introducing transport related single window services could be facilitated if there are related and mutually agreed national strategies and policies that support paperless environment and electronic information exchange among government authorities and private sector in transport domain.



Engagement of stakeholders from private and public sector is equally important, as well as addressing resistance of the parties involved. Such resistance could be originated from: lack of information about opportunities and requirements; fiscal concerns; inertia to change; vested interest (e.g. increased efficiency might reduce/eliminate the needs of services that some parties in private sector are providing).

Establishing organizational structures at national level with clear mandate is crucial for successful implementation of single window project. Introduction of extended B2B transport related services in regulatory single window environment should be primarily transport led initiative. Early involvement in coordinative organizational structures of all stakeholders concerned especially those from private sector might address issues related with possible reluctance to support and accept introduction of new transport related single window services. If transport/logistics sector is not well organized (e.g. transport/logistics associations, networks etc.) leading transport related single window project could be serious challenge. Cooperative leading agency from the government side that will guide and support the process is also essential in order to improve the management of single window project and ensure joint ownership and commitment.

Extending single window services at cross border level (e.g. bilateral, multilateral, sub-regional or regional) requires international cooperation and coordination, which is even more challenging than national coordination. For coordination at international level, the mandate for cross-border coordination structure has to be established; together with specific joint vision and strategic objectives (e.g. regional single window; cross border exchange of transport related documents; international paperless customs transit). Sub-regional and regional cooperation bodies and initiatives are in position to facilitate and provide secretarial support for cross-border coordination for introduction of transport related single window services.

Single window implementation framework (SWIF) details on stakeholder management and interagency collaboration and suggests following steps:

- Obtain political will and a permanent mandate for SW implementation;
- Appoint a Single Window steering committee;
- Determine stakeholder management approach;
- Establish environment for stakeholder coordination and collaboration;
- Identify a list of regional/international organizations and initiatives, which develop policies, regulations, projects and standards for regional/global trade;

- Analyse the interdependencies between the national and regional SW.<sup>163</sup>

International recommendation and guidelines on coordination among stakeholders in single window development, including suggestions from SWIF, are compatible to be used in national and international projects for introduction of transport related single window services.

## 6.2 Legal and technical requirements on electronic transport documentation

Transport-related documentation, information and data that could be exchanged through single window facilities have to be in electronic form and have to comply with relevant legal and technical requirements. Complexity of replacing paper based documents/information with electronic messages certainly depends on the type of the documents/information that has to be dematerialized.

For example documents/information that are related to organization of operations in port areas, B2B transport/logistics related notifications might not require any substantial legal background. In this case replication of the functions of such documents/information is easier to achieve provided that they are backed only with appropriate internal guidelines and operational procedures.

On the other hand regulatory requirements (e.g. reporting to maritime authorities, customs, immigration; obtaining relevant permits, customs transit declaration etc.) or B2B exchanging contractual and negotiable instruments (e.g. bill of lading) usually are covered with much stricter legal framework. In this case it is expected that the use of specific electronic documents have to be stipulated and regulated in certain national level (e.g. national legislation, implementing regulation etc.) or internationally (e.g. international conventions, agreements). In addition national regulation is usually addressing some general issues on electronic transactions such as authentication of electronic documents (e.g. electronic signatures), storage and protection of electronic data.

Replicating the functions of paper-based documents in electronic environment could be challenging because of the very essence of the function as well. For example as discussed in Chapter 3, in order to develop e-B/L the function of negotiable instrument and the document of title has to be ensured. That means the control over e-B/L has to be equivalent to physical possession of paper-based B/L. Such endeavor is still very challenging even though there are examples where e-B/L function is implemented with combination of registry system and secure technology for limited access (e.g. Korean's KTNET uTradeHub presented in Chapter 4).

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<sup>163</sup> UNECE, 2011, Single Window Implementation Framework available at: <http://www.unece.org/fileadmin/DAM/cefact/publica/SWImplementationFramework.pdf>

Having legislative environment that supports paperless transactions only for individual sectors (e.g. customs, transport, port) may create challenges in the process of communication between various government agencies, public authorities and other transport-related stakeholders. For development of transport related single window facilities, legal requirements concerning transport related documents/information have to be identified and harmonized on national level (e.g. in various legislation relevant for different stakeholders) and internationally, to ensure legal acceptability of national and/or cross/border information exchange. Minimal technical requirements also have to be agreed and satisfied in order to enable practical electronic information exchange among different stakeholders and their information systems.

International conventions and documents that encourage use of electronic documents (e.g. UN Electronic Communications in International Contracts Convention, UNCITRAL model laws)<sup>164</sup> and specific national legislation that allows using electronic documents in practice (e.g. Korean national legislation that establishes the legal equivalence between electronic and paper-based bills of lading managed in an electronic title registry)<sup>165</sup> are creating grounds for extended use of electronic transport related single window services addressing the challenges related to legal and technical documentary requirements.

### 6.3 Data harmonization, standardization and technological requirements

Vast amount of transport related documents/information are being frequently and repeatedly exchanged among different stakeholders in transport related processes (as it was elaborated earlier in Chapter 3). Analysis of different transport related processes and documents shared could show that document/information requirements contain many same and similar data elements. Data harmonization and standardization is complex and challenging process, which should identify possibilities to improve efficiency of data sharing in single window environment in order to support trade and transport facilitation.

Such exercise should be based on business processes analysis and requires in-depth multi-sectoral knowledge with close cooperation among different stakeholders. Data harmonization and standardization, supported with application of corresponding technological requirements, will enable interoperability among different information systems and will facilitate development of transport related single window systems.

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<sup>164</sup> In addition to already developed model laws and recommendations regarding electronic commerce (available at: [http://www.uncitral.org/uncitral/uncitral\\_texts/electronic\\_commerce.html](http://www.uncitral.org/uncitral/uncitral_texts/electronic_commerce.html)), UNCITRAL is presently working on provisions of Model Law in the field of electronic transferable records, which should support introduction of e-B/L as well. Draft provisions from March 2015 are available at UNCITRAL website: <http://daccess-dds-ny.un.org/doc/UNDOC/LTD/V15/014/42/PDF/V1501442.pdf?OpenElement>

<sup>165</sup> Legal framework for the operation of electronic bills of lading in the Republic of Korea and specifically article 862 of Korean Commercial Act as discussed in UNCITRAL 2010 document Present and possible future work on electronic commerce. Accessible at: <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/V10/527/74/PDF/V1052774.pdf?OpenElement>

Harmonized data requirements among different stakeholders of single window facilities may contribute to reduction of number of transactions, documents and data elements exchanged among different participants in supply chain processes. For example number of maritime transport related documents and data elements might be reduced.

Standardization and harmonization of data elements could support replacement of several paper-based documents with single electronic exchange (e.g. single vessel entering message could replace three different documents submitted to three different parties as identified in the e-logistics project in Thailand presented in Chapter 5).

#### 6.4 Enabling legal framework

Development of transport related single window requires providing legal framework that: makes possible sharing of relevant electronic information among stakeholders concerned, and ensures legality of single window facility itself. Challenges from the process of establishing legal framework for the transport related single window have to be addressed in addition to the challenges focused only on legal requirements for transport documentation discussed in point 6.2 of this Chapter.

Transport related single windows in this study are understood as B2G regulatory or port single windows that may include extended B2B transport related single window services with interactions at national or international level. Accordingly the legal framework has to cover those specific transport related services (e.g. transport reporting formalities in electronic form at ports; providing electronic transport related permits; submitting electronic transport related documents to government agencies; organization of operation at port areas; transit formalities with electronic transit documents; electronic B2B exchange of transport related documents/information at port, national or cross-border level).

Therefore main focus of the legal framework should be enabling legal environment for electronic B2G and B2B data exchange of transport related documents/information in the context of transport related services, rather than on the legal status of the single window itself. The legal status of the transport related single window facility could differ substantially depending on the business area that single window covers (e.g. regulatory, port-centric, extended with B2B components), business model chosen, and overall national legislative framework.

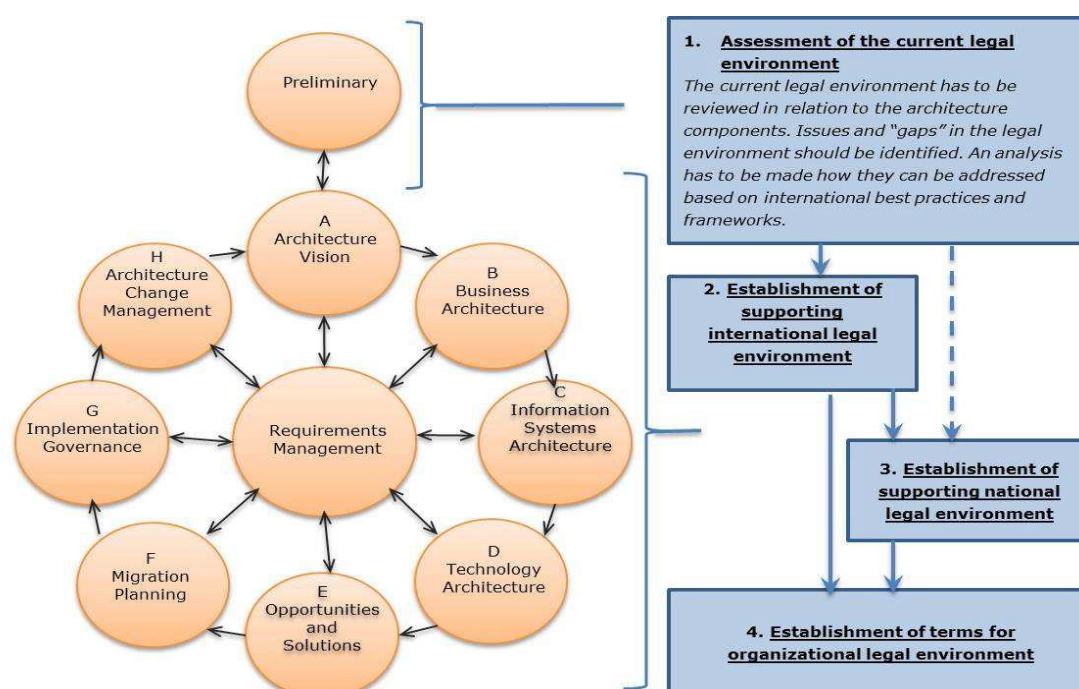
For introduction of transport related single window services existing national legislation has to be revised, simplified and changed if necessary to enable national information exchange among relevant stakeholders. Legal regulatory framework should enable paperless environment in single window information exchange, including several specific requirements such as: validation of electronic documents; acceptance of electronic signatures; data security, data protection, privacy and confidentiality; levels of access to information shared in Single Window environment

in the case of national and/or cross-border information exchange.

Changes of development and introduction of the legislation could be very complex and time consuming especially if they involve harmonization of legislation on bilateral, sub-regional or regional level. For cross-border electronic information exchange appropriate institutional arrangements will have to be developed (e.g. bilateral or multilateral agreements).

Providing legal interoperability could be facilitated if national legislation is following international standards, conventions and best practices with regard to exchange of information in electronic form and single window environment.

**Figure 31: Realization of the Legal Framework in the SWIF**



Source: UNECE, 2011, Single Window Implementation Framework (Fig.19. p-59)

Single window implementation framework (SWIF) identifies core steps for establishing legal framework, applicable to transport related single windows as well and include: assessment of the current legal environment; establishment of supporting international legal environment; establishment of supporting national legal environment; and establishment of terms for organizational agreements.

## 6.5 Fragmentation of Single Windows and stakeholders systems

Many countries already have developed or initiated various types of single windows and even though they might follow similar evolution path, differences among single window solutions could be substantial. Multiple single windows, different port community systems / port management systems at different ports, and several B2B portals/networks may exist in same country. Those systems may run on

different business models, and different operators may have diverse objectives with regard to services provided to their stakeholders systems in public and private sector.

Therefore it should be expected that developing transport-related services in single window facilities, which requires linking/integration of fragmented single windows and other related paperless systems, will face the challenges at several levels: from harmonization of objectives to actual implementation of transport related single window solutions.

Large stakeholders from government sector (e.g. customs) or public sector (e.g. port authorities) may already have highly elaborated information systems with preferences to integrate single window facilities with their own systems and use them only as a gateway for their specific functions (e.g. customs risk management for customs authorities or port operation management for port authorities). Other authorities, which have limited information systems, may prefer single window systems with extended functionalities. Extending regulatory single windows with B2B functionalities might not be priority of government operated regulatory single windows.

Large transport related companies are usually using their own advanced ERP, transport management and logistics systems and could benefit if those systems are interfaced with the single window facilities. From the other hand small and medium companies that do not use advanced internal systems will rely on user-friendly web-based services for access to the single window systems.

When new transport related single window services are being introduced, differences in technological platforms and solutions developed by different single window systems and stakeholder's information system providers could also bring the challenges in interconnection/integration of fragmented systems.

Challenges from fragmentation of single windows and stakeholders systems could appear at national level and it could be even more apparent in the case when cross-border connectivity is being developed (e.g. cross-border exchange of transport related documents, regional single window initiatives, and regional transit systems).

Connecting fragmented single windows and different stakeholders information systems and developing transport related single window services will certainly bring some technical challenges, however they could be overcome with already available state of the art technological solutions for communication and integration of different information systems. Such IT solutions, developed by many capable IT vendors, could further be tailored to the specific needs of each particular user.

Addressing challenges that appear from fragmentation of the systems is not only technical issue, because it is even more important to get different stakeholders on

board to support adjustments and upgrades of their information systems towards common single window objectives. Public and private sector stakeholders have to develop common objectives and to accept IT solutions based on redesigned business processes with use of paperless information exchange. Providing support for such changes is only possible if the benefits from newly introduced transport related services are clearly visible to the stakeholders from both sectors.

To address the issues from fragmentation of single windows and different stakeholders systems countries may follow different paths taking in consideration national policies and strategies and technological level of development of present information systems. Some countries may prefer full integration of national single window systems (e.g. as in the case of Japan's NACCS) or interconnection among different single window solutions (e.g. as presented in the case of national single window facilities in Korea).

## 6.6 Interoperability and interconnectivity among the systems

Government and public authorities are increasingly developing information systems that could address trade and transport facilitation concerns through state of the art ICT solutions, which include paperless information exchange and single window environment. The transport management and logistics IT systems are also becoming more available to transport related stakeholders. Even though transport related processes still heavily rely on paper-based documents, ICT development, and adoption of Internet technologies are creating enabling environment for introduction of transport-related single window services.

In many developing countries progress in upgrading information systems of government/public authorities and increased use of advanced IT systems of other stakeholders from private sector is evident, however connection/integration of different systems at national level and providing cross-border interoperability is yet to be addressed. Diversity of various information systems of government/public authorities and different IT systems of transport related stakeholder creates challenges for interoperability and interconnectivity necessary for seamless functioning of transport-related single window services.

At national level, it is possible to interlink/integrate customs information systems, port community systems, port management systems; information systems of other transport related authorities (e.g. ministries responsible for transport, transport security and safety agencies, agencies responsible for traffic control etc.). Introduction of transport related single window services at international level might require facilities for cross-border electronic exchange, and regional single window environment that may provide interoperability among national single window systems (e.g. ASW design provides interoperability of NSW of ASEAN member states).



ICT coordination efforts and interoperability of information systems in the case of implementation of various transport related single window services could be very demanding and challenging. Different government/public authorities and private sector stakeholders have their own distinctive information systems and development of number of interfaces to connect several information systems at national and/or international level might be required.

Single window information framework (SWIF) identifies different aspects of interoperability that have to be addressed such as process/operational/business interoperability; information/data/semantic interoperability; technical interoperability; presentation interoperability and application interoperability.

**Figure 32: Different aspects of Interoperability**

Aspect of Interoperability	Description
Process/Operational/Business Interoperability	Analyse and streamline relevant business processes to enhance process sharing and process efficiency
Information/Data/Semantic Interoperability	<ul style="list-style-type: none"> <li>• Ensure the use of common definition for individual data elements, common structure for complex data elements, and common structure of individual electronic messages by aligning them with an internationally accepted standard that covers documentary requirements of the international supply chain</li> <li>• Ensure that information is seamlessly shared among Single Window's sub- systems</li> </ul>
Technical Interoperability	<ul style="list-style-type: none"> <li>• Define common technical communication protocol, method for data processing and storage, and security strategies to be used by Single Window's sub-systems</li> <li>• Define how services are to be shared or connected with each other</li> </ul>
Presentation Interoperability	Use common look-and-feel approach through a common portal-like solution guides the user to the underlying functionality of the set of systems
Application Interoperability	<ul style="list-style-type: none"> <li>• Ensure that all Single Window's sub-systems are seamlessly linked</li> <li>• Ensure that identical functionalities are sharable among all Single Window's sub-systems (e.g., one change of address service/component; not one for every application)</li> </ul>

Source: UNECE, 2011, Single Window Implementation Framework (Table.7. p-55)

Diversity of business processes, information exchanged and related data elements and ICT infrastructure with respect to hardware, software solutions, data bases and communication options is burdening interoperability of the information systems. Efforts to provide integration and interoperability of various information systems at national, sub-regional or regional level could be substantial given the different level of ICT development among various agencies within the same country and/or internationally.

# **Chapter 7      Role of governments and international organizations in promoting integration of transport requirements in the Single Windows**

## **7.1      Political will**

One of the necessities for successful introduction of transport requirements in single window environment is having strongly expressed political will in different phases of the process. Political commitment may have multiple direct and indirect implications from the inception to the practical implementation of a project for introduction of transport related single window services. Strong top-level political commitment for support of transport related single window could:

- ensure productive stakeholders coordination;
- encourage cross-border cooperation;
- support establishment of common objectives, policies and strategies;
- urge research activities for finding most feasible transport related solutions in single window systems;
- enhance promotion of the concept for transport related single window services;
- secure timely setting of relevant legislative framework;
- enable smooth transition and acceptance of organizational changes;
- facilitate resource mobilization to respond adequately on demands for fiscal, technical and human resources;

Even if general political will for support of transport facilitation is not lacking, a lot of political effort will be needed to develop policies and strategies that will define specific transport single window targets and that will be acceptable for different key stakeholders from private and public sector. Addressing challenges for reaching compromises with regard to common priorities, vision and strategic objectives may require top-level political involvement.

Policies and strategies that include transport related single windows have to be coherent with other national/regional policies and strategies with regard to trade and transport, ICT solutions and regional integration. Various present/future trade and transport facilitation initiatives (e.g. paperless trade/transport initiatives; single window environment; e-customs) have to be taken in consideration. Coordination and prioritization amongst the various initiatives is necessary in order to address the issues from overlapping activities, to plan in most efficient way the use of resources and to take in consideration absorption capacity of the stakeholders concerned.

If the private transport/logistics sector on national level is not adequately organized and sufficiently developed to take the leading role in transport single window initiative, political decisions may include support for establishing transport/logistics network, portal, single window operator, fully (or partially) funded by the government. Such government-funded entity will have the leading role for support of transport/logistics communities in initial period of preparation, development and implementation of transport related single window and it might be privatized when government assistance will not be further necessary.

If the transport related single window initiative is developed in private-public partnership, political decisions could be made to provide financial and technical support for specific activities such as feasibility studies, national/cross border projects, development of ICT solutions, technical infrastructure and implementation of related programs. Political commitment should be expressed with the clear mandate given to the leading agency from the government side, with appointment of committed and capable leadership, adequate human resources to carry out the initiative and sufficient technical and financial support.

In the case of transport related single windows with cross-border information exchange and in the case of regional initiatives it is necessary to ensure sufficient level of political commitment for bilateral, multilateral, or regional cooperation between the countries and their respective administrations and communities. Multilaterally agreed vision and strategic objectives for cross-border information exchange and regional single window have to ensure consistency with national initiatives and facilitate interoperability among information systems in different countries.

## 7.2 Interagency coordination and private sector involvement

Challenges for coordination behind and across the borders have already been addressed in part 6.1 of this Study as well as directions for addressing these challenges in accordance with Single window implementation framework (SWIF).

As identified earlier private sector should have a leading role in the projects for introduction of transport related single windows with extended B2B components.

The government has important role to support organization and capacity of transport/logistics sector at national level if necessary (e.g. transport/logistics associations, networks, portals etc.). The government also has to establish public-private coordination structure where the role of the private sector will be recognized and supported by leading agency from the government side. With effective coordination and cooperation, possible issues with conflicts of interests and resistance could be addressed and stakeholders will be encouraged to contribute together towards jointly established objectives.

Variety of transport related single window services may support transport facilitation goals, however different public and private stakeholders could have different priorities and different capacity for their involvement in transport related single window projects. Therefore effective coordination is a key for establishing common goals and reducing the gaps among stakeholders.

Establishing and strengthening national coordination mechanisms for trade and transport facilitation is one way to effectively address the challenges of the complex environment. Countries in the region have different experiences with coordination for trade and transport facilitation that may include introduction of single window facilities. Some countries have established fully-fledged national trade and transport facilitation bodies; some countries have introduced various cooperation mechanisms; and some coordinate on ad hoc-basis.<sup>166</sup>

International organization such as ESCAP and UNECE are providing support and guidance for efficient coordination mechanisms in trade and transport context that includes single window initiatives. For example ESCAP 2012, guidelines on national coordination mechanisms<sup>167</sup> offers analysis and recommendations for establishing and strengthening national coordination institutions. UNCEFACT Recommendation 4 recommends and discusses the role and functioning of National Trade Facilitation Bodies.<sup>168</sup>

There are various examples of national coordination mechanisms; however a permanent coordination institution is considered to be the most stable form since it is established with clear long-term mandate and organizational structure. Permanent facilitation committee for example, can be used for coordination of broad and specific facilitation initiatives, including transport related single window services. The role of

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<sup>166</sup> More detailed information is available at ESCAP 2014 paper, Trade Facilitation and Paperless Trade Implementation: 2013/14 Asia-Pacific Update, ESCAP Trade and Investment Division (Wang, Tengfei and Yann Duval). Accessible at: [http://www.unescap.org/sites/default/files/cross-border\\_2.pdf](http://www.unescap.org/sites/default/files/cross-border_2.pdf)

<sup>167</sup> UN ESCAP, 2012, Guidelines on establishing and strengthening national coordination mechanisms for trade and transport facilitation in the ESCAP region. Accessible at: <http://www.unescap.org/sites/default/files/NCM-fulltext.pdf>

<sup>168</sup> [http://www.unece.org/fileadmin/DAM/cefact/recommendations/rec04/rec04\\_ecetrd242e.pdf](http://www.unece.org/fileadmin/DAM/cefact/recommendations/rec04/rec04_ecetrd242e.pdf)

national coordination mechanisms is to provide a platform where all stakeholders from public and private sector can discuss and suggest facilitation solutions.

In that sense, transport related single window solutions could be discussed from initial phase when of national strategies and policies will be developed and priorities will be determined, to actual implementation at national and international level.

National coordination institutions could be established under sub-regional trade and transport arrangements or under national requirements for inter-agency cooperation in the projects on country level. It is highly desirable to avoid duplication of coordination mechanisms in one country, which will contribute to effective use of resources, consistency in overall facilitation policies and it could prevent potential conflicts. Appropriate legal bases and clear mandate for national coordination mechanisms are necessary in order to support efficiency and sustainability over time.

#### **Box 18: Examples of national coordination**

National coordination established under sub-regional trade or transport agreements, e.g.:

- National Transit Transport Coordinating Committees (NTTCC) under ASEAN Framework Agreement on Facilitation of Goods in Transit;
- National Transport Facilitation Committees (NTFC) under Agreement on Facilitation of Cross-Border Transport of Goods and People in the Greater Mekong Sub-region (GMS CBTA);

National coordination established under national requirements, e.g.:

- national interagency bodies for implementing single window concept (e.g. Indonesia, Mongolia, the Republic of Korea, Thailand and Viet Nam);
- national coordination for introduction of automated customs clearance;
- national coordination relating to transit transport of landlocked countries.

Source: ESCAP, 2012, Guidelines on establishing and strengthening national coordination mechanisms for trade and transport facilitation in the ESCAP region.

The form of legal instrument for national coordination may be different in accordance with legislative requirements of the country. The appropriate legal instrument has to specify salient features of the coordination mechanism; composition of the members from private and public sector; the scope; objectives and main areas for coordination. The issues of secretariat support and financing may also be addressed.

The ESCAP guide identifies following main functions of national trade and transport facilitation coordinating institution:

- simplification, standardization and harmonization of procedures and documents;

- assisting in introduction of ICT tools in trade and transport facilitation;
- studying changes in international trade and transport environment;
- assisting in conception, negotiation and implementation of trade and transport facilitation agreements;
- developing capacities of stakeholders.

Transport related single window services should be of particular interest in the working agenda of national coordination first in order to study and identify best single window solutions that could support national transport facilitation strategies, and then to suggest to the government legislative changes and ask for specific support with development and implementation of such transport related single window services.

### 7.3 Enabling legislative framework

Challenges for fulfillment of legal requirements on electronic transport documentation (e.g. e-B/L) and enabling legal framework on transport related single window have been already addressed in parts 6.2 and 6.4 of this Study, accordingly. Realization of the legal framework in the SWIF has been also discussed in the part 6.4 of this Study.

As identified earlier the governments have an important role to provide enabling legal environment for use of electronic documents (e.g. legal equivalence between electronic and paper-based transport documentation, authentication of electronic documents (e.g. electronic signatories), storage and protection of electronic data.

Transport related single window legal requirements, depending on the nature and scope of transport single window service provided, could be spread to different legislation areas. That includes commercial legislation for covering B2B transactions as well as specific regulatory legislation that is addressing B2G and G2G interactions.

For example the scope of legislation could relate to transport reporting formalities in electronic form at ports; providing electronic transport related permits; submitting electronic transport related documents to government agencies; organization of operation at port areas; transit formalities with electronic transit documents; electronic B2B exchange of transport related documents/information at port, national or cross-border level.

Relevant international conventions, recommendations and standards should be used as legal background for national legislation whenever possible. National legislation relevant for transport single windows might be developed on several levels such as national laws and implementing regulations, mandatory and voluntary standards, rulebooks of relevant authorities and contractual provisions.

#### **Box 19: Electronic transport documents / SW - Legal background examples**

- e-AWB - Montreal Protocol 4 and Montreal Convention 1999
- e-B/L – UN Convention on contracts for the international carriage of goods wholly or partly by sea (the “Rotterdam Rules”) (not in force yet)
- Maritime certificates - IMO Guidelines for the use of electronic certificates
- e-CIM/SMGS - COTIF Convention (CIM) and the SMGS Agreement
- e-CMR - CMR Convention
- PAA cross border electronic exchange - PAA certification authority recognition agreements, Club agreement, subscribers agreements, and interconnection agreement
- ASW - Agreement to establish and implement the ASEAN Single Window (2005) and the Protocol to establish and implement the ASEAN Single Window (2006)
- ASEAN Customs Transit System - ASEAN Framework Agreement on the Facilitation of Goods in Transit (1998) and its Protocol 7: Customs Transit System, (2015)
- Nations laws on electronic commerce and electronic signatures - UN Convention on the Use of Electronic Communications in International Contracts (2005); UNCITRAL Model Law on Electronic Commerce (1996); UNCITRAL Model Law on Electronic Signatures (2001)
- Example of Korean National SW Legal Background
  - Act on Promotion for the Trade Business Automation (1991)
  - e-Trade Facilitation Act (2006)
  - Framework Act on Electronic Commerce (1999)
  - Digital Signature Act (1999)
  - Act on Promotion of Information and Communication Network Utilization and Information Protection (2001)
  - Korean Commercial Act (art. 862 - e B/L) (2008)

Legislation related to transport related single window services has to ensure fulfilment of regulatory requirements, while at the same time have to improve capability of the stakeholders from private sector to electronically exchange information (B2B and B2G) based on principles of non-discrimination, technological neutrality and fair competition. That might include standard rules for purchasing transport/logistics services online, enabling and simple regulation for e-transport/logistics solutions, reduced tax burden for e-transport/logistics businesses.

International organization such as ESCAP and UNECE are providing support and guidance for establishing legal framework for single window implementation, which is also relevant for transport related single windows. UNECE (2013) Recommendation No.35 for establishing a legal framework for international trade Single Window that addresses legal issues on setting up a single window facility and UNNExT (2012) capacity-building guide on single window legal issues have been briefly presented at Chapter 2 of this Study.



## 7.4 Laying standards for exchange of information

Challenges for data harmonization, standardization and technological requirements as well as challenges related to interoperability and interconnectivity among information systems have been already discussed in parts 6.3 and 6.6 of this Study. Different aspects of interoperability that have to be addressed in accordance with the SWIF have also been identified in the part 6.6 of this Study.

In order to facilitate ability of various information systems for seamless electronic information exchange, it is essential that governments develop national legal environment in conformity with international standards and best practices. National government should follow international standards and guidelines in order to ensure cross-border and regional interoperability. Common rules that define data element names, their meaning, their representations, and the structure of electronic messages have to be applied. Communication protocols for exchange of information may use international ICT guidelines and recommendation and international messaging standards.

Several international organizations such as UNESCAP, UNECE, WCO, ISO, are providing support for addressing the challenges for running efficient and effective data harmonization and standardization projects, providing various instruments such as recommendations and guidelines, some of them been briefly presented in Chapter 2 of this study.

Guidelines and tools developed by international organizations with regard to exchange of information and development of single window include: UN Layout Key for Trade Documents, UN Electronic Data Interchange for Administration, Commerce and Transport Standard (UN/EDIFACT) syntax rules, and XML schemas, Code Lists, United Nations Trade Data Elements Directory (UNTDDED), Core Component Library (CCL), UN/EDIFACT), UNCEFACT (2013) Recommendation 34, UNNExT (2012) Business Process Analysis Guide to Simplify Trade Procedures; the UNNExT (2012) Data Harmonization and Modelling Guide for Single Window Environment, WCO Single window data harmonization guidelines, WCO RKC ICT Guidelines, WCO Data Model.

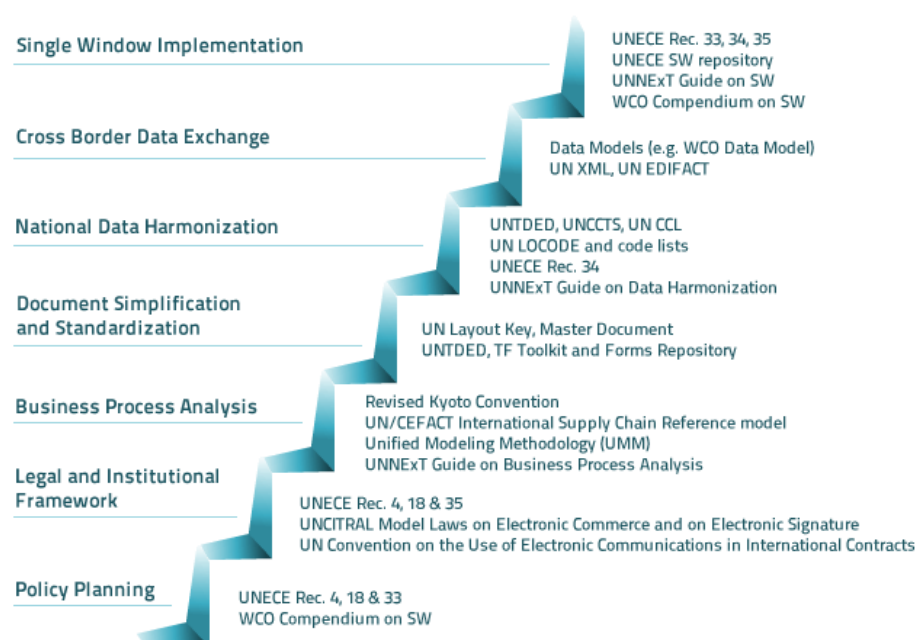
Form approximately 200 EDIFACT messages there are around 50 standard messages for transport and logistics, presented in Annex 5 of this Study. XML based solutions are also covering transport area, and standardization initiatives are supporting their development.<sup>169,170,171</sup>

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<sup>169</sup> UN CEFACT XML Schemas library is available on UNECE website:  
[http://www.unece.org/cefact/xml\\_schemas/index.html](http://www.unece.org/cefact/xml_schemas/index.html)

<sup>170</sup> Universal Business Language (UBL) (Version 2.1 - November 2013), is a library of standard electronic XML business documents, which includes among other transport operations, international freight management and intermodal freight management processes and XML documents. Available at: <http://docs.oasis-open.org/ubl/os-UBL-2.1/UBL-2.1.html>

**Figure 33: Step by Step approach to Single Window implementation**



Source: UNECE - UN/CEFACT, Trade Facilitation Implementation Guide, Single Window Implementation. Accessible at: <http://tfig.unece.org/contents/single-window-implementation.htm>

UNECE is presently working on new recommendation 36, which is particularly addressing single window interoperability in order to provide guidance on the mechanism and systems required for the interconnectivity and interoperability of two or more national (or regional) Single Windows.<sup>172</sup>

## 7.5 Provide platform for cross-border harmonization and sharing experience in integration

Cross-border electronic exchange in transport related single windows could cover various international transport aspects (e.g. transport permits, trans-frontier movement of waste, international customs transit, registration and worthiness certificates, advance manifest, transport documents (e-B/L), etc.). Each country has its own national transport related legislation and it regulates certain transport aspects with other countries with various bilateral/multilateral international institutional arrangements.

<sup>171</sup> ISO standard (ISO 28005-1:2013), Security management systems for the supply chain, contains technical specifications on message structures based on XML for Implementation of a maritime single window system for exchange of electronic information between ships and shore for coastal transit or port calls. Available at: [http://www.iso.org/iso/catalogue\\_detail.htm?csnumber=54105](http://www.iso.org/iso/catalogue_detail.htm?csnumber=54105)

<sup>172</sup> UNECE/UNCEFACT, April 2015, Draft Recommendation and Guidelines on Single Window (Recommendation No.36) (Draft for internal review). Accessible at: [http://www1.unece.org/cefact/platform/download/attachments/48562914/150424+Rec36+Internal+Review+v1\\_1.pdf](http://www1.unece.org/cefact/platform/download/attachments/48562914/150424+Rec36+Internal+Review+v1_1.pdf)

Diversity of national legislation and bilateral/multilateral agreements represents serious challenge for introduction of effective cross-border transport related single windows services as result of divergent and inconsistent practices and complexity of multiple arrangements. Therefore international organizations have important role to provide a platform for harmonization and integration of national transport related aspects including specifics on transport related single windows.

ESCAP's (2007) study "Towards a Harmonized Legal Regime on Transport Facilitation in the ESCAP Region" provides support for harmonization of transport facilitation efforts, analyzing typical elements of sub-regional transport facilitation agreements and structure of transport facilitation bilateral agreements. The study provides guidelines for harmonization and possible ways ahead.

International transport could benefit from harmonization of legislation and implementing practices. The process of harmonization begins with harmonization of related strategic objectives, which may include introduction of specific transport related single window services (e.g. e-AWB/e-B/L data sharing, advanced cargo information, regional paperless transit system). Harmonization and integration could be promoted and facilitated by various international, regional or sub-regional bodies.

For example, ESCAP supported and promoted Regional strategic framework for the facilitation of international road transport, which was adopted with Ministerial declaration on transport development in Asia and the Pacific in 2012.

#### **Box 20: ESCAP Regional Strategic Framework (RSF) for Transport Facilitation**

RSF establishes several common long term targets and approaches, which could guide ESCAP members in formulation of their national transport policies, and provide harmonization of strategic objectives.

##### Common targets for fundamental elements of international road transport:

- wider application of multiple-entry and multilateral road transport permits,
- multiple entry visas for professional drivers and crews of road vehicles,
- application of international conventions on temporary importation of road vehicles,
- third-party insurance through the use of Green Card or similar system,
- unification of vehicle weights and dimensions requirements,
- standardized vehicle registration and inspection certificates.

##### Common approaches for key modalities for international road transport facilitation:

- building an effective legal regime,
- wider application of new technologies,
- development of professional training for international road transport,
- establishment/strengthening of national facilitation coordination mechanisms,
- promotion of joint control at border crossings,
- promotion of economic zones at border crossings, dry ports and logistics centres,
- further application of facilitation tools.

Source: Extracts from ESCAP Booklet, June 2013, Regional Strategic Framework for the Facilitation of International Road Transport

One of the important components of the Regional strategic framework is establishment of the Regional network of legal and technical experts on transport facilitation, and its initial work is also supported and facilitated by ESCAP. This regional network, designed as a forum for exchange of information, coordination, and identification of constraints and solutions for the transport facilitation instruments could have major role in promotion and harmonization efforts.

In 2012 ESCAP members have adopted Resolution 68/3 on “Enabling paperless trade and the cross-border recognition of electronic data and documents for conclusive and sustainable intraregional trade facilitation” which invites the member States to work towards the development of regional arrangements on the facilitation of cross-border paperless trade, which could also include transport components. With this resolution wider application of new technologies, cross-border recognition of electronic data and single window concept is promoted in order to increase efficiency and transparency of international trade and transport transactions while improving regulatory compliance.

Implementation of Resolution 68/3 is supported by activities of United Nations network of experts for paperless trade and transport in Asia and the Pacific (UNNExT). The UNNExT activities include promotion of international standards in this area; training and sharing lessons learned and outcomes from the existing bilateral and sub-regional pilot projects on the recognition and exchange of trade-related electronic data and documents, as well as actions to initiate new projects. The activities related to Resolution 68/3 are closely connected to establishment of Single window environment.

One of the ESCAP supported initiatives of the Resolution 68/3 is drafting of a regional agreement / framework agreement / framework arrangement on facilitation of cross-border paperless trade in Asia and the Pacific with objective to promote cross-border paperless trade by enabling exchange and mutual recognition of trade-related data and documents in electronic form and facilitating interoperability among national and subregional single windows and/or other paperless trade systems.<sup>173</sup>

When developing a platform for cross-border harmonization and integration it has to be considered that both sectors (public and private) should be able to openly share their views and collaborate on cross-border paperless trade and transport issues, having in mind trade and transport facilitation as well as regulatory compliance.

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<sup>173</sup> Article 1 of the Draft text of a regional arrangement for the facilitation of cross-border paperless trade. Accessible at <http://www.unescap.org/sites/default/files/Draft%20Text%20of%20Regional%20Arrangement.pdf>

## 7.6 Provide forum for forging agreements/MOUs required

For specific cross-border initiatives (e.g. regional single window or regional customs transit system) providing an effective forum for forging agreement/MOUs will be necessary.

For example in the case of regional ASEAN Single Window the ASEAN Economic Ministers in 2004 have agreed to establish the Inter-Agency Task Force to facilitate the establishment of the ASW. The Inter-Agency Task Force has drafted “The Agreement to Establish and Implement the ASEAN Single Window”, which was signed by ASEAN Economic Ministers in December 2005. The Protocol to establish and implement the ASEAN Single Window that includes more technical provisions and annexes was signed by ASEAN Finance Ministers in December 2006. ASEAN Single Window Steering Committee (ASWSC) was established as the decision making body and was supported by two working groups namely: the Working Group on Technical Matters (TWG), and the Working Group on Legal and Regulatory Matters (LWG). The ASWSC reports to the Directors General of Customs and the Senior Economic Officials Meeting (SEOM).<sup>174</sup>

For development of ASEAN Customs transit system, a national transit transport coordinating committee was established in each of the Contracting Parties and a transit transport coordinating board was established on sub-regional level in accordance with provisions for institutional arrangements from ASEAN Framework agreement on the facilitation of goods in transit. The national transit transport coordinating committees have role in coordination and implementation of the Agreement at national level, and the transit transport coordinating board composed of senior officials nominated from each Contracting Party and a representative of the ASEAN Secretariat, oversees coordination and supports implementation of the Agreement.

Suggested ESCAP regional agreement on facilitation of cross-border paperless trade in Asia and the Pacific proposes several levels of regional coordinative/collaborative structures:

- Paperless Trade Council - comprising one ministerial-level nominee from each Party and the Executive Secretary of ESCAP;
- Standing Committee - composed of senior representatives of each Party to supervise and coordinate the implementation of the Agreement and submit its recommendations to the Council;

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<sup>174</sup> UNNExT Brief No. 13, May 2015, Towards An Enabling Environment for Paperless Trade - ASEAN Single Window: A Regional Single Window for ASEAN Connectivity. Accessible at: <http://unnex.unescap.org/pub/brief13.pdf>

- Working groups for collaboration on the implementation of specific topics related to adopted action plan - comprising relevant technical or legal experts.

Putting transport facilitation on the agenda of relevant cross-border coordinative structures is one of the necessities for further development of specific cross-border agreements and MoU that will address actual introduction and implementation of cross-border transport related single window services. The progress in establishing cross-border agreements and MoUs for related transport related single window services depends on efficiency of collaboration between the countries concerned and such process could be facilitated and supported by sub-regional or regional organizations such as ESCAP.

# Chapter 8      Conclusions and recommendations

1. The scope for introduction of transport requirements in single window environment is huge and it could cover various areas, for example:

- customs transit (national/regional) and transit guarantees;
- transport/transit regulatory requirements (e.g. transport/transit permits);
- regulatory requirements imposed on carriers/forwarding agents regarding cargo (e.g. cargo manifests, dangerous/restricted goods permits);
- regulatory requirements regarding transport means (e.g. conveyance reporting, clearance of ships in maritime transport);
- operations at sea ports, airports and land-border crossings;
- transport and logistics related (B2B, B2G, G2G) electronic exchange of documents and information (nationally/cross-border).

2. The environment for introduction of transport requirements in single windows is extremely complex and characterized with:

- vast number of stakeholders involved from different sectors (public/private);
- abundance of different information/documents exchanged;
- various related laws, regulations, internal practices.

3. Extending single window environment with introduction of B2B transport related single window services could support simplified and streamlined trade and transport related processes. Extended single window environment should provide data capturing from the IT systems of the private sector, efficient B2B information exchange and reuse of data for B2G transactions through single window systems. Private sector can play a leading role in extension of single windows with B2B components.

Use of transport/logistics networks/systems (e.g. national, port operations related, container management networks/systems) and advanced transport/logistics in-house IT systems could boost efficiency of supply chain operations. The use of such networks/systems is encouraged. Transport/logistics networks and in-house IT systems are expected to become more available and visible due to continuous IT development and adoption of internet technologies. For increased efficiency it is essential to consider providing interoperability and linking the transport/logistics networks and in-house IT systems with present/future single window solutions.

4. Governments and public sector have important role to support introduction of transport related services in single window environment with:



- enabling legislation (e.g. for increased use of electronic documents, harmonized regulatory processes, harmonized and standardized data elements of different transport related regulatory documents), and
- promotion and support of activities for introduction of transport related requirements in single window environment (e.g. awareness campaigns; feasibility studies; developing and publishing functional and technical requirements to support interoperability of private and public IT systems; financing/supporting transport related SW projects; funding entities to develop/implement transport related SW single window solutions; funding development of transport/logistics networks and subsidizing procurement of internal transport/logistics information systems).

5. Introduction of transport related requirements in single window environment is long term process that needs to be carefully managed. There are number of preconditions for successful introduction of single window solutions. The challenges identified (e.g. multi sector and interagency coordination; legal framework; data harmonization, standardization and technological requirements; interoperability and interconnectivity) have to be appropriately addressed.

It is more feasible to introduce transport related single window services with incremental steps one after another, depending on priorities established and capacity of the stakeholders. Various types of single windows (e.g. regulatory single windows, port related single window) could be developed independently with objective to be interlinked/integrated in the future.

Countries interested in introduction of transport related single windows should identify transport related single window components and specific processes that have highest impact on transport facilitation, if included in single window environment, in order to first address such components and processes.

A recent survey<sup>175</sup> indicates that participants consider regulatory component most important in support of transport facilitation if included in single window environment. The regulatory component is followed by B2B commercial component, then by fundamental transport elements and by finally port related component. The survey also indicates the role of specific processes on transport facilitation, if such processes are included in transport related single window environment, as presented in the table below.<sup>176</sup>

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<sup>175</sup> Survey conducted at the ESCAP Expert Group Meeting on Integrated use of Single Window for Transport Facilitation held in Bangkok on 26 November 2015

<sup>176</sup> Outline of the questionnaire and results the Survey are presented in Annex 6 of this Study. Note that the Survey in ESCAP Expert Group Meeting on Integrated use of Single Window for Transport Facilitation held in Bangkok on 26 November 2015, was conducted in very small scale only among eight participants (mainly from public sector) present at the meeting.

**Figure 34: Coverage of transport related processes in single window and their impact to transport facilitation**

Impact	Process included in Single Window environment
High	transit guarantees; transport/transit permits; submission of cargo manifest; notification/permits for special categories of goods; advance regulatory reporting;
Medium	phyto-sanitary requirements; cargo and conveyance tracking; conveyance reporting; health requirements for humans; notifications for release of goods/conveyance; professional qualifications; cargo clearance; preparing formal transport documentation; temperature controlled goods/livestock;
Low	immigration for crew; pollution standards; weight and dimension requirements; booking transport; containers handling; conveyance handling; worthiness certification; third party vehicle insurance; payment of charges; registration of conveyance.

6. There are no one size fits all solution for introduction of transport requirements in single window environment. The countries might consider various scope and different options such as: centralized or distributed single window platform; multiple single window facilities accommodated for the needs of specific sectors; customs centric and port community centric single window systems etc. Studying experiences of other countries and regions in providing transport related single window services and the evolution in development of single windows is valuable source of information for better understanding of opportunities and challenges that could be expected. However replication of such experiences is not possible and specific national circumstances and facilitation goals have to be addressed.

Both centralized and distributed single window options have their own advantages and disadvantages. Centralized single window environment may offer uniform solutions and full integration of the processes covered. However establishing such centralized network may represent serious challenge, even though once such system is set, utilization should be straightforward and more cost efficient in terms of hardware/software maintenance, upgrades, etc. Main challenge to develop centralized single window solution is not only complexity of design but addressing various needs of vast number of stakeholders, which may prefer more clustered and tailored single window solutions. Other disadvantages include increased vulnerability in the case of reduced availability due to system/connection failures and security concerns.

Advantages of distributed systems are in providing more customized solutions and flexibility. Development of such decentralized systems is easier to achieve, however linking several single windows and related systems requires interoperability of the

systems, which could be more complex and challenging to establish. Legal and practical implementation could also represent challenge if efficient coordination is not provided. Decentralized solutions (e.g. separate customs centric single windows and port related single windows) are presently more common option.<sup>177</sup>

7. Interoperability between various single windows as well as interconnection with various transport related systems (e.g. port management systems, port community systems, logistics networks/systems, container tracking systems, internal transport management systems) is imperative for future efficient state of the art single window solutions.

Interoperability challenges have to be addressed on national as well as on cross-border level. When developing strategies for better interconnection of present/future systems various new concepts could be studied and considered, such as:

- extended single window environment (port community systems with B2B components connected to regulatory single window);
- collaborative platforms among inter-organization information system (IOS);
- development of distributed access points (AP) infrastructure (deployed locally and/or at private/public clouds) for communication between various information systems;
- data pipeline concept and support for push and/or pull concepts for information data exchange.

8. Introduction of transport related requirements in single window environment has a potential to bring huge benefits to trade and transport by reducing the costs and removing various barriers and impediments. National single window experiences and findings from single window related projects discussed in this study are clearly confirming such expectations. Streamlined and facilitated trade and transport formalities have to be main driving force behind accelerated expansion of single window services, which will take into consideration transport related requirements. Streamlined and facilitated trade and transport formalities and increased visibility from transparent single window services could positively impact fight against corruption as well.

9. Introduction of transport related single window can have real positive effect on international transport only if transport and transit rights are properly addressed, the burden from requirements for submission of extensive paper-based transport documentation is reduced, inefficient transloading at border crossings from one

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<sup>177</sup> Majority of the participants at the ESCAP Expert Group Meeting on Integrated use of Single Window for Transport Facilitation held in Bangkok on 26 November 2015 have also expressed their view that development of distributed single window systems represents more feasible option.

transportation means to another is eliminated, and where necessary efficient international customs transit system is introduced.

## Way Ahead

1. Developing national strategies and policies for introduction of transport related requirements to single window environment to articulate joint objectives of different stakeholders from private and public sector. Those strategies and policies could be based on specific feasibility studies and should enable clear positioning of transport related single windows in overall trade and transport environment. They should ensure that all related stakeholders could move in same direction and address stakeholders' engagement and possible resistance.

International instruments on single window developed by ESCAP, UNECE, IMO, WCO can provide guidance and support for introduction of transport related requirements in single window environment from the beginning of the process with development of national strategies/policies to actual implementation of single window projects. The land transport border crossings formalities could be supported with ESCAP model on integrated controls explained in Chapter 5 (figure 24) of this study and can be linked to single window.

2. Establishing sustainable private/public coordinative structures with mandate to address key issues for introduction and implementation of transport related single window services including: defining priority areas, identifying specific necessary pre-conditions (e.g. data harmonization, interoperability) and single window business model (e.g. system funded/operated by public authorities or PPP; with or without payment of fees).
3. Initiating, providing support and implementing specific projects for introduction of transport related single window services in present/future single window facilities that may include:
  - introduction and linkages with national/regional paperless customs transit systems;
  - interlinking/integration with other transport related regulatory information systems (e.g. systems for management of transport/transit permits; notifications/permits for special categories of goods);
  - paperless exchange of transport related documents/information in customs clearance (e.g. cargo manifests, advanced regulatory reporting, transport conveyance reporting, cargo and conveyance tracking);
  - introduction/interconnection of transport/logistics networks/systems and systems for efficient port clearance, port management, container management for increased efficiency;

- data harmonization and reuse of data in transport related documents (e.g. data capturing from the source to support options for linking B2B with B2G information exchange);
- extension of regulatory/port single windows with B2B components for improved single window services;
- interlinking/integration of different single windows and other related information systems (e.g. regulatory and port single windows; B2B networks/systems).

4. Once the necessary infrastructure for implementation of national/regional single window is established, and the concept for transport related single window service is successfully proven, then the single window environment could gradually expand and provide more value added services to transport related stakeholders.

## Overview of transport related documents

UNLK classification of transport and related services documents:

Transport and Related Services	<b>Forwarding and Cargo Handling</b>	<ul style="list-style-type: none"> <li>▪ <i>Instructions from customers to forwarders</i>: Forwarding instructions;</li> <li>▪ <i>Goods receipts</i>: Forwarder's certificate of receipt; Forwarder's warehouse receipt; Dock receipt; Warehouse (shed) receipt;</li> <li>▪ <i>Advice documents</i>: Forwarder's advice to import agent; Forwarder's advice to exporter;</li> <li>▪ <i>Authorizations and instructions</i>: Delivery order; Handling order; Gate pass;</li> <li>▪ <i>Administrative documents</i>: Forwarder's invoice; Port charges documents.</li> </ul>
	<b>Transport</b>	<ul style="list-style-type: none"> <li>▪ <i>Contract documents</i>: constituting or evidencing a contract of carriage, such as Universal (multipurpose) transport documents, Sea waybills (Liner waybills, Ocean waybills, River waybills), Bills of lading, Rail and Road consignment notes, Air waybills, Dispatch notes for post parcels, Multimodal (combined) transport documents. Through bills of lading;</li> <li>▪ <i>Receipt document</i>: acknowledging receipt of goods for carriage; Mate's receipt, Acceptance certificates (waterways), Duplicate rail and road consignment notes; Certificate of transport;</li> <li>▪ <i>Contents documents</i>: listing goods in transport units or means of transport; Cargo and Freight manifests, Bordereau, Container manifest (Unit packing list);</li> <li>▪ <i>Administrative and legal documents</i>: Road list; Discharge report, Freight invoice; Letter of indemnity;</li> <li>▪ <i>Notification documents</i>: Booking confirmation, Calling forward notice, Arrival notice, Notices of circumstances preventing delivery or transport, Delivery notice.</li> </ul>
	<b>Insurance</b>	<ul style="list-style-type: none"> <li>▪ <i>Insurance agreements</i>: Insurance contract; Insurance policy; Insurance certificate;</li> <li>▪ <i>Notification documents</i>: Insurance notice; Cover note; and</li> <li>▪ <i>Administrative documents</i>: Premium notice; Insurer's invoice.</li> </ul>

Source: UNECE, 2002, UN Layout Key for Trade Documents - Guidelines for application – Informative Annex to Recommendation No.1, accessible at:

[http://www.unece.org/fileadmin/DAM/cefact/recommendations/rec01/rec01\\_ecetr270.pdf](http://www.unece.org/fileadmin/DAM/cefact/recommendations/rec01/rec01_ecetr270.pdf)

Transport-related documents with background in international conventions, recommendations and other instruments:

- Standard Bill of Lading (International Chamber of Shipping), applicable for direct/through/(combined transport) bills of lading and sea waybills;
- Standard Cargo and Freight Manifests (International Chamber of Shipping), applicable to cargo and freight manifests;
- International Rail Consignment Notes (CIM Convention/SMGS Agreement);
- International Road Consignment Note (CMR Convention);
- Universal Air Waybill (IATA);
- Dispatch Note for post parcels (World Post Convention);

- Negotiable FIATA Multimodal Transport Bill of Lading (FIATA-FBL);
- Non-negotiable FIATA Multimodal Transport Way Bill (FIATA-FWB);
- Goods declaration for transit (Revised Kyoto Convention);
- Dangerous goods declaration (UN/ECE/FAL Rec.11);
- Cargo declaration (IMO FAL Convention).

#### IMO FAL Convention standardized forms for documents and certificates

##### *Documents:*

- General Declaration (FAL form 1)
- Cargo Declaration (FAL form 2)
- Ship's Stores Declaration (FAL form 3)
- Crew's Effects Declaration (FAL form 4)
- Crew List (FAL form 5)
- Passenger List (FAL form 6)
- Dangerous Goods (FAL form 7)

##### *Certificates:*

- International Tonnage Certificate;
- International Load Line Certificate;
- Intact stability booklet; Damage control booklets;
- Minimum safe manning document;
- Certificates for masters, officers or ratings;
- International Oil Pollution Prevention Certificate; Oil Record Book;
- Shipboard Oil Pollution Emergency Plan;
- Garbage Management Plan;
- Garbage Record Book;
- Cargo Securing Manual;
- Document of Compliance and Safety Management Certificate (ISM Code).

Source: IMO website: <http://www.imo.org/OurWork/Facilitation/FormsCertificates/Pages/Default.aspx>



## EU Maritime National Single Windows

EU e-Maritime Single Window initiative has a background in EC Directive 2010/65/EU on reporting formalities applicable to maritime transport for ships arriving in and ships departing from ports situated in EU Member States.<sup>178</sup> This initiative is in line with the EU 2011 White Paper on Single European Transport Area, which among other, advocates integration of monitoring tools by all relevant authorities and full interoperability between ICT systems.<sup>179</sup>

Several EU projects are supporting development of e-Maritime single windows e.g.:

- e-Freight project on European e-freight capabilities for co-modal transport;<sup>180</sup>
- eMAR project on e-Maritime Strategic Framework and Simulation based Validation;<sup>181</sup>
- SKEMA project that offers Interactive Knowledge Platform for Maritime Transport and Logistics;<sup>182</sup>
- AnNa project that support the effective implementation of the EC Directive 2010/65/EU and integration in maritime single window development;<sup>183</sup>
- i-Cargo project that aims at advancing and extending the use of ICT to support new logistics services.<sup>184</sup>

National Single Window Guidelines for maritime transport related to Directive 2010/65/EU define National Single Window (NSW) and provide recommendations on the main issues that need to be considered. The guidelines identify standards and specifications for elements that have to be harmonised, highlight some of the best practices and available tools (e.g. NSW prototype), and suggest the steps that have to be taken for developing the NSW and providing interoperability.

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<sup>178</sup> [European Union, 2010](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:283:0001:0010:EN:PDF), Directive 2010/65/EU of the European Parliament and of the Council of 20 October 2010 on Reporting Formalities for Ships Arriving In and/or Departing From Ports of The Member States and Repealing Directive 2002/6/EC (OJ L283/1, 29.10.2010). Accessible at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:283:0001:0010:EN:PDF>

<sup>179</sup> European Commission, 2011, WHITE PAPER Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system (COM/2011/0144 final). Accessible at: <http://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:52011DC0144>

<sup>180</sup> More information is available on e-Freight project web-site: <http://www.efreightproject.eu>

<sup>181</sup> More information is available on eMAR project web-site: <http://www.emarproject.eu>

<sup>182</sup> More information is available on SKEMA project web-site: <http://www.skematransport.eu>

<sup>183</sup> More information is available on AnNa project web-site: <http://www.annamsw.eu>

<sup>184</sup> More information is available on i-Cargo project web-site: <http://www.i-cargo.eu/content/about-icargo-project>

Reporting formalities covered with EU Maritime National Single Window are categorized in three groups:

- reporting formalities based on legal acts on EU level (e.g. port notification, border checks on persons, HAZMAT notification, waste notification, security notification, entry summary declaration);
- notifications based on international conventions (e.g. FAL forms, maritime declaration of health);
- other reporting requirements based on national legislation of the Member States.<sup>185</sup>

In order to support data harmonization of the NSW reporting formalities, the eMS<sup>186</sup> sub-group on data mapping and functionalities has produced a Data Mapping Report.<sup>187</sup> The report identifies data elements for each formality; provides technical definitions and business rules; and makes references to messaging standards (e.g. UN/EDIFACT, WCO data model, ISO 28005<sup>188</sup>).

Entry Summary Declaration (ENS) that has to be submitted to EU Member States Customs authorities is not included in the data mapping report. Different NSW solutions developed by Member States imply few options for submission of ENS. Several Member States are using a cargo manifest with more detailed cargo-related information as alternative to FAL form 2 (Cargo Declaration).<sup>189</sup>

European Commission and Member states are developing harmonized electronic cargo manifest (eManifest), which will be transmitted electronically through the NSW. The eManifest, is also part of the Blue Belt initiative<sup>190</sup> that should provide minimum administrative burden to the ships which operate within EU internal market. The eManifest, when lodged in an EU port, will allow customs to easily determine the status of the goods, even if a vessel has called at a third country port but European Union goods remained on board.<sup>191</sup>

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<sup>185</sup> European Commission, Directorate D – Logistics, maritime & land transport and passenger rights, 2015, National Single Window Guidelines (Final version 17 April 2015) (Part 4.2, p.9 and Annex 1, p.33-35). Accessible at: <http://www.annamsw.eu/component/zoo/item/eu-nsw-guidelines-april-2015.html?Itemid=176>

<sup>186</sup> Expert group on Maritime administrative simplification and electronic information services: <http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=2593>

<sup>187</sup> European Commission, Directorate D – Logistics, maritime & land transport and passenger rights, 2015, Directive 2010/65/EU on Reporting Formalities – Data mapping report (Final version 1.6 - Final 25 Feb. 2015). Accessible at: <http://www.annamsw.eu/component/zoo/item/eu-sw-data-mapping-report-final-february-2015.html>

<sup>188</sup> ISO 28005-1:2013 Security management systems for the supply chain - Electronic port clearance (EPC)

<sup>189</sup> European Commission, Directorate D – Logistics, maritime & land transport and passenger rights, 2015, National Single Window Guidelines (Final version 17 April 2015) (Part 8.1, p.21 and Annex 2, p.36). Accessible at: <http://www.annamsw.eu/component/zoo/item/eu-nsw-guidelines-april-2015.html?Itemid=176>

<sup>190</sup> EU Blue Belt initiative: [http://ec.europa.eu/transport/modes/maritime/news/bluebelt\\_en.htm](http://ec.europa.eu/transport/modes/maritime/news/bluebelt_en.htm) and EC, 2013, Communication from the Commission: Blue Belt, a Single Transport Area for shipping (COM/2013/510 final): Accessible at: <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52013DC0510&from=EN>

<sup>191</sup> EC, 2014, Report From The Commission To The European Parliament And The Council on the functioning of Directive 2010/65/EU on reporting formalities for ships arriving in and/or departing from ports of the Member States (COM/2014/320 final): [http://ec.europa.eu/transport/modes/maritime/ports/doc/com\(2014\)320.pdf](http://ec.europa.eu/transport/modes/maritime/ports/doc/com(2014)320.pdf)

The NSW should serve as a two-way communication channel between authorities and data providers. The NSW enables communication with data providers such as: exchange of notifications and ship clearance and receipts (e.g. positive or negative in case of syntax errors, incomplete information, etc.), as well as relevant acknowledgment (e.g. approval, denial, additional information needed), once that relevant information is exchanged with the authorities concerned. The business processes for submitting / updating notifications, receiving receipt and acknowledgement messages should be harmonised at EU level.

Main NSW features identified with EC NSW Guidelines are:

- Interfaces to ship data providers:
  - system to system interface (e.g. submitting notification/receiving receipt in NSW through system interface) or
  - web user interface in form of lightweight user application where all functionalities are grouped and the data elements are organized in separate blocks of information (e.g. Ship, Port, Dangerous goods, Waste, etc.);
- Port call identifier - unique identifier for each ship call (generated or issued by NSW with possible reference to the voyage number);
- Content of notifications – distinct identifies for different notification and defined content as indicated in Annex 2 of EC Data mapping report;<sup>192</sup>
- NSW data quality – provided by establishment of common data quality validation rules; as well as national SSN data quality where validation is carried out by the central SSN system;
- Use of reference data (e.g. use of data bases embedded in the NSW or linked to NSW to obtain data elements);
- Re-use of data (e.g. from other notifications, from previous calls, available data submitted by other agents, available data in SSN systems);
- Ship data providers configuration and access rights – backed by ship data providers registration and controlled access to NSW;
- Authorities configuration – that defines involvement of each relevant authority and necessary data elements to be exchanged in order to respond to the regulatory requirements, which they are responsible for;
- Communication of decisions to ship data providers (e.g. systematic clearance, silent clearance, or no clearance – with communication of decision outside NSW).

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<sup>192</sup> European Commission, Directorate D – Logistics, maritime & land transport and passenger rights, 2015, Directive 2010/65/EU on Reporting Formalities – Data mapping report (Final version 1.6 - Final 25 Feb. 2015). Accessible at: <http://www.annamsw.eu/component/zoo/item/eu-sw-data-mapping-report-final-february-2015.html>

Several general requirements have to be harmonized at EU level such as:

- Data storage requirements (same as SSN requirements) with minimum period for data storage (online – 2 months; offline 5 years);
- Availability (same as SSN requirements) – minimum 99 per cent over period on one year and maximum permissible interruption 12 hours;
- Security – with mechanisms to ensure non-repudiation and traceability;
- Personal data protection measures;
- Classification of the information (e.g. classified/unclassified) with allocated appropriate security measures.

### **Maritime NSW prototype**

European Maritime Safety Agency (EMSA) is leading the demonstration project for setting up a prototype of a National Single Window (NSW prototype), which allows reporting of all formalities required by Directive 2010/65/EU.<sup>193</sup> The project has developed software and service components that enable data flows between the NSW, the shipping industry, public authorities and SSN.

Present NSW prototype has following characteristics/limitations:

- It is interfaced directly with the central SSN system (it simulates the national SSN system and does not cover the interfaces with the existing national SSN);
- It is built on centralised approach as unique NSW at national level, which distributes the information to the relevant national and local authorities. Such centralized approach may not be suitable to some Member States that already have advanced single window solutions introduced;
- Does not cover interface with existing port community systems;
- Includes both, system-to-system and a web interface with ship data providers;
- Supports authentication of users by the NSW;
- Provides data exchange between the ship data provider and the NSW based on ISO 28005 XML standard (EDIFACT standard for the exchange of messages is not implemented in the prototype).<sup>194</sup>

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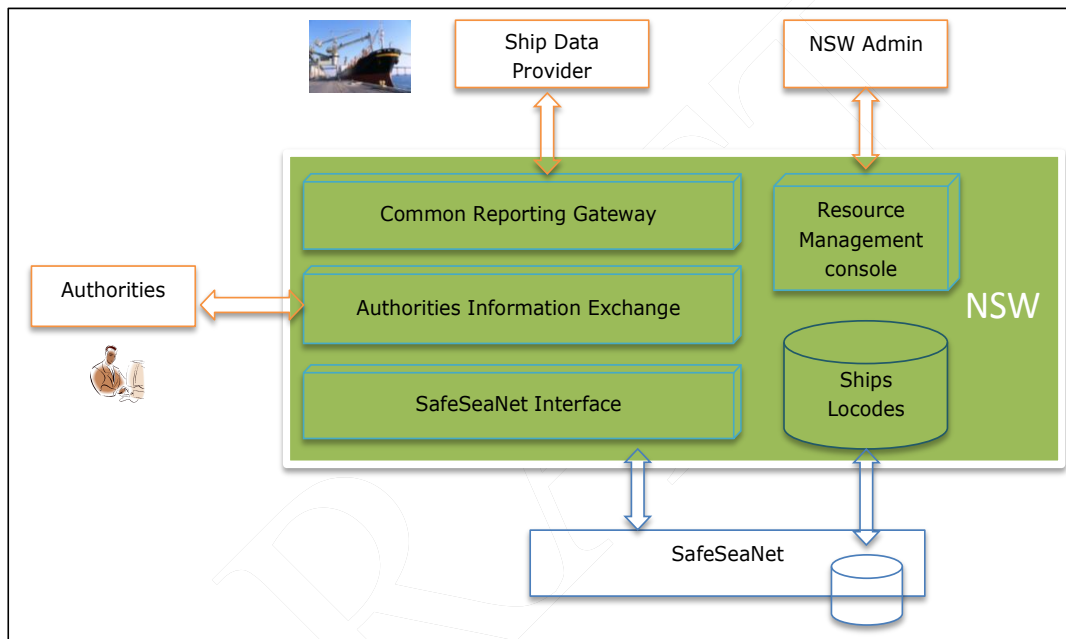
<sup>193</sup> More information is available on EMSA web-site: <http://emsa.europa.eu/related-projects/nsw.html>

<sup>194</sup> Based on NSW design leading principles available on EMSA web-site (last accessed 10.06.2015): <http://emsa.europa.eu/nsw/download/2765/1934/23.html>

The NSW prototype has three main modules:

- The Common Reporting Gateway - a standardized reporting interface for the Shipping Industry.
- The Authority Information Exchange module – that distributes the information reported to the relevant authorities and records their decisions (it also includes the SSN interface module).
- The Resource Management Console – that handles the administration of the system. Ship and a location database of this module are automatically synchronized with ship details and LOCODES databases from SSN.<sup>195</sup>

**Figure 1: The architecture of the NSW prototype:**



Source: European Commission, Directorate D – Logistics, maritime & land transport and passenger rights, 2015, National Single Window Guidelines (Final version 17 April 2015). (Annex 3 Figure 1, p.39)

EMSA is making the NSW prototype software available to Member States on request. The Member States could use the prototype as a complete NSW solution or they may use only some of its components, if that is more suitable for them taking in consideration their national specifics with regard to organization of information systems of relevant agencies and national SSN systems. EU Member States have option to re-use and adapt the NSW prototype modules. EMSA could make available to the Member States the system design documentation and the actual software (including the source code) and offer technical assistance.

<sup>195</sup> European Commission, Directorate D – Logistics, maritime & land transport and passenger rights, 2015, National Single Window Guidelines (Final version 17 April 2015) (Annex 3, p.37-41). Accessible at: <http://www.annamsw.eu/component/zoo/item/eu-nsw-guidelines-april-2015.html?Itemid=176>

If the Member States choose to continue using the existing national SSN system, a system-to-system interface would need to be implemented. By re-using modules from the NSW prototype Member States could develop suitable option e.g.:

- full NSW solutions (in that case the prototype may have to be upgraded with additional links to the existing national systems (e.g. customs, port authorities, etc.), Port Community Systems or the national SSN system);
- bridge to SafeSeaNet; or
- reporting gateway for shipping Industry.<sup>196</sup>

### **Maritime NSW in relation to wider e-Freight an e-Maritime context**

Current activities for establishing EU Maritime NSWs, as well as future options for development of more integrated e-Maritime NSW solutions have to be put in wider context, regarding maritime transport and international supply chain. Several EU projects (e.g. e-Freight, eMAR, iCargo) have been addressing various aspects of international transport and relations to single window concept.

EU e-Freight initiative fosters a vision of paperless freight transport processes where an electronic flow of information is linked to the physical flow of goods and overall framework for information exchange is established to cover whole supply chain. E-Freight project identifies several key issues to be addressed including single transport document for all modes of transport and development of next generation single windows to streamline cargo and traffic information exchange between stakeholders involved.<sup>197</sup>

The e-Freight common strategic framework includes information exchanged:

- between logistics demand and logistics supply:
  - **TSD:** Transport Service description (a standard description of transport services suitable for automatic detection);
  - **TEP:** Transport Execution Plan (booking/transport instruction describing all the information needed related for transport service to the execution);
  - **GII:** Goods item Itinerary, (describing the different stages through which the cargo will be transported);
  - **TES:** Transport Execution Status (providing information about the progress of the transport and cargo (and vehicle) condition);
  - **MWB:** an electronic multimodal Waybill (signifying that an agreement to transport cargo has been reached);

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<sup>196</sup> European Commission, Directorate D – Logistics, maritime & land transport and passenger rights, 2015, National Single Window Guidelines (Final version 17 April 2015) (Annex 3, p.39-41). Accessible at: <http://www.annamsw.eu/component/zoo/item/eu-nsw-guidelines-april-2015.html?Itemid=176>

<sup>197</sup> The EU e-Freight initiative, e-Freight project website (last accessed 12.06.2015): <http://www.efreightproject.eu/knowledge/defaultinfo.aspx?areaid=47&index=2>



- between logistics supply and transportation network management:
  - **TPS:** Transport Progress Status, (assisting in establishing the best possible arrival time estimates);
- between logistics supply and regulation enforcement:
  - **CRS:** Common Reporting Schema, (providing a unified way of informing authorities about transport including all information necessary for all forms of reporting to authorities).<sup>198</sup>

e-Freight project has developed standardized messages<sup>199</sup> for key processes and a concept for multimodal Single Window, which could facilitate exchange of electronic regulatory information, and support stakeholders in all transport modes.

Next generation national single windows concept is addressing issues of integration and linking between Maritime Single Window and Customs Single window as well as connecting national single window of Member States. e-Freight project deliverables include Reference Solutions for Next Generation National Single Windows<sup>200</sup> and Reference Solutions for Central EU National Single Window Support Services.<sup>201</sup>

The eMAR project, is building on e-Freight project deliverables with focus on e-Maritime solutions. This project EMAR projects has examined some current state-of-the-art e-maritime solutions from several ports in EU (port community systems and single windows) and has analyzed in detail e-services for maritime transport and port operations.

The eMAR project has developed e-Maritime Strategic Framework (EMSF) and conceptual architecture that supports development and operation of interoperable applications, which can exchange information with other applications using eMAR Common Framework messages. The eMAR Ecosystem applications can be established and connected using different platforms/tools to produce compatible services. eMAR endeavors to support development of “small apps with high level of robustness and usability addressing the needs of SMEs and functionality gaps to promote integration for maritime logistics services in the EU transport system.”<sup>202</sup>

<sup>198</sup> Jan Tore Pedersen, 2011, e-Freight project, One Common Framework for Information and Communication Systems in Transport and Logistics – Facilitating Interoperability. Accessible at: <http://www.efreightproject.eu/knowledge/DownloadFile.aspx?tableName=tblSubjectArticles&field=PDF%20Filename&idField=subjectArticleID&id=516>.

<sup>199</sup> Standardized messages has been included in Universal Business Language (UBL) (Version 2.1 - November 2013) library of standard electronic XML business documents. Available at: <http://docs.oasis-open.org/ubl/os-UBL-2.1/UBL-2.1.html>

<sup>200</sup> E-Freight project, 2011, D3.2 – Reference Solutions for Next Generation National Single Windows. Accessible at: <http://www.efreightproject.eu/uploadfiles/e-Freight%20D3.2%20Reference%20Solutions%20for%20Next%20Generation%20National%20Single%20Windows.pdf>

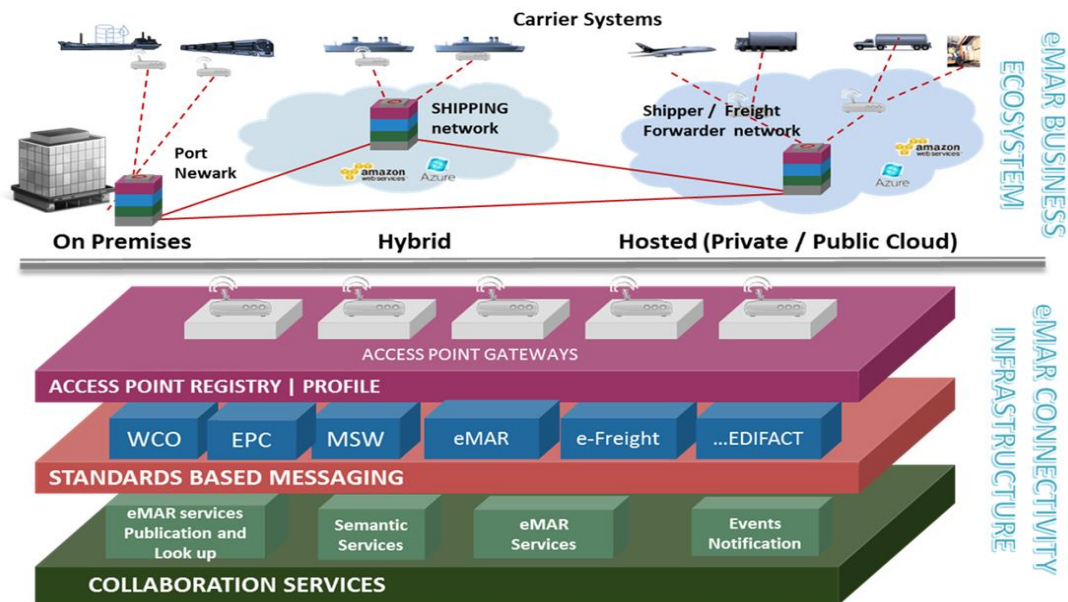
<sup>201</sup> E-Freight Project, 2013, D3.4 – Reference Solutions for Central EU National Single Window Support Services. Accessible at: <http://www.efreightproject.eu/uploadfiles/D3.4%20e-Freight%20Reference%20solutions%20for%20Central%20EU%20level%20Support%20Services%20for%20NGNSW.pdf>

<sup>202</sup> EMAR Project, 2014, D2.1: eMAR Ecosystem (p.42). Accessible at: [http://www.emarproject.eu/uploadfiles/deliverables/eMAR\\_D2.1\\_eMAR%20Ecosystem\\_Final%20Published\\_V0.2.pdf.pdf](http://www.emarproject.eu/uploadfiles/deliverables/eMAR_D2.1_eMAR%20Ecosystem_Final%20Published_V0.2.pdf.pdf)



The eMAR Ecosystem architecture could be presented in different levels (e.g. business and infrastructure) for smart deployment of these applications and related components. eMAR connectivity infrastructure enables creation of communication channels for information exchange using eMAR messages through existing standards or eMAR Access Points.

**Figure 2: eMAR Ecosystem Architecture**



Source: EMAR Project, 2014, D2.1: eMAR Ecosystem (Figure 8 p.35)

In order to provide higher customization and flexibility for the specific needs of business community, implementation of connectivity and application functions can follow different scenario options. The architecture components can be optionally deployed on premises, hybrid or hosted in the cloud (private or public). For example a hybrid model offers a combination of the two (the public and the private clouds), which enables setting up gateways/access points in the public cloud, but storing vital company data and information only on premises or in a private cloud.<sup>203</sup>

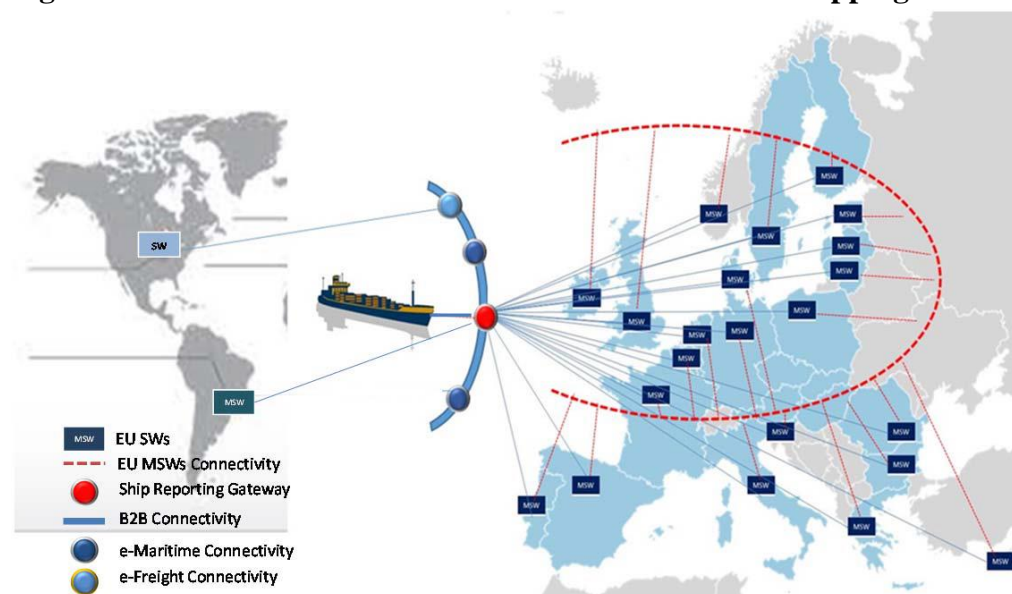
EMAR project and other related projects (e-Freight and iCargo project) advocate development of access points (AP) infrastructure between the stakeholders involved. AP infrastructure could have many advantages against presently dominant centralized solutions for information exchange (e.g. greater flexibility for interaction, integration with existing systems and new systems). AP technology enables communication between a user's information systems, the eMAR Ecosystem business applications and components, and services exposed through other access points. AP concept allows using messages (which could be understood as equivalent for secure email for e-Maritime communication) without a need for centralized platform.<sup>204</sup>

<sup>203</sup> Source: EMAR Project, 2014, D2.1: eMAR Ecosystem (p.35-41). Accessible at: [http://www.emarproject.eu/uploadfiles/deliverables/eMAR\\_D2.1\\_eMAR%20Ecosystem\\_Final%20Published\\_V0.2.pdf.pdf](http://www.emarproject.eu/uploadfiles/deliverables/eMAR_D2.1_eMAR%20Ecosystem_Final%20Published_V0.2.pdf.pdf)

<sup>204</sup> Access point infrastructure explained in details in deliverable 2.2 of EMAR Project, 2014, D2.2 Connectivity and Information Management. Accessible at: [http://www.emarproject.eu/uploadfiles/eMAR\\_D2.2\\_Connectivity%20and%20Information%20Management\\_\\_Final%20Published\\_V0.2.pdf](http://www.emarproject.eu/uploadfiles/eMAR_D2.2_Connectivity%20and%20Information%20Management__Final%20Published_V0.2.pdf)

The EMAR Project has produced a specification of National Single Windows with regard to EU Maritime Single Window development,<sup>205</sup> and EMAR national single window application.<sup>206</sup> The application developed (i-Ship) provides application software that shipping Industry representatives could use to fulfill their reporting obligations to European Maritime and Custom Authorities. It is cloud based and it represents “European common reporting gateway to all reporting nodes” (port community system or MSW, Customs) in Europe.

**Figure 3: Vision for interconnected e-Maritime SWs and shipping networks**



Source: eMAR Project, 2014, D4.5 Specification of National Single Windows (Figure 7a, p.29)

EMAR Project highlights that long-term development strategies for e-Maritime single window have to make reporting requirement easier for shipping industry; enable efficient regulation supervision and enforcement based on timely information for risk management; and provide smooth information exchange with third party information at multinational, EU and international level. Policy support for harmonization of EU Maritime Single windows is important precondition for effective integration of business and compliance solutions. Providing interconnectivity of different single windows and stakeholder information sources and international harmonization is also very important for future development. Options for extension of EU Maritime Single Window solutions could be considered, where other parties (e.g. USA and Asia maritime single windows) might accept EU standard messages and other way round.<sup>207</sup>

<sup>205</sup> eMAR Project, 2014, D4.5 Specification of National Single Windows – Part 1- EU Maritime Single Window development. Accessible at: [http://www.emarproject.eu/uploadfiles/D4.5%20National%20Single%20Window%20Part%201\\_Final%20Published\\_V0.1.pdf](http://www.emarproject.eu/uploadfiles/D4.5%20National%20Single%20Window%20Part%201_Final%20Published_V0.1.pdf)

<sup>206</sup> eMAR Project, D4.6 e-MAR NSW application. Accessible at: [http://www.emarproject.eu/uploadfiles/D4.6%20e-MAR%20NSW%20application\\_Final.pdf](http://www.emarproject.eu/uploadfiles/D4.6%20e-MAR%20NSW%20application_Final.pdf)

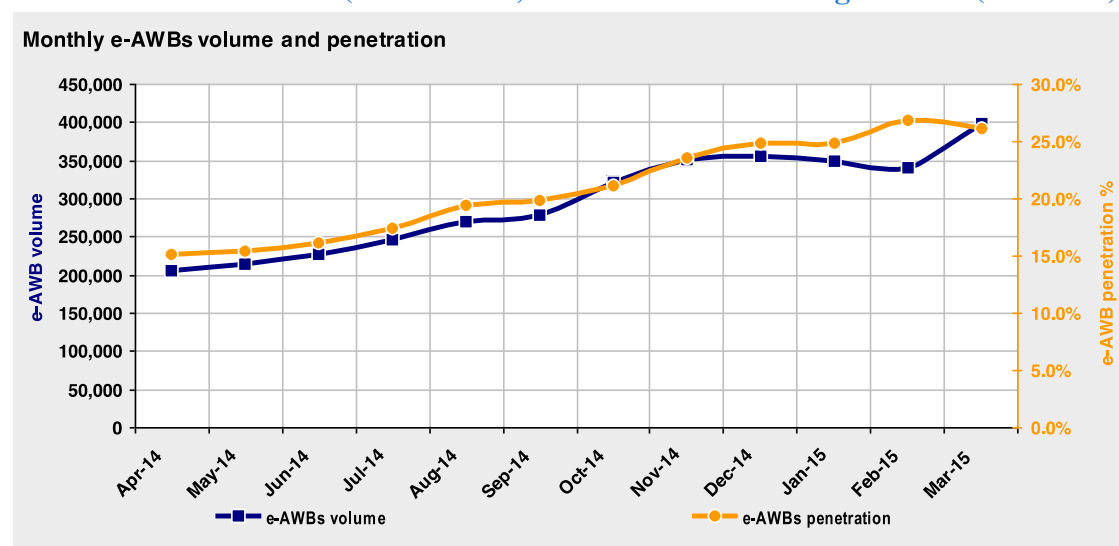
<sup>207</sup> eMAR Project, 2014, D4.5 Specification of National Single Windows Accessible at: [http://www.emarproject.eu/uploadfiles/D4.5%20National%20Single%20Window%20Part%201\\_Final%20Published\\_V0.1.pdf](http://www.emarproject.eu/uploadfiles/D4.5%20National%20Single%20Window%20Part%201_Final%20Published_V0.1.pdf)

## IATA e-AWB

## e-AWB volume and penetration

Current Status - 26.2% (March 2015)

Year-End Target - 45% (Dec 2015)



Source: IATA website: <https://www.iata.org/whatwedo/cargo/e/awb/Pages/index.aspx> (e-AWB international monthly report - March 2015. Available at: <https://www.iata.org/whatwedo/cargo/e/awb/Documents/e-awb-monthly-report-r17.pdf>)

## IATA e-Freight capability (reported already live / by region)

Location	IATA Region	e-freight Capability Target Status	e-freight Domestic Capable	e-AWB Capable Import	e-AWB Capable Export	e-AWB Capable Transit	e-AWB capable Trans-shipment
Australia (AU)	Asia Pacific	Already live	No	Conditional	Conditional	Conditional	Conditional
Japan (JP)	Asia Pacific	Already live	No	Conditional	Conditional	Conditional	Conditional
Korea (South) (KR)	Asia Pacific	Already live	Yes	Conditional	Conditional	Yes	Conditional
Malaysia (MY)	Asia Pacific	Already live	No	Conditional	Conditional	Conditional	Conditional
New Zealand (NZ)	Asia Pacific	Already live	No	Yes	Yes	Yes	Yes
Singapore (SG)	Asia Pacific	Already live	No	Conditional	Yes	Yes	Yes
Thailand (TH)	Asia Pacific	Already live	No	No	No	No	No
Hong Kong (SAR), China (HK)	North Asia	Already live	No	Yes	Yes	Yes	Yes
Chinese Taipei (TW)	North Asia	Already live	No	Conditional	Conditional	Conditional	Conditional
United Arab Emirates (AE)	Mena	Already live	Yes	Conditional	Conditional	Conditional	Conditional
Kenya (KE)	Africa	Already live	No	No	No	No	No

Location	IATA Region	e-freight Capability Target Status	e-freight Domestic Capable	e-AWB Capable Import	e-AWB Capable Export	e-AWB Capable Transit	e-AWB capable Trans-shipment
Mauritius (MU)	Africa	Already live	No	No Information	No Information	No Information	No Information
South Africa (ZA)	Africa	Already live	No	Yes	Yes	Yes	Yes
Austria (AT)	Europe	Already live	No	Conditional	Conditional	Yes	Yes
Belgium (BE)	Europe	Already live	No	Yes	Conditional	Yes	Yes
Cyprus (CY)	Europe	Already live	No	Conditional	Conditional	Conditional	Conditional
Czech Republic (CZ)	Europe	Already live	No	Conditional	Conditional	Conditional	Conditional
Denmark (DK)	Europe	Already live	No	Yes	Yes	Yes	Yes
Finland (FI)	Europe	Already live	No	Yes	Yes	Yes	Yes
France (FR)	Europe	Already live	No	Conditional	Conditional	Conditional	Conditional
Germany (DE)	Europe	Already live	Yes	Conditional	Conditional	Yes	Yes
Hungary (HU)	Europe	Already live	No	Yes	Yes	Yes	Yes
Iceland (IS)	Europe	Already live	No	Yes	Yes	No Information	No Information
Ireland (IE)	Europe	Already live	No	Yes	Yes	Yes	Yes
Israel (IL)	Europe	Already live	No	Conditional	Conditional	Conditional	Conditional
Italy (IT)	Europe	Already live	No	Conditional	Yes	Yes	Yes
Luxembourg (LU)	Europe	Already live	No	No Information	No Information	No Information	No Information
Malta (MT)	Europe	Already live	No	Yes	Yes	Yes	Yes
Netherlands (NL)	Europe	Already live	No	Yes	Yes	Yes	Yes
Norway (NO)	Europe	Already live	Yes	Yes	Yes	Yes	Yes
Romania (RO)	Europe	Already live	No	Conditional	Conditional	Conditional	Conditional
Slovakia (SK)	Europe	Already live	No	No Information	No Information	No Information	No Information
Slovenia (SI)	Europe	Already live	No	No Information	No Information	No Information	No Information
Spain (ES)	Europe	Already live	Yes	Yes	Yes	Yes	Conditional
Sweden (SE)	Europe	Already live	Yes	Yes	Yes	Yes	Yes
Switzerland (CH)	Europe	Already live	Yes	Yes	Conditional	Yes	Yes
United Kingdom (GB)	Europe	Already live	No	Yes	Yes	Yes	Yes
Canada (CA)	North America	Already live	No	Yes	Yes	Yes	Yes

Location	IATA Region	e-freight Capability Target Status	e-freight Domestic Capable	e-AWB Capable Import	e-AWB Capable Export	e-AWB Capable Transit	e-AWB capable Trans-shipment
United States of America (US)	North America	Already live	Yes	Yes	Yes	Yes	Yes
Chile (CL)	The Americas	Already live	No	Conditional	Conditional	No	No
Colombia (CO)	The Americas	Already live	No	No	No	No	No
Mexico (MX)	The Americas	Already live	No	Conditional	Conditional	Conditional	Conditional

#### e-AWB Status Colours

Green	Yes: i. AWB data never needed ii. OR: AWB data needed on exception and laser printed paper AWB can then be provided
Orange	Conditional: i. AWB data needed on exception and must be provided electronically (no paper AWB accepted) ii. OR: AWB data needed systematically and can be provided electronically iii. OR: AWB data needed systematically and can be provided on laser printer paper iv. OR: Some airports are not aware of central regulations that are compatible with e-AWB and continue requesting the paper AWB systematically
Red	No: All other cases
White	No information available at this time

Source: Based on IATA e-Cargo Matchmaker report for the locations where the e-AWB capability is already alive  
<https://matchmaker.iata.org/efReport/countryStatus> (last accessed on 15.06.2015)

## Examples of Cargo Community Systems

### e-AWB and e-freight implementation at Hong Kong International Airport

Hong Kong International Airport (HKIA) is one of the busiest airports in the world for international air cargo and ranked as the top airport of origin by e-AWB volume. Some of the airlines, which use HKIA as primary hub, such as: Cathay Pacific Airways (CX) and Dragonair (KA) have reached 100% e-AWB implementation for all export shipments since 2011. IATA case studies analyse the benefits e-freight implementation for airlines and freight forwarders based on Hong Kong experience.<sup>208</sup>

Export processes at HKIA start with delivery of the freight at the airport cargo terminal (prior submission of the freight documentation). The ground handler, acting as a neutral party captures in its web application information on the number of delivered pieces, the overall weight, and dimensions. The freight forwarder can access those data from its own system or through the airline system and finalize the freight documentation (e.g. air waybill, the house air waybill and the house manifest). Freight forwarders have to key in their systems air waybill and house manifest data and send their data (e-AWB) using direct host-to-host connection to the airline (e.g. Cathay Pacific). The forwarders, which do not have system capability for sending e-AWB, can use Ezycargo Internet application.<sup>209</sup>

Ezycargo is developed by Global Logistics System (HK) Co. Ltd. (GLSHK), (previously known under the brand name Traxon-HK™), as internet service portal for support of air cargo shipment processes. The Ezycargo solution offers comprehensive range of functions including: electronic bookings, air waybill stock management and air waybill printing, electronic distribution of master and house air waybill data. Ezycargo is directly connected with four carriers and provides linkages to more than sixty carriers through its Cargo Community System (CCS).<sup>210</sup>

<sup>208</sup> IATA, 2012, Case Study: The benefits of 100% e-AWB and e-freight implementation; The Case of Cathay Pacific. Accessible at: <http://www.iata.org/whatwedo/cargo/e/efreight/documents/e-freight-case-study-cathay-pacific.pdf> and

IATA, 2013, Case Study: The Benefits of e-freight for a Network Freight Forwarder; The case of Kuehne+Nagel in Hong Kong. Accessible at: <http://www.iata.org/whatwedo/cargo/e/Documents/full-case-study-kn.pdf>

<sup>209</sup> IATA, 2012, Case Study: The benefits of 100% e-AWB and e-freight implementation; The Case of Cathay Pacific (p.14). Accessible at: <http://www.iata.org/whatwedo/cargo/e/efreight/documents/e-freight-case-study-cathay-pacific.pdf>

<sup>210</sup> Ezycargo website FAQ (last accessed 17.06.2015): <http://www.ezycargo.com/en/faq.html>

Identified benefits of e-freight implementation at Hong Kong International Airport include: increased productivity, elimination of operational tasks, elimination of duplicated data entry, improved access to information and faster treatment of shipment, reduced costs for handling/storage of paper documents, improved customer services, increased quality of services and level of security.<sup>211</sup>

Productivity gains are examined for several scenarios for removing pouches for commercial documents and use of 100% e-AWB/e-House Manifest. The case of Cathay Pacific in Hong Kong shows that nearly 20% of total productivity gains are achieved with implementation of 100% e-AWB and 100% e-House Manifest. Further productivity gains could be obtained with reduction of document pouch, and such gains may reach up to nearly 50% of total productivity gains if 100% of shipments are without pouch.<sup>212</sup>

The case of Kuehne+Nagel in Hong Kong examines various options for supply chain data integration with regard to e-freight electronic: shipper-forwarder integration; airline-ground handler-forwarder integration; and forwarder (origin) - forwarder (destination) integration. Analysis is showing that e-freight implementation brings between 8% and 44% time saving for the operations of a multinational freight forwarder, depending on implementation scenarios.<sup>213</sup>

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<sup>211</sup> IATA, 2012, Case Study: The benefits of 100% e-AWB and e-freight implementation; The Case of Cathay Pacific (p.19-23). Accessible at: <http://www.iata.org/whatwedo/cargo/e/efreight/documents/e-freight-case-study-cathay-pacific.pdf>

<sup>212</sup> IATA, 2012, Case Study: The benefits of 100% e-AWB and e-freight implementation; The Case of Cathay Pacific (p.4). Accessible at: <http://www.iata.org/whatwedo/cargo/e/efreight/documents/e-freight-case-study-cathay-pacific.pdf>

<sup>213</sup> IATA, 2013, Case Study: The Benefits of e-freight for a Network Freight Forwarder; The case of Kuehne+Nagel in Hong Kong. Accessible at: <http://www.iata.org/whatwedo/cargo/e/Documents/full-case-study-kn.pdf>



### **e-AWB handling and Cargo Community Network in Singapore**

In order to support and increase the e-AWB penetration, the Singapore e-AWB working group has developed e-AWB handling guidelines for Singapore. For e-fright compatible processes in Singapore it was recommended that no physical Master Air Waybill (MAWB) or House Manifest (FHL) should be tendered by the forwarder to any airline and the physical documents have to be replaced with relevant messages for all shipments prior to lodging-in their cargo at the acceptance counter.

The e-AWB messages (e.g. FWB/XFWB) in Singapore may be sent via:

- CCNhub portal at URL <http://www.ccnhub.com/en/>
- Airline's individual e-AWB platform site
- Forwarder's in-house computer system with gateway connections to CCNhub
- Direct host-to-host connection between airline and forwarder systems
- Direct host-to-host connection between airline and forwarder host system gateway IT provider

The airlines shall determine whether the shipment qualifies as e-AWB, and act accordingly. Once the FWB data matches the actual shipment, airline will send out FSU/RCS to conclude the contract.<sup>214</sup>

Singapore's Cargo Community Network (CCN) is providing a wide range of cargo community systems (CCS) solutions to the air cargo industry including eAWB service. CCN's e-AWB service covers end-to-end process from FWB creation to accounting settlement. This solution serves as central depository and archive for eAWB and facilitates related processing and sharing of information across agents and airlines.

CCN's eAWB integrated service improves efficiency, provides better visibility, and increases FWB quality.<sup>215</sup>

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<sup>214</sup> Singapore e-AWB working group, e-AWB Handling Guideline – Singapore (version 5.0). Accessible at: <http://www.iata.org/whatwedo/cargo/eawb/Documents/e-awb-handling-guidelines-sg.pdf>

<sup>215</sup> Cargo Community Network web-site (last accessed 18.06.2015): <http://www.ccn.com.sg/products-services>

### **Implementation of e-freight initiative at CSI Airport in Mumbai, India**

Mumbai Chattrapathi Shivaji International (CSI) Airport is one of India's major international airports and its air cargo holds the leading position with the highest air cargo throughput handled. GVK-Mumbai International Airport Limited (GVK MIAL), the custodian of the air cargo terminal, supports the e-freight initiative and state-of-the art projects to improve efficiency of air transport processes.<sup>216</sup> In 2014 the airport cargo community system for CSI Airport has been introduced known as GVK MIAL Air Xchange (GMAX).<sup>217</sup>

GMAX provides elimination of the AWB hard copy at export cargo acceptance. Paperless air freight handling has been supported with implementation other related initiatives such as advance shipment information in exports; online delivery order message for master AWB and house AWB in imports; automated vehicle token generation in exports to provide real time update of cargo vehicles.<sup>218</sup>

GMAX is developed on the basis of UPLIFT (Universal Platform for Logistics and Integrated Freight Transport), a joint initiative between Air Cargo Agents Association of India (ACAAI) and Kale Logistics to create a cargo community platform.<sup>219</sup> UPLIFT provides electronic communication between freight forwarding and custom house agent (CHA) organizations and other stakeholders like shippers, consignees, airports, seaports, airlines, transporters, customs, custodians etc.

GMAX/UPLIFT key features include: single point of shipment data entry for shippers, electronic transmission of shipment documents and archival, receiving status updates via SMS/emails, connecting with multiple airlines and custodians online, electronic submission of AWBs, electronic receipt of MAWB/HAWB for airlines, links with customs authorities systems (e.g. Indian Customs ICEGATE).<sup>220</sup>

The Mumbai CSI airport has been successfully transformed into e-freight station with support of GMAX, which is being used by more than 1800 forwarders/custom brokers to electronically process AWBs and exchange them with carriers. GMAX/UPLIFT solutions have contributed to one of the fastest ever EDI adoption and e-AWB penetration in air transport industry.<sup>221</sup>

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<sup>216</sup> CSI Airport website (last visited 18.06.2015): <http://www.csia.in/Cargo/about-mial-cargo.aspx>

<sup>217</sup> GMAX Circular No.GMAX/KLSPL/001 – 15/09/2014. Accessible at:  
[http://www.gmax.gvk.com/cont/trade\\_links/index.html#GMAXCirculars](http://www.gmax.gvk.com/cont/trade_links/index.html#GMAXCirculars)

<sup>218</sup> GMAX web site, GVK – Mumbai International Airport rated e freight compliant by IATA (last accessed 18.06.2015): <http://www.gmax.gvk.com/cont/Download/GVK%20Cargo%20developments.pdf>

<sup>219</sup> ACAAI website information on UPLIFT (last visited 18.06.2015): <http://www.acaai.in/uplift.doc>

<sup>220</sup> Kale Logistics website, Community Platforms – Uplift (last accessed 18.06.2015):  
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<sup>221</sup> Kale Logistics website, Press Release June 2015 (last accessed 18.06.2015):  
[http://www.kalelogistics.in/press\\_release\\_June15\\_15.aspx](http://www.kalelogistics.in/press_release_June15_15.aspx)

### **Cargo Community Solutions at Amsterdam Schiphol Airport in Netherland**

Amsterdam Schiphol Airport in cooperation with Air Cargo Netherland<sup>222</sup> and Cargonaut B.V.<sup>223</sup> provides various cargo community solutions for electronic information exchange between forwarding agents and logistics service providers, airlines, handling agents, customs authorities and other government agencies, integrators, shippers, truckers and general sales agents.

Registered users of the Cargonaut cargo community platform are authorized to send or receive messages (e.g. electronic air waybills, customs declarations, status, and transport movements) with other parties connected to Cargonaut or to another Cargo Community System linked to Cargonaut. The software solutions include: eAWB (for producing and efficient exchange of the electronic air waybill); AWB manager (software package for master and house waybills), eCargo Receipt (which gives insight into the Schiphol airport export delivery process); eLink (that enables fast export handling through transfer of information and goods using smart cards). eCargo Pouch (central document and message management for sharing paperless information with other partners (e.g. packing lists, invoices, electronic messages, etc.) compatible with the IATA e-freight program.<sup>224</sup>

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<sup>222</sup> Air Cargo Netherland (ACN) is air cargo industry association for the Netherlands whose members include airports, airlines, air cargo forwarders, handling agents, air cargo truckers, general sales agents and a large number of business service providers, such as banks, insurers.  
<https://www.schiphol.nl/B2B/Cargo/NewsPublications/CargoNews5/AIRCARGONETHERLANDSACN.htm>

<sup>223</sup> Cargonaut B.V is an information systems supplier, who is developing IT solutions for the air cargo industry and operates Cargo Community Systems in the Netherlands. <http://www.cargonaut.nl/en/>

<sup>224</sup> Cargonaut product overview <http://www.cargonaut.nl/en/complete-productoverview/>

**UN/EDIFACT Transport-related EDI messages**

[IFTMAN](#) Arrival notice message

[BAPLIE](#) Bayplan/stowage plan occupied and empty locations message

[BERMAN](#) Berth management message

[IFTMBC](#) Booking confirmation message

[BMISRM](#) Bulk marine inspection summary report message

[IFTICL](#) Cargo insurance claims message

[HANMOV](#) Cargo/goods handling and movement message

[IFTMCA](#) Consignment advice message

[COPARN](#) Container announcement message

[COPRAR](#) Container discharge/loading order message

[COARRI](#) Container discharge/loading report message

[CODECO](#) Container gate-in/gate-out report message

[COPINO](#) Container pre-notification message

[COREOR](#) Container release order message

[COHAOR](#) Container special handling order message

[COSTCO](#) Container stuffing/stripping confirmation message

[COSTOR](#) Container stuffing/stripping order message

[CNTCND](#) Contractual conditions message

[CUSCAR](#) Customs cargo report message

[CUSREP](#) Customs conveyance report message

[IFTDGN](#) Dangerous goods notification message

[DGRECA](#) Dangerous goods recapitulation message

[DELJIT](#) Delivery just in time message

[DELFOR](#) Delivery schedule message

[DESADV](#) Despatch advice message

[IFTMBF](#) Firm booking message

[IFCSUM](#) Forwarding and consolidation summary message

[IFTRIN](#) Forwarding and transport rate information message

[IFTSAI](#) Forwarding and transport schedule and availability information message

[IFTCCA](#) Forwarding and transport shipment charge calculation message

[GOVCBR](#) Government Cross Border Regulatory message  
[ITRRPT](#) In transit report detail message  
[IFTMIN](#) Instruction message  
[INSDS](#) Instruction to despatch message  
[SANCRT](#) International movement of goods governmental regulatory  
[IFTSTA](#) International multimodal status report message  
[IFTSTQ](#) International multimodal status request message  
[IFTFCC](#) International transport freight costs and other charges message  
[INVOIC](#) Invoice message  
[MEQPOS](#) Means of transport and equipment position message  
[PAXLST](#) Passenger list message  
[IFTMBP](#) Provisional booking message  
[RECADV](#) Receiving advice message  
[MOVINS](#) Stowage instruction message  
[TANSTA](#) Tank status report message  
[TPFREP](#) Terminal performance message  
[COEDOR](#) Transport equipment stock and profile report message  
[CALINF](#) Vessel call information message  
[VESDEP](#) Vessel departure message  
[WASDIS](#) Waste disposal information message

Source: UN/EDIFACT, Index of message types by name. Accessible at:  
<http://www.unece.org/fileadmin/DAM/trade/untdid/d14b/trmd/trmdi2.htm>

**Outline of the questionnaire and results of the survey conducted in ESCAP  
Expert Group Meeting on Integrated use of Single Window for Transport  
Facilitation (Bangkok 26 November 2015)**

Questionnaire on Transport related processes in Single Window environment

Please rank by importance (1- 4) which components could support transport facilitation if included in Single Window environment by your opinion

	<b>SW Component</b>	<b>Rank</b>
1	<b>B2B Commercial</b> (transport/logistics) (booking, transport documentation preparation, cargo insurance, transport notifications)	
2	<b>Port related</b> (sea port; airport, dry ports border crossings) (port operations management)	
3	<b>Regulatory</b> (conveyance reporting; advanced cargo manifest, customs declarations; cargo permits for specific types of goods)	
4	<b>Fundamental transport elements</b> (transport permits; registration of transport means; worthiness certification; insurance of transport means; certification for carrying dangerous goods; licencing professionals to operate transport means)	

Please rank 10 most important processes (1-10), which could support transport facilitation if included in Single Window environment by your opinion

	<b>Process</b>	<b>Rank</b>
1	Conveyance reporting	
2	Advance regulatory reporting	
3	Submission of cargo manifest	
4	Transit Guarantees	
5	Transport/Transit Permits	
6	Notification/permits for special category of goods (dangerous goods waste, livestock)	
7	Temperature controlled goods livestock	
8	Immigration for crew	
9	Health requirements for humans	
10	Professional qualifications	
11	Phyto-sanitary requirements	
12	Weight and dimension requirements	
13	Pollution standards	
14	Payment of charges (e.g. road user, port user)	
15	Cargo Clearance	
16	Notifications for release of goods/conveyance (customs/port authorities)	
17	Registration of conveyance	
18	Worthiness certificate	
19	Third party vehicle insurance	
20	Booking transport	
21	Preparing formal transport documentation (e.g. B/L, AWB)	
22	Cargo and conveyance tracking	
23	Containers handling	
24	Conveyance handling	

\* Remark: 1 is the most important / 4 (10) is the least important

## Results on Survey on Transport related processes in Single Window environment<sup>225</sup>

Components that could support transport facilitation if included in SW environment, ranked by importance in opinion of EGM participants

	SW Component	Rank 1	Rank 2	Rank 3	Rank 4	Overall
1	<b>Regulatory</b> (conveyance reporting; advanced cargo manifest, customs declarations; cargo permits for specific types of goods)	6	1 Land/ Sea/Air	1	/	<b>1</b>
2	<b>B2B Commercial</b> (transport/logistics) (booking, transport documentation preparation, cargo insurance, transport notifications)	3 Sea/Air	3	2	1	<b>2</b>
3	<b>Fundamental transport elements</b> (transport permits; registration of transport means; worthiness certification; insurance of transport means; certification for carrying dangerous goods; licencing professionals to operate transport means)	2 Land	2	4 Sea	2	<b>3</b>
4	<b>Port related</b> (sea port; airport, dry ports border crossings) (port operations management)	1	2	1 Sea	4	<b>4</b>

<sup>225</sup> Survey details and methodology:

- Small scale Survey in ESCAP Expert Group Meeting on Integrated use of Single Window for Transport Facilitation held in Bangkok on 26 November 2015, includes opinions of eight participants (mainly from public sector) present at the meeting;
- One participant has provided responses divided in three categories by mode of transport (land/sea/air). That specific expert response is included in the survey and considered as three different responses;
- Two participants have not limited their responses only to ten most important processes, but instead they have graded all processes by importance with marks in the range (1-10). Those two specific expert responses are included in the survey as well.
- Overall ranking of single window components is done based on quantitative and qualitative analysis of the responses (number of responses by rank and level of rank associated to the component)
- Overall ranking of the processes is done based on quantitative and qualitative analysis of the responses (number of responses by rank and frequency of ranking specific process / overall points by process calculated as sum of multiples of number of responses and point given by rank (e.g. Rank 1 – 10 points; Rank 2 9 points ... Rank 10 – 1point). For example Transit guarantee process has 2 Rank 1 responses, 2 Rank 2 responses, 3 Rank 3 responses and one Rank 4 response or frequency of 8 responses and 65 points (2x10+2x9+3x8+1x3). Processes with 50 and more overall points are considered processes with High impact; processes with 30-49 overall points are considered as processes with Medium impact and processes with less than 30 overall points are considered as processes with Low impact on transport facilitation with their inclusion in Single Window environment.



Processes that could support transport facilitation in SW environment ranked by importance in opinion of EGM participants

	<b>Process</b>	<b>Rank1 10 p</b>	<b>Rank2 9p</b>	<b>Rank3 8p</b>	<b>Rank4 7p</b>	<b>Rank5 6p</b>	<b>Rank6 5p</b>	<b>Rank7 4p</b>	<b>Rank8 3p</b>	<b>Rank9 2p</b>	<b>Rank10 1p</b>	<b>Overall Freq./Points/Rank</b>
1	Transit Guarantees	2	2 Land	3					1			<b>8/65/1 – High</b>
2	Transport/Transit Permits	4 Land	1							3 Sea/Air	1	<b>9/56/2 - High</b>
3	Submission of cargo manifest	2	1	2 Sea/Air		1			1			<b>7/54/3 – High</b>
4	Notification/permits for special category of goods (dangerous, goods waste), livestock)	1		2 Land	2 Sea/Air		1	1		1	1	<b>9/52/4 – High</b>
5	Advance regulatory reporting	2	2 Sea/Air		1				1	1		<b>7/50/5 – High</b>
6	Phyto-sanitary requirements	1			1	2 Land	2 Sea/Air	1	1			<b>8/46/6 - Medium</b>
7	Cargo and conveyance tracking		2		1	1	1	1 Land		1	1	<b>8/44/7 - Medium</b>
8	Conveyance reporting	3 Sea/Air						2				<b>5/44/8 - Medium</b>
9	Health requirements for humans				3 Land	2	1	2 Sea/Air				<b>8/40/9 - Medium</b>
10	Notifications for release of goods/conveyance (customs/port authorities)	1		1		1		1	1 Land	2 Sea/Air		<b>7/35/10 - Medium</b>
11	Professional qualifications	1		1		2	1					<b>5/35/11 - Medium</b>

	<b>Process</b>	<b>Rank1 10 p</b>	<b>Rank2 9p</b>	<b>Rank3 8p</b>	<b>Rank4 7p</b>	<b>Rank5 6p</b>	<b>Rank6 5p</b>	<b>Rank7 4p</b>	<b>Rank8 3p</b>	<b>Rank9 2p</b>	<b>Rank10 1p</b>	<b>Overall Freq./Points/Rank</b>
12	Cargo Clearance	1			1		2	1	1			<b>6/34/12 - Medium</b>
13	Preparing formal transport documentation (e.g. B/L, AWB)	1		1		1	1			1		<b>5/31/13 - Medium</b>
14	Temperature controlled goods livestock	1				2 Sea/Air	1 Land		2			<b>7/30/14 - Medium</b>
15	Immigration for crew	1	1			1						<b>3/25/15 - Low</b>
16	Pollution standards			1					4 Sea/Air	1 Land		<b>6/22/16 - Low</b>
17	Weight and dimension requirements	1			1						3 Land	<b>5/20/17 - Low</b>
18	Booking transport	1		1								<b>2/18/18 - Low</b>
19	Containers handling	1					1				2	<b>4/17/19 - Low</b>
20	Conveyance handling		1				1					<b>2/14/20 – Low</b>
18	Worthiness certificate	1						1				<b>2/14/20 - Low</b>
19	Third party vehicle insurance		1				1					<b>2/14/20 - Low</b>
14	Payment of charges (e.g. road user, port user)	1									2	<b>3/12/21 - Low</b>
17	Registration of conveyance	1										<b>1/10/22 - Low</b>

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