



eMAR White Paper MSW 1
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**EU Maritime Single Window
Development Guide and Check-list**

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1. Introduction

Trade and transport related authorities have established, over the last few decades, an extensive range of authority-specific and country specific regulatory requirements for international trade and transport with little coordination amongst each other, either at the national, European, or international level. As a result, traders and transport operators are often faced with a complex set of duplicative and redundant reporting requirements.

Compliance support computer systems have also been produced with little attention to rationalising the underlying regulations and compliance processes. The net result is that compliance is a complex task particularly for SMEs and costs are generally high; both factors hindering trade development with implications on economic growth.

This problem has become more acute in recent years with the requirements for advanced trade and transport notifications for security purposes.

To address the issues outlined above, a number of initiatives have emerged centred in the concept of a single point interaction between businesses and authorities commonly termed the Single Window (SW) with implementations at national level (NSWs) or at EU or International level.

Although Single Window concepts and solutions were first developed for trade facilitation by Customs, in recent years transport Single Windows have been used, mainly in the maritime sector. Renewed impetus for development of Maritime Single Windows comes from the EU Directive 2010/65/EU (commonly known as the 'FAL Directive') which mandates Member States to accept the fulfilment of ship reporting formalities in electronic format and their transmission via a **single window as soon as possible** ...no later than 1 June 2015.

From the business side, **Single Windows can be seen as key components in the emerging trade and transport connectivity infrastructure** relying on e-Freight and e-Maritime capabilities. Compliance solutions are therefore becoming an intrinsic component of integrated and 'smart' international supply chains which in turn rely on new interoperability support standards and associated connectivity technologies.

In this eMAR report we establish an evolution trail of SW concepts and practices from a broad range of initiatives associated with trade and transport authorities and business driven solutions. The review indicates that there is convergence of principles and methods and it is feasible to develop harmonised SW to accommodate the requirements from the key drivers:

1. **Customs and Coordinated Border Management:** import, export, and transit-related regulations and security management;
2. **Maritime authorities:** ship formalities and Vessel Traffic Monitoring regulations for port clearance and safety / emergency management.

A generic Architecture for Maritime Single Windows (MSW) is introduced consolidating the different viewpoints and development streams outlined in the report. A **MSW Development Guideline and Check-list is also proposed** based on experience gained over the last five years with surveys and pilot developments in SKEMA, e-Freight, COMCIS and currently in eMAR and eCompliance Projects.

The main conclusion is that MSWs are critically dependent on the level of cooperation between authorities but success will be measured by how well MSW solutions are accepted by businesses including SMEs.

2. Trade facilitation SWs

2.1 UN/CEFACT Recommendation 33

The Single Window concept

The concept of Single Window was introduced by United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) to enhance the efficient exchange of information between trade and government.

According to UNECE (Economic Commission for Europe) Single Window² is 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 as shown in Figure 1.

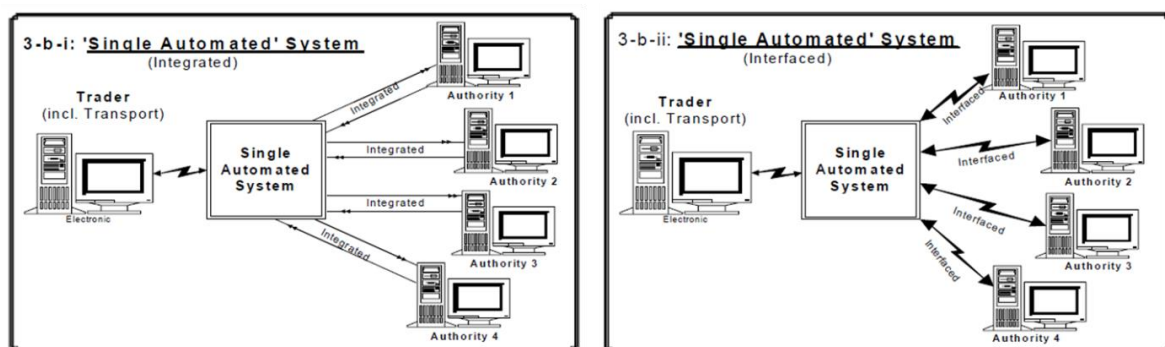


Figure 1: UNICE Recommendation No. 33 Single Window

If information is electronic then individual data elements need only be submitted once. In practical terms, the Single Window aims to expedite and simplify information flows between

² UNICE Recommendation No. 33 developed by the International Trade Procedures Working Group (ITPWG-TBG15) of UN/CEFACT and was approved through the Intersessional Approval Process in September 2004. It is the latest in a series of over 30 trade facilitation

trade and government and bring meaningful gains to all parties involved in cross-border trade. When cross-border trade is subject to security concerns, or to special rules as is the case of the European Union, the consequences need to be built in the SW architecture, particularly the requirements for information exchange between SWs.

UNICE *Recommends that the Single Window should be managed centrally* by a lead agency, enabling the appropriate governmental authorities and agencies to receive or have access to the information relevant for their purpose and co-ordinate their controls. Today, the progress made in technologies facilitating distributed systems as well as increased experience in governance issues could give rise to additional options particularly making feasible ideas of creating 'linked' NSWs to form international Single Windows.

Many international organisations, including UNECE, UNCTAD, WCO, IMO, ICAO and ICC provide advice on the SW concepts to promote interoperability in the supply chain.

Experience from Case Studies

Over 30 countries from all regions of the world have introduced a Single Window facility and have achieved considerable advantages:

- reduction of time and resources required by businesses in preparing, presenting and processing reporting requirements with an associated decrease in trade transaction costs;
- improved trader compliance through more complete, accurate and timely data submission with an associated increase in government revenues, and more efficient and effective border management and control.

A Repository of Case Studies complements recommendation 33³ and offers examples of the business models adopted for existing or planned Single Window facilities. The Case Studies provide an insight into the planning and implementation of a Single Window and share experiences on a wide range of topics from initial concept and identification of benefits, through services provision and technology options.

A crucial conclusion in UNICE recommendation, which has been validated by many recent reports is that:

- **the most important prerequisites for the successful implementation of a Single Window facility are the will and preparedness of the government and the relevant authorities and the full support and participation of the business community.**

Also important is the national legal framework, including privacy laws and security rules in the exchange of information on 'a needs basis'. **Businesses require complete protection and control of their data.** However, different national laws on data privacy and security issues

³ Establishing a legal framework for international trade Single Window http://www.unece.org/cefact/single_window/welcome.htm

create complexities in the implementation of NSWs which must be addressed at an early design stage.

The National Data Set (NDS)

The foundation of NSWs is a National Data Set (NDS) which rationalises regulatory requirements and should be aligned to trade and economic development policy. When undertaking the simplification and standardisation exercise⁴, Government should have a clear objective for the way in which the National Data Set will be used, particularly with respect to:

- interaction with other national, European and international systems;
- trade facilitation;
- safety, security and environmental risk management.

Recommendation 34⁴ includes an Overall Data Harmonization Process which can be summarised as shown in Figure 2.

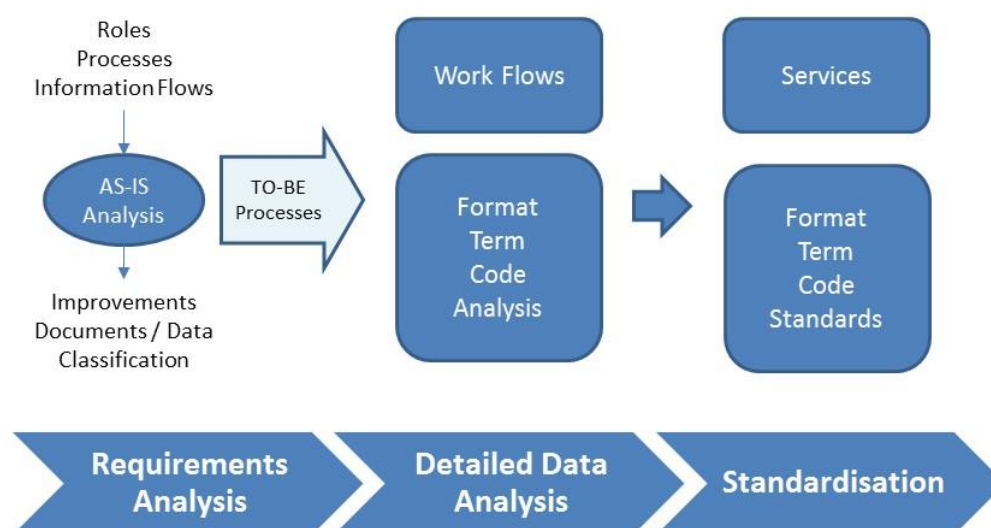


Figure 2: Data Harmonisation Process

Obviously use of standards developed over the years by intergovernmental agencies and international organisations such as UNECE, UNCTAD, WCO, IMO, ICAO and the ICC will help ensure that the systems developed to implement the Single Window are more likely to be compatible with similar developments in other countries and could also help in the exchange of information to form an international trade and transport SW.

⁴ Recommendation 34 on Data Simplification and Standardization for International Trade

2.2 Customs Related initiatives

The World Customs Organization's (WCO) perspective

The WCO has adopted the UNICE definition of the Single Window seen as *a trade facilitation measure*.⁵

SW recommendations from WCO include:

1. Use of ICT and dataset standards commonly accepted by the relevant public and private stakeholders. In particular : Harmonized System of Commodity Description and Coding, the WCO Data Model and the Unique Consignment Reference;
2. Agencies involved in Integrated Border Management should determine the essential data for their controls;
3. If examination of goods is necessary, the Single Window should be used for the co-ordination of physical inspection amongst the relevant agencies.

WCO in recent years has promoted the SW for harmonisation and the streamlining of cross-border customs procedures (WCO IT 2013). In this context, the SAFE framework of standards secure supply chains⁶ is aimed at:

1. Promoting co-operation between the Customs and business communities;
2. Strengthening networking arrangements between Customs administrations to improve their capability to detect high-risk consignments;
3. Supporting the seamless movement of goods through secure international trade supply chains.

Mutual Recognition (MR) is a broad concept embodied within the WCO SAFE Framework whereby an action or decision taken or an authorization that has been properly granted by one Customs administration, is recognized and accepted by another Customs administration. A conceptual view of the WCO Single Window linked to Coordinated Border Management is shown in Figure 3A centred in the WCO Data Model.

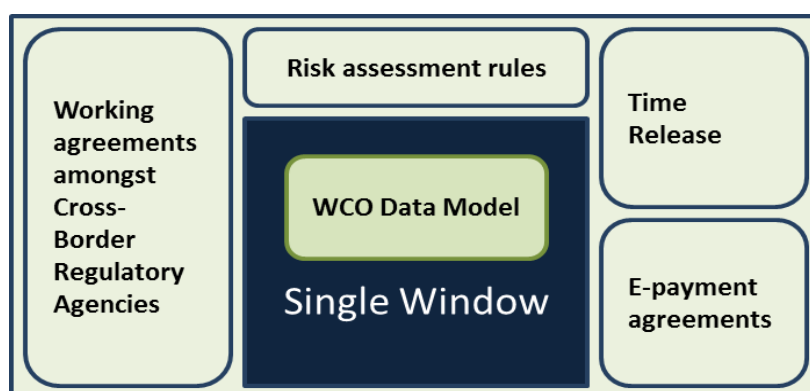


Fig. 3A: WCO Single Window linked to Coordinated Border Management

⁵ http://www.wcoomd.org/en/topics/facilitation/activities-and-programmes/~/_/media/FA35ECDE953D4CDDA32A58D6F620B1FE.ashx

⁶ the SAFE framework of standards secure supply chains Nov 2009 http://www.wcoomd.org/en/topics/research/activities-and-programmes/~/_/media/44CC67F66E7C48FC9834F3504F9D7C19.ashx

The WCO Data Model Version 3⁷ is a standardised data requirement library (Fig 3B) for the Business to Government (B2G) and the Government to Government (G2G) exchange of information. It is organised as a dictionary with data sets for Import, Export, Transit, Conveyance and Response.

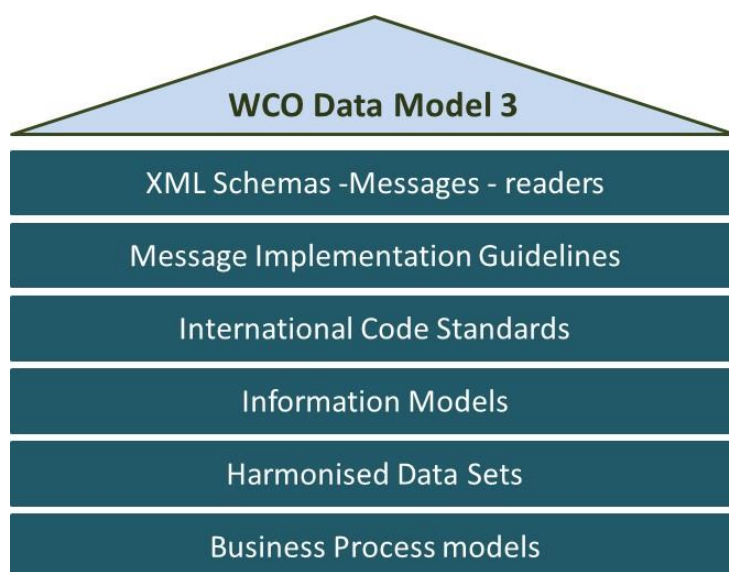


Fig 3B WCO DATA Model Version 3

The WCO Data Model Version 3 specifically includes information required by other cross-border regulatory agencies besides Customs to meet their reporting needs and greater consideration is given to support Extensible Mark-up Language (XML) usage. The **Government Cross-Border Regulatory message (GOVCBR)**, is designed to feed the “Whole-of-Government Single Window” for cross-border release of goods, containers, and means of transport. Importantly WCO provide annual releases which can include extensions needed for specific developments such as the Maritime Single Window. **The use of the WCO model would therefore speed up deployment of MSWs.**

WCO Survey of Single Window Implementation⁸

Five types of cargo clearance systems are today in operation:

1. **Integrated Single Window.** Individual data elements are submitted once to a single entry point (integrated automated system) to fulfil all import, export and transit-related regulatory requirements (i.e., enables multiple procedures to be performed from a single submission);
2. **Interfaced Single Window.** Individual data elements are submitted once to a single entry point but each regulatory agency maintain its own automated system and connect with other systems through custom-build interfaces;

⁷ <http://www.wcoomd.org/en/topics/facilitation/resources/~media/70998C307D3C47C996DB047B664B92AE.ashx>

⁸ WCO Research Paper No. 17 Aug 13

3. **Hybrid Single Window.** A combination of the Integrated and the Interfaced approach;
4. **One-Stop Service.** Stakeholders are required to implement each procedure/declaration separately;
5. **Stand-alone system for Customs clearance.**

Among the surveyed Customs administrations, the majority have a non-single window type:

- 19 (34%) indicated that they operate a single window system;
- 37 (66%) indicated that they operate non single window system.

Of the Customs administrations responding:

- Two (4%) indicated that they operate an integrated single window;
- Five (9%) indicated that they operate a interfaced single window;
- 12 (20%) indicated that they operate a hybrid single window;
- Seven (13%) indicated that they operate the one-stop service;
- 25 (45%) indicated that they operate the stand-alone system;
- Five (9%) indicated that they operate other systems.

The majority of Customs administrations harmonize single window data with internationally recognized standards. The WCO Data Model and UN/EDIFACT is widely adopted but not the WCO Unique Consignment Reference (UCR).

Significant efforts need to be made for the adoption of security standards such as ISO 28000.

The European e-Customs initiative

The European electronic customs initiative is essentially based on the following legislation:

1. The [Security and Safety Amendment to the Customs Code](#), which provides for full computerisation of all procedures related to security and safety;
2. The Decision on the paperless environment for customs and trade ([Electronic Customs Decision](#)) which sets the basic framework and major deadlines for the electronic customs projects;
3. The [modernised Community Customs Code](#) which provides for the completion of the computerisation of customs.

The Security and Safety Amendment to the Customs Code include:

1. [Regulation \(EC\) 648/2005](#) and its [implementing provisions](#) requiring pre-arrival and pre-departure information (in the form of summary declarations lodged before the goods are brought into or out of the Community customs territory) to be filed electronically and also envisages exchange and sharing of the information between the Member States administrations, when possible;
2. Provisions for the implementation of Council Regulation (EEC) No 2913/92 provides for the **EORI system** (Economic Operators' Registration and Identification system)⁹.

The e-Customs initiative which started in 2008 has been aimed to create secure, interoperable electronic customs systems for the exchange of the data.

⁹ <http://www.eori.eu/>

The design approach advocated by DG TAXUD, shown in Figure 3, emphasises an iterative process to specify a streamlined SW model which will then guide the automation of compliance related processes.

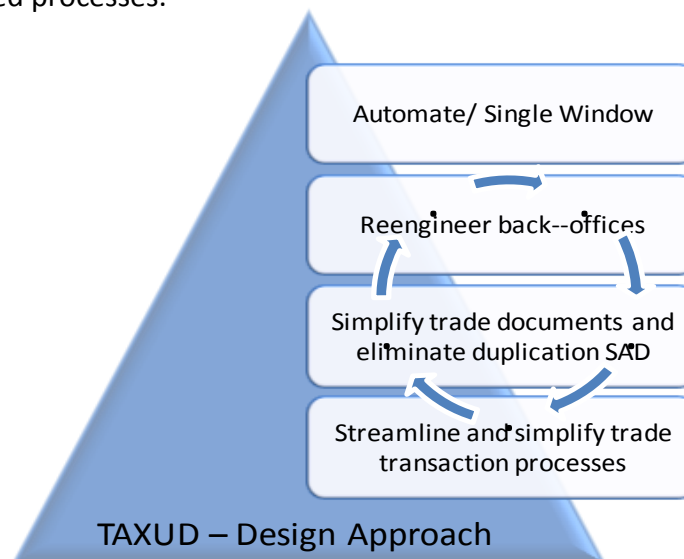


Fig 4 TAXUD Single Window Design Approach

The single administrative document, SAD¹⁰, provides the documentary basis for EU customs declarations in the EU. The document covers the placement of any goods under any customs procedure (export, import, transit where the new computerised transit system (NCTS) is not yet used, warehouses, temporary import, inward and outward processing, etc.) whatever the mode of transport used.

A number of Customs Trans-European Systems are in operation, including:

1. **New Computerised Transit Systems (NCTS);**
2. **Export Control System (ECS);**
3. **Import Control System (ICS).**

Centralised Databases:

1. Economic Operators' System (EORI);
2. Tariff Systems.

Customs related information concerning the outcome of the health controls could be retrieved from the Trade Control and Expert System, introduced by Decision 2002/459/EC¹⁹, which creates a trans-European network for the notification, certification and monitoring of imports, exports and trade of sanitary and phytosanitary products.

The interaction of a Maritime Single Window with the above systems needs careful deliberation.

¹⁰ http://ec.europa.eu/taxation_customs/customs/procedural_aspects/general/sad/

2.3 Examples of National trade SW developments

SWs from different continents are presented to provide a picture of international practices.

The US International Trade Data System (ITDS)

The US International Trade Data System (ITDS) was established in 1996. Customs and Border Protection (CBP)¹¹ are now developing the new Automated Commercial Environment (ACE).

ACE is a phased implementation for CBP and Single Window participants to provide one electronic interface through which the trade submits all required information for all government agencies. This would cover all processes from advance screening and targeting (note the WCO Framework of Standards to Secure and Facilitate Global Trade), release of goods (the transport and goods declarations) payment of duties, taxes, and fees, and post declaration processing.

The ITDS Standard Data Set and the ACE Logical data Model are mapped to the WCO Data Model. CBP has completed this harmonization process with twenty-three Governmental Agencies. Over 10,000 data elements were gathered. These have been consolidated into approximately 500 elements. However, many users currently employ CBP proprietary data. A data pipeline has been established for the transmission of data to all authorities. International harmonization is promoted.

From a shipping perspective the Electronic Notice of Arrival/Departure – **eNOAD** is used for port clearance in US Ports. The National Vessel Movement Center (NVMC)¹² was established by the United States Coast Guard (USCG, as a single clearinghouse for submission and processing of notice of arrival and departure (NOAD) information for vessels entering U.S. ports and facilities.

Harmonisation of standard messages requested by eNOAD, the EU Maritime Single Window, and other international SWs is an issue for future consideration.

Singapore TradeXchange¹³

Launched in October 2007, TradeXchange® is a neutral and secure trade platform providing seamless inter-connectivity among commercial and regulatory systems for the Singapore trade and logistics community. In addition, it will offer a single electronic window for integrated workflow, submissions and enquiries to the Sea Ports, Airports, Maritime Authorities, Customs and Controlling Agencies.

¹¹ www.cbp.gov ; <http://www.itds.gov/>

¹² <http://www.nvmc.uscg.gov/nvmc/Default.aspx>

¹³ <https://www.tradexchange.gov.sg/tradexchange>

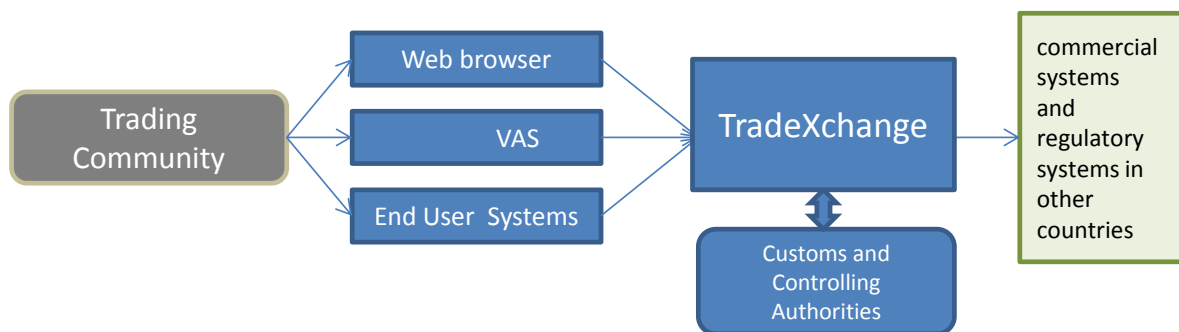


Fig 5 TradeXchange Singapore SW

TradeXchange® is a multi-agency initiative led by Singapore Customs, Economic Development Board and Infocomm Development Authority of Singapore (IDA).

TradeXchange provides connectivity to commercial systems and regulatory systems in other countries. A number of value-added service providers offer application services to the trade and logistics community in areas such as trade documentation preparation, supply chain management, logistics and freight management, trade finance and insurance.

TradeXchange is the first IT project in Singapore to be implemented as a Public-Private Partnership (PPP). **TradeXchange highlights Single Window features motivated from a business perspective.**

Finnish system PortNet

The Finnish system PortNet is operational since 1993 driven by benefits to its users:

1. FMA, Port Authorities, The Customs, Vessel Traffic Operators, Frontier Guard;
2. Ship-owners, Ship Agents, Stevedoring Companies.

The system is operated by the Finnish Maritime Administration (which is the designated National Competent Authority for SSN). Since 2000 a XML and web user interface has been implemented while (PortNet 2 has been introduced since 2009). All the Finnish ports are linked to the system. PortNet provides direct input to the SSN without involving any other actors. 40000 port call notices and 70000 cargo notices are received annually.

The key recommendation from the experience gained in Finland is:

- establish the co-operation between authorities, decide what services actually should be set up, decide on finance, and decide on who will take the technical lead;
- prepare legislation, if not in place already;
- listen to and follow good advice.

3. EU Maritime transport Single Windows (MSW)

Maritime transport administrative procedures are complex, time-consuming and even today, are often done on paper.

Maritime Single Windows encompass policies and solutions for simplification and facilitation of ship reporting formalities. In Europe, due to the strategic importance of creating a plain field for all modes of transport across Member States, the Maritime Single Window has been given a prominent position.

EU Maritime Single Windows have been associated primarily with two interrelated policies:

1. Directive 2002/59/EC for vessel traffic monitoring (the "VTMIS Directive") aimed to improve safety and environmental protection in European seas;
2. Directive 2010/65/EU for ships arriving in and/or departing from ports of the Member States (Reporting Formalities Directive -RFD), describing the actions that Member States should implement to make efficient use of electronic data transmission and information exchange systems.

3.1 Initial developments associated with vessel traffic monitoring (VTMIS directive)

In the maritime transport sector internationally, the concept of Single Window has been used for some time by Port Single Windows to facilitate port state control.

One of the main objectives of the VTMIS Directive has been to guarantee that all Member States will be interconnected via the Community maritime information exchange system SafeSeaNet (SSN)¹⁴, in order to obtain a complete view of the movements of ships and dangerous or polluting cargoes in European waters. The VTMIS Directive mandated the development of National SSN applications which became operational by 2009.

National SSN applications, differ from country to country. We can distinguish two types that have a significant bearing on the implementation of the reporting formalities directive.

1. **Extended National SSN applications** which provide the central National System for ship reporting as exemplified by Norway¹⁵ (In 2004/05, through Norwegian Parliament White Paper, the Norwegian Coastal Administration was appointed to coordinate the development of a national reporting system on behalf of Norwegian authorities). Such systems are relatively easy to extend to comply with the ship formalities directive because they have followed EU directives generally. As such even some 'integration' with EU Customs SWs (e.g. ICS) is often available.
2. **National SSN applications closely linked to Port Systems** exemplified by the UK MCA CERS System¹⁶. Such systems rely on Port Community Systems to provide the necessary

¹⁴ SafeSeaNet aims at the collection, storage and exchange of information for the purpose of maritime safety, port and maritime security, marine environment protection and the efficiency of maritime traffic and maritime transport.

¹⁵ http://www.kystverket.no/en/EN_Maritime-Services/Reporting-and-Information-Services/SafeSeaNet-Norway/

¹⁶ <http://www.dft.gov.uk/mca/mcga07-home/shipsandcargoes/mcga-shiptype/mcga-cers.htm>

information in the required format (e.g. PortPlus) for transmission to SSN. Such applications have no links with Custom Systems. Ship reporting obligations can be done by fax or email, or manually and port enters information to computer systems as required.

3.2 SafeSeaNet (SSN)

SafeSeaNet was established as a centralised European platform for maritime data exchange, linking together maritime authorities from across Europe¹⁷. SSN is likely to play a pivot role in the development of MSWs.

Expected evolution of SSN (i.e. during 2010-2013)¹⁸ includes a number of developments that impact future MSW solutions:

1. Transition of the European Index Server (EIS) architecture into a SOA based approach (to be used for the exchange of the new PortPlus messages);
2. Combination/ fusion of position data originated from AIS, LRIT, VMS and SAR images in SSN GIS interface;
3. Integrated distribution of LRIT/ AIS information via SSN;
4. Integration of SSN and CleanSeasnet functionality to facilitate pollution incidents analysis and identification of potential polluters;
5. Visualization of ship inspection information (collected and processed by THETIS) on the SSN GIS interface;
6. Related STIRES services, Voyage plan service, AIS /LRIT repository etc. ;
7. SSN access mechanism improvement.

In the new SSN version¹⁹ the same exchange mechanism will be maintained and upgraded to include Waste, Security and Hazmat details as per 2010/65/EU. Interfacing of MSW with SSN V3 should therefore not pose additional difficulties. Further the IMP demonstrator project should provide an additional MSW prototype contributing to further knowledge development.

3.3 Port Community Systems

Port Community Systems (PCS)²⁰ have become an essential component for the efficient operation of many major European Ports. Typically PCSs have developed particular implementation guides for each EDIFACT message, and support their Port Communities for interchange of Transport Orders, Bayplans, Gate Reports (Gate-in and Gate-Out), Bookings, Shipping Instructions, Custom Clearances, etc.²¹. Important EDIFACT Massagers include:

- 1 . the BERMAN Message²² which provides the Port Call information;

¹⁷ <http://emsa.europa.eu/operations/safeseanet.html>

¹⁸ Based on EMSA documents on the SSN system

¹⁹ <http://emsa.europa.eu/documents/workshop-presentations-a-reports.html>

²⁰ *Port Community Systems (PCS)* supporting exchange of commercial and logistic messages in a port environment, B2B (Business to Business) services; similar applications include Cargo Community System (CCS)

²¹ <http://www.eskema.eu/defaultinfo.aspx?topicid=52&index=4>

²² http://www.unece.org/trade/untddid/d05b/trmd/berman_c.htm

2. the Customs cargo report message CUSCAR²³.

Despite the value offered by PCSs to their communities the different implementation guides in each port create increased costs for the reporting parties. Such costs are associated with developing computer interfaces for each PCs or using transformation platforms (e. g INTTRA²⁴, GT Nexus²⁵)

EPCSA²⁶ represent the interests of the Port Community Systems Operators in Europe and promotes the role of PCSs in the MSW. EPCSA'S Policy is that the European Commission should encourage the development of Port Community Systems as an efficient and effective way of simplifying port processes and a means by which the requirements of 2010/65 can be implemented.

Key questions on the future role of PCSs in MSW systems include:

- transition paths to unifying messages submitted by carriers and cargo agents to PCSs;
- potential of harmonisation between PCS messages with the requirements of the ship formalities directive as agreed by all Member States.

3.4 Developments associated with the European maritime transport space without barriers

The European policy **European maritime transport space without barriers**²⁷ established an action plan for the simplification of formalities for vessels sailing between EU ports as well as a facilitation for vessels making a call in a port located in a third country or free zone. As part of the action plan, the Commission adopted Regulation (EU) No 177/2010²⁸ introducing streamlined procedures for the so-called "**regular shipping services**" (RSS) performed by authorised companies.

Another part of the action plan, is the **e-Maritime initiative**²⁹, which aims to foster the use of advanced information technologies for the maritime transport sector by investigating regulatory rationalisation arising from use of new ICT capabilities for interoperability and electronic communication between the different actors involved in maritime transport. Even though the EU e-Maritime programme will be specified through industry engagement, an early priority for the e-Maritime initiative has been support for the **implementation of Maritime Single Windows**³⁰.

²³ http://www.unece.org/trade/untddid/d00a/trmd/cuscar_c.htm

²⁴ <http://www.inttra.com>

²⁵ <http://www.gtnexus.com>

²⁶ <http://www.epcsa.eu/port-community-systems>

²⁷ COM(2009) 10 final

²⁸ OJ L52 of 3.3.2010

²⁹ <http://www.eskema.eu/defaultinfo.aspx?areaid=44&index=2>

³⁰ <http://www.eskema.eu/defaultinfo.aspx?topicid=156&index=2>

In a broader context, the **2011 White Paper for the future of transport**³¹ advocates a Single European Transport Area in which all residual barriers between modes and between borders are to be eliminated. In particular, it calls for a Blue Belt³² in the seas around Europe which would simplify the formalities for ships travelling between EU ports.

3.5 The Reporting Formalities Directive (RFD)

Directive 2010/65/EU for ships arriving in and/or departing from ports of the Member States, describes the Member States' actions for efficient use of electronic data transmission and information exchange systems. Such actions will contribute to the achievement of a European maritime transport space without barriers.

Every EU country must ensure that the reporting formalities at their ports are requested in a harmonised and coordinated manner. The master, or any other person duly authorised by the operator of the ship, must provide the competent national authority with notification, prior to arriving in an EU port, of the information required under the reporting formalities³³.

The main articles:

1. **Article 1** (Harmonizing Administrative Procedures): the goal is to simplify the administrative procedures applied to maritime transport by standardizing the electronic transmission of information. Both reference domain models (class diagrams) and standard messages are being developed by various working groups and projects. the electronic FAL forms required by the IMO/FAL Convention³⁴ are accepted as part of the RFD thus harmonizing international legislation;
2. **Article 3** (Commission – MS co-operation): the goal is for Member States to harmonise their reporting formalities and to co-operate with the Commission for the coordination of reporting formalities within the Union;
3. **Article 5** (National Single Windows): Member States need to implement a single entry point for all reporting obligations conducted using electronic data transmission. This SW linking SSN, E-Customs and other electronic systems shall be the place where all information is reported once and made available to various 'competent authorities'.

The implementation of Directive 2010/65/EU is coordinated by the eMS expert group with representatives from each member state and observers from stakeholder associations.³⁵

³¹ COM(2011) 144 final

³² COM(2013) 510 final

³³ http://europa.eu/legislation_summaries/transport/waterborne_transport/tr0047_en.htm

³⁴ <http://www.imo.org/OurWork/Facilitation/FormsCertificates/Pages/Default.aspx> The Convention on Facilitation of International Maritime Traffic (FAL Convention) includes in its Standard 2.1 a list of documents which public authorities can demand of a ship. The Facilitation Committee, at its thirty-eighth session (8 to 12 April 2013), approved the Revised IMO Compendium on facilitation and electronic business

³⁵ Jukka Savo Simplification of port processes, Reporting Formalities, Blue Belt , e-maritime, EPCSA Conf 11/6/13

Some key definitions from the eMS NSW Guidelines include:

- **Competent authorities:** National authorities involved in the processing of reporting formalities submitted for ships arriving at or departing from a port.
- **NSW authority:** The competent authority or the competent body designated by a Member State to implement the provisions of the Directive, in particular, with the responsibility for overseeing the setting up and operation of the NSW for the purpose of Directive 2010/65/EU.
- **NSW trusted 3rd parties:** Are parties authorised by the NSW authority which exchange information with the NSW, respecting the NSW requirements. These may include the Port Community Systems.
- **Relevant authorities:** Any national authority needing, and having legal rights to access, the information.

Development of eManifest

Information relating to cargo which is required by customs and other authorities is collected via a *range* of cargo declarations. Despite the adoption of a standardised cargo declaration in the FAL Convention and the existence of an electronic format (FAL2) there is no harmonised structure for the cargo manifest agreed by the Member States to be used for electronic administrative clearance systems. FAL2 is for Maritime Authorities but not used in practice, as Member States use manifests with more items to address national legislation.

The process associated with Cargo release normally starts with the submission of a CUSCAR message (specific for each country) by the carrier to a PCS facilitate the control of goods. In each country a large number (often over 10) that can put 'HOLDS' on the release of goods. Customs Import Declaration (CUSDEC message) normally submitted to a Customs' system by import agent is the last stage of the cargo clearance from authorities.

The electronic cargo 'eManifest' with information on the EU status of goods³⁶ is being considered as a practical solution to achieve a “consolidated” view of what is carried on-board concerning a specific Port.

The latest Commission position³⁷ is that the eManifest would take the form of a harmonised and electronic cargo manifest further facilitating maritime transport for vessels calling at EU and also at third country ports by:

- facilitating Re-use of data previously provided;
- eliminating multiple reporting of same data to different authorities in a ship's departure/ arrival port.

³⁶ key for implementing the second Blue Belt measure – proof of status of goods

³⁷ Considerations for the Implementation of the eManifest; eManifest V1.0 Brussels, 13 September 2013

The eManifest will be implemented in a phased approach:

1. Proof of Union Status and “Identification of post-Export goods” and the requirements of the maritime authorities are in the first phase;
2. Improvements for supply chain security (processes, interaction with Import Control Systems and data) will be designed from the outset but implemented in subsequent phases.

When the eManifest is lodged in an EU port, the Union status of the goods on board will be indicated and, if confirmed, customs controls would no longer be needed for Union goods apart from random checks. For the Proof of Union status, status information will be entered in the eManifest. The credibility of the information is to be either ensured by an Authorised Consignor for the Proof of status, or by endorsement of the status by customs.

Points of attention are potential involvement of third country administrations and harmonisation with export procedures and an extended use as transit declaration for all modes of transport.

Given the multiple cargo related messages and particularly the different channels for message transmission used today and actual Customs systems in operation any changes particularly arising from work flow may be very costly to implement. This makes decisions whether the eManifest should be structured a one message or multiple messages (which will reduce work flow changes) particularly difficult. Overall, agreement to eManifest by all stakeholders are difficult to achieve. The benefits need to be clearly articulated. Possibly it should be remembered that the MSW provides an opportunity to design in the required changes aiming to reduce costs in the long run.

Potential eManifest approach

A way forward is that an eManifest is submitted in a single modular message before the arrival of a ship to an EU port:

1. Part1 : General Cargo declaration (e.g. FAL1 content);
2. Part2: List of ALL the consignments on board (including “hazmat”-related consignments) identified e.g. by their MRNs (Movement Reference Number);
3. Details (description of goods items) need provided only for consignments that:
 - are first time loaded (original loading or transshipment) at the loading port of the ship for her current *voyage and the goods nature did not require the lodgment of an ENS*
 - Have an update (e.g. because of a cargo diversion) *and the goods nature did not require the lodgment of an ENS.*

It is assumed that the data of previously submitted ENSs shall be pushed to the ports where goods are to be unloaded irrespective of risk assessment outcomes.

The advantage of this approach is achieving full re-use of data previously submitted and transparency on the cargo on-board the arriving ships to the Authorities (Custom or Maritime). The VTM Directive requirements are satisfied as for EU departures the details of Hazmat are reported to the departure port of the ship. SSN could provide the mechanism for pulling and/ or pushing data among Member States or can be done through information sharing between MSWs.

Points for attention:

1. Consistent way for linking cargo consignments to ship voyages;
2. Cross-checking multiple reporting for the same consignment;
3. Establishing rules dealing with departures of ships towards “unknown” ports of Call, call cancellations and cargo diversions;
4. Harmonization of “Entry key” used by Member States and internationally for “voyage” number, and/ or CallIDs and cargo conveyance numbers;
5. Reconsidering the need for a “departure” Manifest;
6. Reconsidering how the declaration of temporary storage is to be “harmonised”.

Common Veterinary Entry Document (SVED) and TRACES

To clear veterinary consignments entering the EU, a validated CVED is needed. The certificate proves that the checks laid down in EU and UK law have been carried out and that the consignment may be released for free circulation. In the case of products not fit for human consumption it may also specify the address to which the goods must be delivered.

TRACES (TRAdE Control and Expert System)³⁸ is a trans-European network for veterinary health which notifies, certifies and monitors imports, exports and trade in animals and animal products. Economic operators (private sector) and competent authorities all over the world can use this web-based network to trace back and forth animal and animal product movement. TRACES support applications for ITAHCs for exporting and CVEDs for importing live animals and their products.

³⁸ http://ec.europa.eu/food/animal/diseases/traces/index_en.htm

3.6 MSW Messages and Data models

The information elements that come under the reporting obligations and therefore under consideration for the development of MSW data models and standard messages are given in the following table.

☐	ETA, ETD reporting
☐	ATA, ATD reporting
☐	Notification for ships arriving in ports of the Member States/ Norway/ Iceland (submitted at least 24 hours before arrival and including ETA and person on board information)
☐	Notification for ships departing from ports of the Member States / Norway/ Iceland (submitted before or on departure and including ETD and scheduled destination information)
☐	Person on board lists (passengers, crew, stowaways)
☐	Notification of dangerous or polluting goods carried on board (for inbound voyage submitted at least 24h before ship arrival and for outbound voyage before or on ship departure)
☐	Notification of waste and residues
☐	Notification of security information (including e.g. the information on ship security level and on last 10 calls at port facilities. It is submitted at least 24 hours before arrival)
☐	Entry summary declaration (ENS) for non-Union goods
☐	Cargo manifest
☐	Declaration of temporary storage
☐	FAL form 1: General Declaration
☐	FAL form 2: Cargo Declaration
☐	FAL form 3: Ship's Stores Declaration
☐	FAL form 4: Crew's Effects Declaration
☐	FAL form 5: Crew List
☐	FAL form 6: Passenger List
☐	FAL form 7: Dangerous Goods
☐	Maritime Declaration of Health

Given the urgency of developing National Single Windows in all EU Member States a number of projects are developing MSW models. Notable examples are:

1. the eMS group³⁹;

³⁹ Expert group on Maritime administrative simplification and electronic information services –DG MOVE

2. the AnNA project⁴⁰. This EU Member States driven project - in close co-operation with the European Commission – is aimed to support the effective implementation of the ship formalities Directive. ANNA is developing the Business to Maritime Single Window (B2MSW) Messages which will be tested by a number of member states in MSW pilots.

Electronic port clearance (EPC)

The IMO Facilitation Committee (FAL) decided in April 2013 to list ISO 28005 as a reference for XML based electronic port clearance systems (EPC) in the FAL Compendium.

ISO 28005, "Security management systems for the supply chain – Electronic Port Clearance (EPC)"⁴¹. EPC currently consists of two parts: Part 1 is "Message structures – Implementation of a maritime single window system" and part 2 is "Core data elements".

Core data elements cover all requirements for ship to shore and shore to ship reporting as defined in the following:

1. All FAL standard declarations (FAL 1 to 7) as defined in the FAL Convention [FAL];
2. ISPS reporting requirements as defined in [ISPS] and [MSC 1305];
3. All general ship reporting requirements as defined in [A.851]⁴²;
4. Recommended reporting on ship generated waste as defined in [MEPC 644] and which is mandatory in Europe as described in [EU/2000/59];
5. Required reporting as defined in the bulk loading and unloading code [A.862];
6. ETA reporting to pilot station as defined in [A.960]⁴³.

ISO/PAS 28005-1:2012 allows different configurations of the single window (SW), from a minimum solution to support basic clearance requirements to a more complex system to facilitate more extensive cooperation between ship and shore organisations.

The standard has been developed through a number of EU-projects, and lately e-Freight has been responsible for the finalisation of the standard and the work towards IMO FAL approval.

The eMAR CRS

CRS as the name implies provides a unified solution for regulatory information management associated with trade and transport at both National, EU and international levels. Initially developed in the e-Freight project it is being refined to provide the data model and messages for MSW prototypes developed under eMAR.

⁴⁰ <http://www.annamsw.eu/about.html>

⁴¹ http://www.iso.org/iso/catalogue_detail.htm?csnumber=61323

⁴² IMO Assembly Resolution A.851 (20), General Principles for Ship Reporting Systems and Ship Reporting Requirements, Including Guidelines for Reporting Incidents Involving Dangerous Goods, Harmful Substances and/or Marine Pollutants.

⁴³ IMO Resolution A.960(23) - Recommendations on Training and Certification and on Operational Procedures for Maritime Pilots other than Deep-Sea Pilots

The CRS has been tested for submission of formalities under various scenarios, including submissions to ICS systems, submissions to SSN via National Single Windows, and recently submissions by the DNV Navigator and other ship applications.

A major advantage of CRS is that it is structured to represent accurately both a cargo and ship / voyage perspectives. It has been constructed taking into account the main international standards, particularly WCO and EPC.

3.7 MSWs and IMO e-Navigation

The IMO E-Navigation initiative focuses primarily on the shipborne navigation - the development of electronic capabilities to get a ship quickly and safely from A to B. The Preliminary List of Potential e-navigation Solutions⁴⁴ includes:

- S1: improved, harmonized and user-friendly bridge design;
- S2: means for standardized and automated reporting;
- S3: improved reliability, resilience and integrity of bridge equipment and navigation information;
- S4: integration and presentation of available information in graphical displays received via communication equipment; and
- S9: improved Communication of VTS Service Portfolio.

The e-navigation solutions S2, S4 and S9 focus on efficient transfer of marine information/data between all users (ship-ship, ship-shore, shore-ship and shore-shore) and are directly related to MSWs and associated e-Maritime solutions.

e-navigation is to be built on improved connectivity between ship and shore and therefore ship reporting to MSWs will become dependent on e-navigation solutions in the future.

For the purpose of e-navigation, usability means the extent to which systems can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use. Usability for ship reporting applications could be considered as part of the overall e-navigation usability guidelines. Additionally web-based training for shipboard formalities reporting will be necessary.

⁴⁴ NAV/58/WP6 rev.1 Annex

4. A Guide for developing National Maritime Single Windows

4.1 Strategic Framework

Each country has different interests and priorities, different authority structures, different cultures and industrial development histories which need to be brought together systematically before specifying and developing or upgrading effective Maritime Single Windows (MSWs).

The long term development strategies for MSWs can be drawn with reference to three generic objectives (related to the three principal MSW stakeholders). These are:

1. Make the job of **reporting parties** easier;
2. Facilitate efficient regulations supervision and enforcement by **national authorities** and provide complete accurate and timely information for risk management and other support applications pertaining to national transport and trade policy and strategy;
3. Facilitate information exchange with **third party information platforms** at multi-national, EU and international level.

Support for reporting parties, needs to be addressed at both policy and technology / system perspectives. **In Europe the e-Maritime programme is ideally suited to support such strategy by engaging with industry to identify key solutions and fostering policies to facilitate their implementation.**

Undoubtedly, MSW success will come from harmonisation of legal ship reporting formalities in all EU Member States. This implies a common European standard for ship formalities messages **ensuring that ship operators will need one 'link' to any MSW in Europe irrespective of Port of Call.**

International harmonisation is obviously equally important. The active participation of international organisations in this process such as IMO, WCO and ISO is vitally important. However, as standardisation is a long term goal, **harmonisation of MSW infrastructures can provide a medium term solution.** This means that MSW solutions in the USA and Asia should be extended to accept EU standard messages and the other way round in Europe (e.g. by incorporating necessary adaptors). Further benefits to reporting parties will arise from **automated generation of standard MSW messages from business networking support systems (B2B) utilising e-Freight and e-Maritime developments.**

From the authorities perspectives compliance can be largely automated so that strategic developments could be focused on the role of MSW in improving risk management (safety, security, environmental protection) through improved targeting and co-ordinated intervention responses. In this context strategic goals include:

- interconnection between SWs for different modes to establish a better picture of trade and transport movements;

- increased co-operation between authorities and trusted reporting parties;
- enhanced flexibility for SW registered users to broadcast 'alert' information to specified recipients;
- common information fusion services ensuring a uniform level of capability across all EU states and internationally.

For European and international information exchanges the strategic goal is maintaining connectivity alignment between information sources ensuring best two way exchanges to maximise information utilisation. The EMSA SafeSeaNet and other applications (see section 3.2) offers a good example of a range of focused capabilities for enhanced maritime safety which can be utilised in MSWs.

The vision is to move to a situation depicted by Figure 6A with interconnected MSWs and shipping networks.

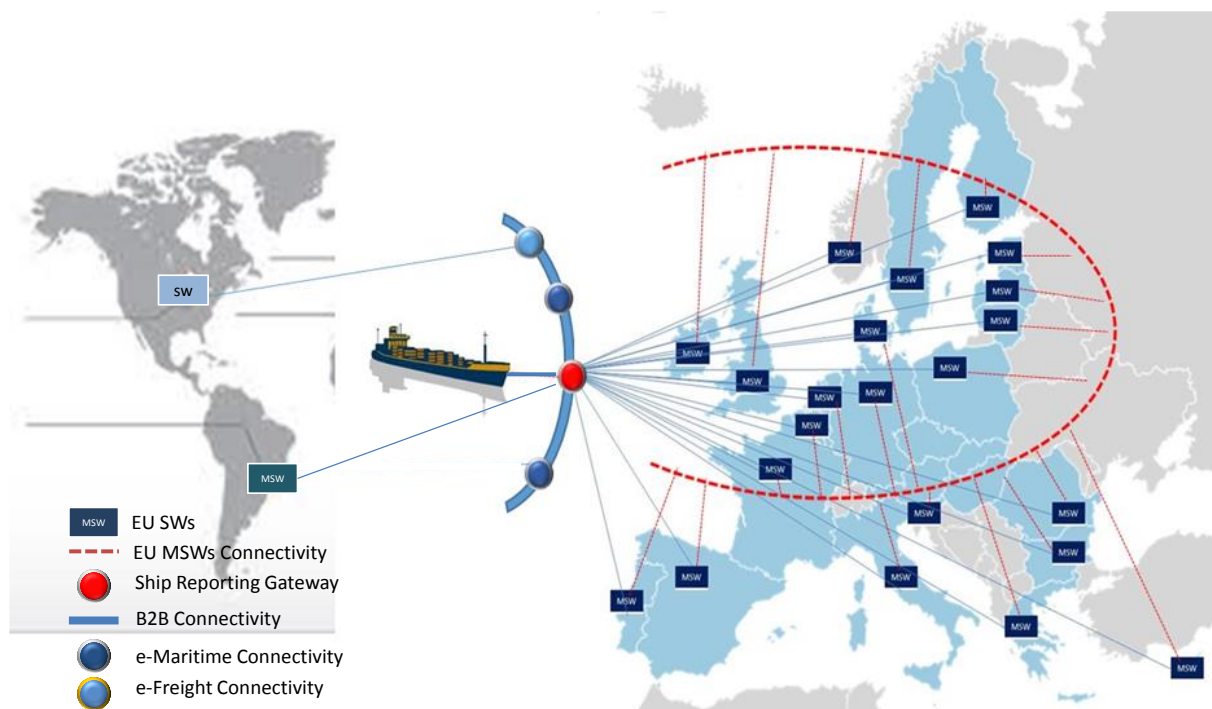


Figure 6A: a vision for interconnected MSWs and shipping networks

The Maritime Single Window is effectively a connectivity mechanism between Businesses and Authorities. Yet, business interfacing solutions (B2A) are often inadequate as design decisions tend to concentrate on the areas under government control (i.e. the A2A system). Possibly the most important challenge is therefore to pay attention in designing the business side of MSWs. For this key influence factors are:

1. Effective dissemination of MSW plans and developments to all reporting parties including clear explanation for changes and instructions for future use;

2. Providing MSW user interfaces adhering to common usability criteria;
3. Providing Common user registration and authentication rules are used.

Having established an efficient connectivity infrastructure Value Adding Services can be added for all stakeholders (both for businesses and authorities).

In summary, as shown in Figure 6B the three pillars for the long term development of MSWs are:

1. Policy support for harmonisation of MSW related standards and infrastructures particularly a common EU MSW Message Implementation Guide as proposed by AnNA and international harmonisation promoted by WCO and IMO;
2. Integrated business and compliance solutions building on e-Freight and eMaritime capabilities⁴⁵ and Value Added Services utilising collective information sources;
3. Interconnectivity of SWs and multi stakeholder information sources at EU and internationally to facilitate safety, security, and environmental risk management.

Each of the pillars must address change management support and specifically solutions for SMEs.



Fig 6B: Strategic MSW Development Framework

⁴⁵ Supported also by latest UNECE paper Trends for collaboration in international trade: building a common Single Window Environment (ECE/TRADE/411): This paper analyses the role of inter-organization collaboration platforms in global trade. It argues that the interoperability among different inter-organization information exchange systems in global supply chains will be the key success factor to future supply chain efficiency. The establishment of an environment that fosters the development of a network of inter-organization collaboration and information exchange systems is a responsibility of policy makers. Finally a draft policy framework is proposed to provide an environment in which different inter-organization information exchange and collaboration platforms can develop networks and synergies

4.2 The stakeholders and their requirements / benefits

The main stakeholders and associated requirements and benefits are given in the following table.

Stakeholders	Requirements	Benefits	Means
National Authorities	Obtain complete, accurate and reliable information available on a time or event basis. Offer reporting parties easy and harmonised (B2A) interfaces creating lower barriers to trade. Establish flexible services to develop co-operation schemes with trusted parties.	Correct revenue yields from custom duties etc. Improved efficiency and quality in overseeing, enforcing regulations. Improved safety, security and environmental risk management. Security risks managed earlier. Less government intervention. Higher performance levels with lower resources including costs. Reduction in fraud and counterfeiting. Reduced costs of maintaining multiple systems with similar functionalities or producing bespoke integration that are difficult to maintain.	Easier access to information through better co-ordination between all authorities involved, and integration of key information sources. More targeted inspections through improved situational awareness and better response coordination between authorities involved. Access to advanced common services
Reporting Parties: Masters Ship operators, ship agents, Freight forwarders/ cargo agents	Less administrative work. Cost effective reporting. Common MSW interfacing requirements irrespective of port of call. Simple electronic instructions for interfacing to MSWs.	Reduced time and cost for submitting regulatory information. Improved confidentiality. Improved awareness of and compliance with regulations. Selection of compliance services with reduced costs. Reduced uncertainties leading to improved planning. Shorter lead times for cargo collection	Common reporting Gateways Common registration services User guides and registries of compliance/reporting services. Potential VAS from MSWs or related EU and international platforms

4.3 A Generic MSW Architecture

A generic MSW Architecture is given in Fig. 7 reflecting key features highlighted in the previous sections.

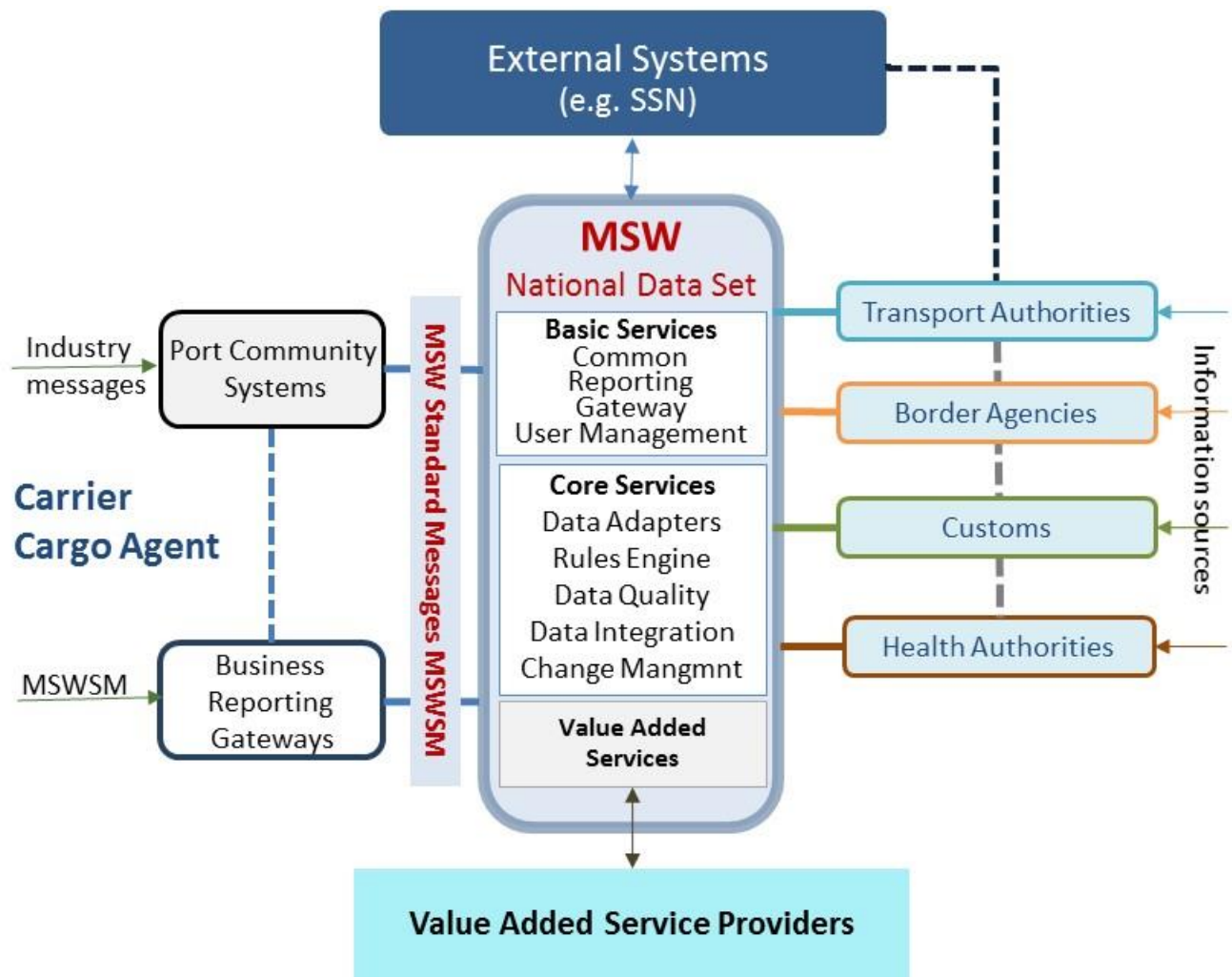


Fig 7: Generic NSW Architecture

The key features are:

1. MSWs provide a Single Interface between trade and transport businesses and authorities responsible for enforcing national, EU and international legislation.
2. MSWs represent eGov applications based on a National Data Set (and national data model) offering a Common Reporting Gateway to businesses for submitting Standard Messages (MSWSM) which are stored by each MSW using the NDS.
3. MSWs will include basic services including the Common Reporting Gateway equipped with validation rules and User Management. User Management should implement common authentication rules allowing interlinking to user management of other NSWs and EU / multinational platforms. User Management should address specifically interactions with trusted reporting parties such as AEO or Authorised Consignor, etc.

4. Two main channels for the submission of reporting information / declarations would provide both flexibility and utilisation of existing systems. These are:
 - a. Port Community Systems and similar community systems. Such systems normally facilitate both commercial and regulatory information exchange. The interface between PCSs and NSW should be kept harmonised.
 - b. Business Reporting Gateways represent commercial applications used by carriers, agents or aggregators to fulfil formalities as per applicable legislation. BRGs will connect with standard or bespoke interfaces either to the PCSs or to the CRG maintained by a NSW.

Business Reporting Gateways could provide additional information agreed under co-operation schemes between business and authorities including data from sensors. BRGs will be essentially similar to MSW common reporting gateways but with added functionalities to assist task of different reporting parties.

5. The MSW provides interfacing to external systems such as SSN. This implies that the NDS must contain all data elements to construct notifications as required by external platforms. Information exchange mechanisms should be developed for cooperation with other NSWs and additionally with platforms offering important information sources. The use of aggregated data available by EU and international databases should be considered early in the design of MSWs.
6. MSWs could include core services including:
 - a. Data Adapters primarily to link with existing authority systems but which could be extended to include adapters for linking commercial information sources to the MSW;
 - b. Rules Engine to implement information sharing rules and event based information data flows;
 - c. Data Quality offering data integrity checks and monitoring quality indicators associated with submitting parties;
 - d. Data Integration offering common services to aggregate data according to specific requirements for authorities particularly for safety, security or environmental risk management;
 - e. Change Management which can include observatory of legislation change, revisions to NDS and change propagation services helping user groups to implement changes in a timely and cost effective manner.
7. MSWs could also facilitate provision of Value Added Services. Provision can be made to allow service providers to offer VAS primarily for authorities but also to businesses when liability and confidentiality issues can be adequately resolved.

4.4 An MSW development roadmap

Developing or upgrading National Single Windows can be organised under the following three development streams as shown in Fig 8. These are:

1. Development and maintenance of National MSW Models
2. Strategy and MSW Specification
3. MSW pilots

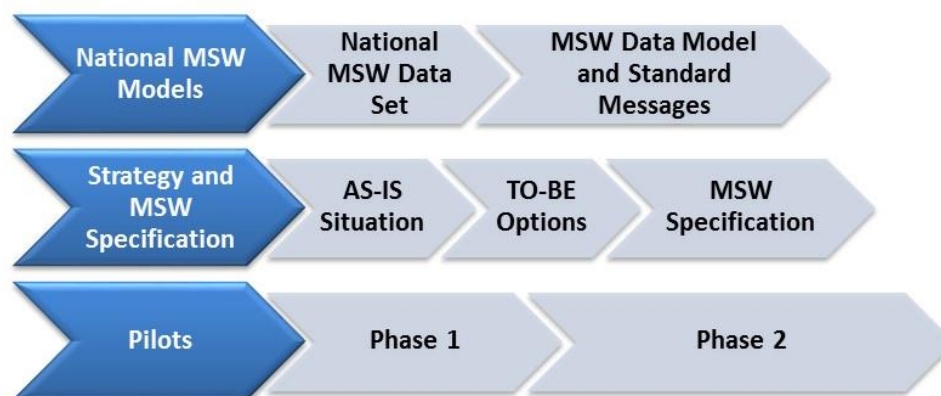


Figure 8 MSW development roadmap

4.5 Development and maintenance of National MSW Models

As indicated earlier the cornerstone for the development of MSWs is the underlying National Data Set, the Data Model and associated standard MSW Messages. It is important to recognise that the process for developing or adopting such models is critically important to the success of the MSW. The main MSW modelling components are shown in the figure 9.

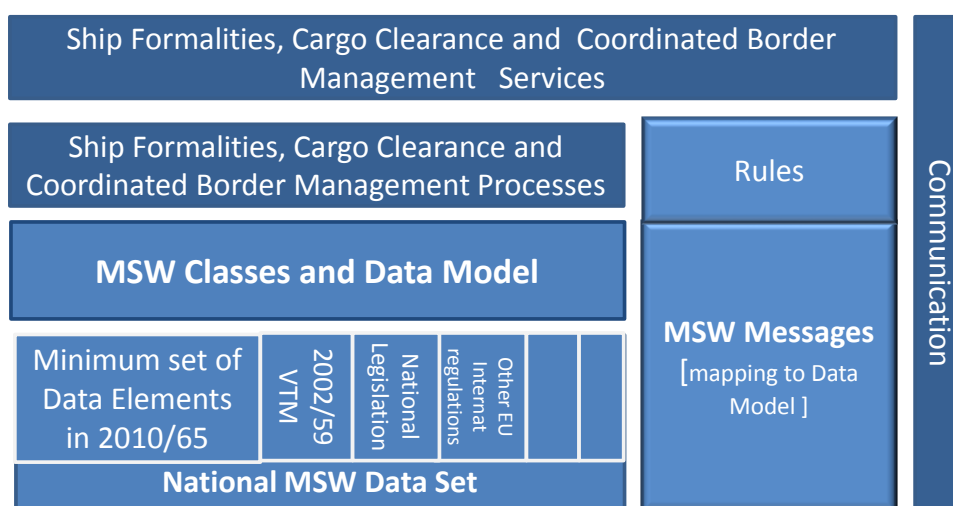


Fig 9: MSW modelling components

The data elements that must be included in the MSW can be derived by the relevant legislation/directives. This data set specification should include name, description, format and reference standard. The minimum data set can be specified with reference to 2010/65.

However all related directives should be addressed, including national legislation and port specific laws were applicable. Further, harmonisation with other modes has advantages, so additional data elements could be added. Further, known future requirements could be included.

The eventual data set should be mapped into classes and the associated data model. There is a hierarchy of models starting with the data set, to data model to process model and service models which in practice are specified through an iterative process.

The MSW messages provide mechanisms for information transmissions (different types of declarations) at specific times / events (pre-arrival, arrival, departure, etc.). Validation and information flow rules are an integral part of the messages specification.

The complexity of the models involved and particularly the need to frequently make changes to reflect new legislation makes modelling tools a valuable component of the MSW solution. Approaches for designing and building MSWs that remains decoupled from languages, platforms and technologies are particularly relevant.

Data model for ship formalities

A basic conceptual model of the main MSW information entities is given in the following diagram. Reporting parties for each Port of Call and associated Voyage submit declarations associated with:

1. The Ship;
2. People;
3. Cargo.

The MSW Messages are essentially structured to reflect this model.

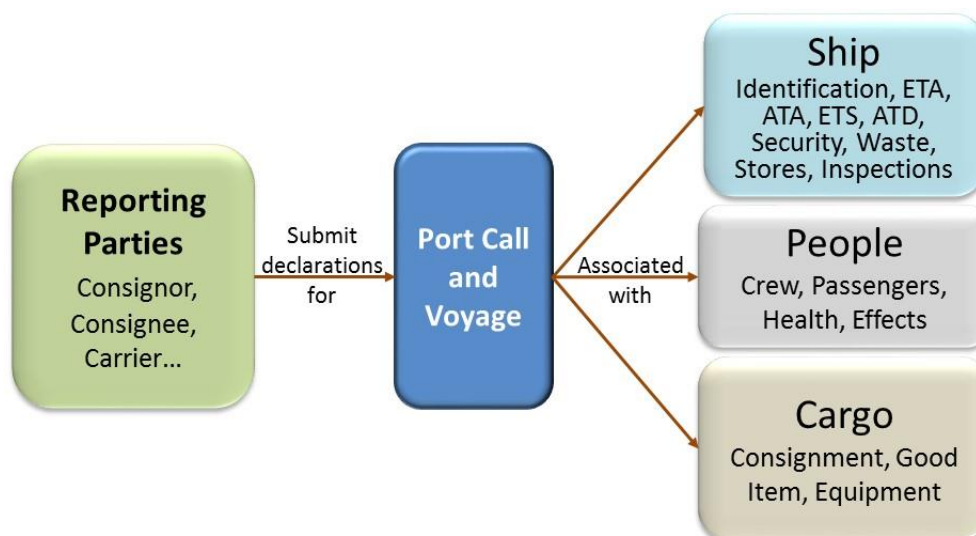


Fig 10: High level ship formalities data model

A National MSW Data model

A National MSW Data Model is country specific as shown in Figure 11. Therefore, the National Dataset and Data Model can be constructed to:

- reflect national strategies both from maritime, customs, and border control perspectives;
- be aligned with the ship the standard MSW Messages;
- be aligned with the authority applications linked to the MSW.

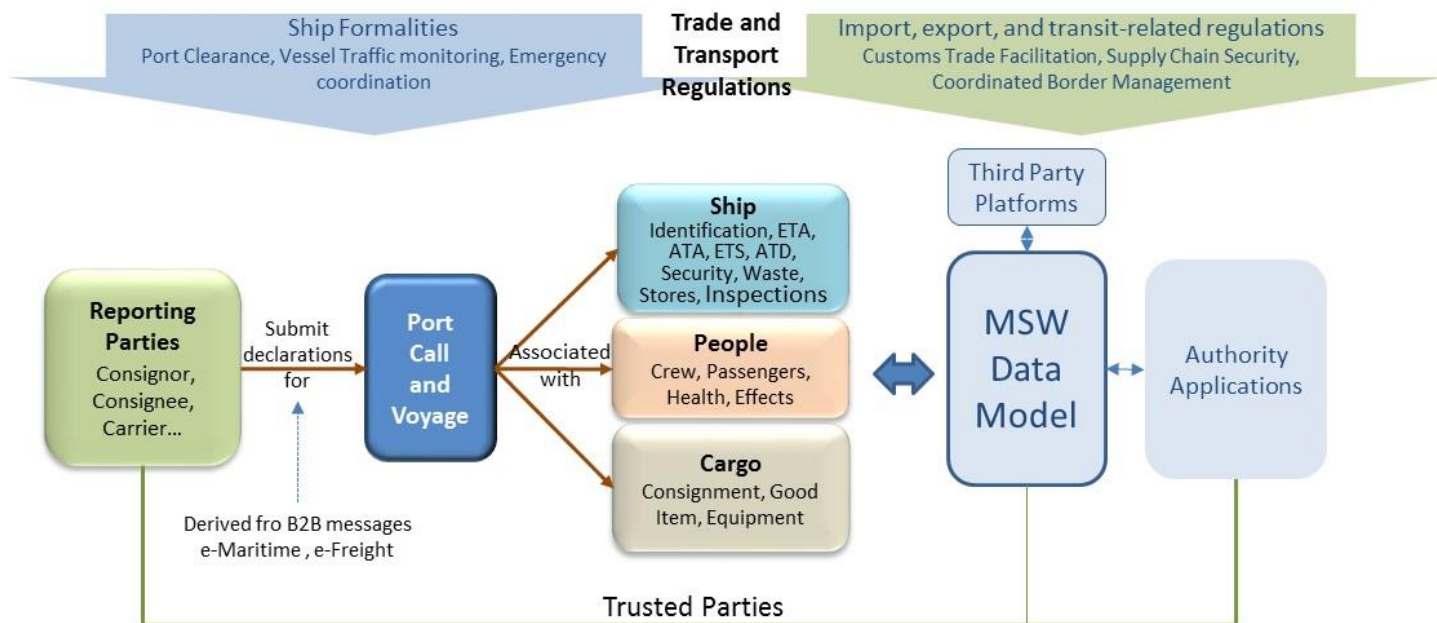


Figure 11: MSW Data Model Dependencies

4.6 Strategy and MSW Specification

National Single Windows represent large investments and can impact economic growth as well as security and environmental strategies. The MSW specification needs to be guided by national strategy which is likely to reflect the type of strategic issues outlined earlier.

Functional and non-functional specifications will need to be produced with attention on:

1. Establishing clear expectations within the user community for target systems in terms of Functionality, Robustness, Usability;
2. Establishing SLAs for reliability and availability amongst interdependent systems;
3. Providing user training - use of interactive (online) media support-creation of a newsgroup (forums, topics and posts to discuss improvements and priorities).

4.7 Pilots

Early pilots are necessary to establish feasibility of strategic options and to provide feedback to finalise specifications.

Full scale pilots provide the means to develop solutions minimising risks for deviation from specifications and costs escalation.

5. MSW Development Preparation Check-List

	Document / Activity	Focus	Topics
Strategy	Vision and scope	Objectives Benefits Scoping choices Components	• Objectives and vision for the Single Window and related directives and national policies / strategies • Expected impact / benefits / KPIs per stakeholder group ○ Reporting parties ○ Authorities ○ EU or international agencies ○ Other • AS-IS modelling of processes and systems per authority and understanding of key constraints • Single Window's Architecture and Components to satisfy the overall Single Window vision • Interaction with other modes (aviation, rail, road, inland navigation) and cargo / passenger perspectives) • Central or Distributed Architecture (options and justification of choices) reliability, flexibility, and scalability factors ○ Existing authority applications to be interfaced ○ New authority applications to be introduced ○ Requirements for Authority specific web interfaces ○ Strategy for SLAs for reliability and availability amongst interdependent systems • Role of PCSs - integration with EU and international SWs and commercial platforms ○ PCSs to be linked with – interfacing agreements ○ Interfacing with SSN - review for 'optimised' use of SSN information ○ Interfacing with EU platforms – TRACES, etc.



			○ ship and cargo status information sources ○ AEO and international mutual recognition DBs • Cooperation strategies with trusted parties • User management policy, common authentication rules, migration from existing systems, authorisation requirements per authority • Strategy for MSW core services • Training policy for authority users and support tools for reporting parties • Change management support • Measures to support SMEs • Stakeholder engagement strategy and dissemination programme • Value Added Services strategy - VAS categories – providers accreditation
	Commitment	Sponsorship and Leadership Desire and Willingness	• Concerned parties understand the need for the MSW vision / scope • There is desire to achieve the “vision” and willingness to do the work • The management team support the implementation of the targeted information system • They are able to engage all concerned parties in the project and keep them on board throughout.
	Strategic Planning / funding	Capacity to Execute	• There is an established channel for coordinating strategic decision making between the sub-projects at both policy and technical levels • Sufficient financial resources have been or will be allocated to the development of targeted system • Recognition of the need for knowledge and skill-building and corresponding arrangements which may include training or hiring of competent consultants • Stakeholder engagement strategy actioned.



Solution Specification	MSW Specification	Agreed AS-IS Situation TO-BE Options Impact Success criteria	• Agreed AS-IS specification for all authorities involved including process models • TO-BE model options streamlining and simplifying trade transaction processes and inter-authority cooperation ○ Overall process model ○ Process model per authority ○ Development roadmap • MSW Functional and non-functional specification • Security architecture and services • IT implementation strategy • Data migration plan • Impact assessment • Success criteria and performance measurement • Establish clear expectations within the user community for targeted systems ○ Functionality ○ Robustness ○ Usability
	Development and maintenance of National MSW Models		• National Data Set (NDS) agreed by all authorities ○ Minimum dataset from applicable directives (reference AnNA dataset) ○ Mapping from applications to be linked to the MSW ○ Matrix of Data Elements and 'use' by authorities and their applications ○ Validated National Data Set • Information sources to be linked to MSW or linked applications agreed and implication on NDS checked • External platform information exchanges to be checked within the NDS • National Data Model agreed • MSW Message structures specified (reference AnNA) • Validation rules agreed (reference AnNA) • Process and service models and SLAs agreed



			• Communication services considered • Modelling tools considered • Regulations observatory considered • Models maintenance responsibilities assigned • Training considered
	Pilots	Test Ability to Implement and Operate	• Organise pilot to validate feasibility of strategy and MSW specification • Roles and responsibilities of concerned parties in the pilots are clearly identified • Test scenarios and user participation defined • Deployment strategy specified • Data and measurement programme in place • Phase 1 pilot to test strategy and provide feedback for detailed specification as well as cost estimates for full solution ○ Interfacing with reporting parties ○ Authorities information exchange – interfacing to existing applications ○ Integration with external systems - SSN • Phase 2 pilot to provide user acceptance testing and refinements to models and implementation components

Acknowledgements

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