SEVENTH FRAMEWORK PROGRAMME

SST–2007–TREN–1 - SST.2007.2.2.4. Maritime and logistics co-ordination platform

SKEMA Coordination Action

“Sustainable Knowledge Platform for the European Maritime and Logistics Industry”

Inventory of Port Single Windows and Port Community Systems

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Contents

1 Introduction

This study develops an inventory of the reporting transactions carried out by European Sea Ports using their electronic data processing systems. It compiles several types of information about these systems, namely the transactions achieved by the systems; their function and the documents required by those transactions; the authorities and other stakeholders that interact with these systems and how they do it; whether the systems were created by law; the companies that provide and run these systems; the funding of the systems; efficiency of operation and future expectations.

The sample was drawn from a list of more than a hundred European ports with diverse traffic, based on the ESPO annual report published in 2008[1]. Only 12 ports completed the survey and a further 2 ports provided us with web sources where we could find the necessary information.

The information is described and analysed in three subsections as follows:

- General inventory of all surveyed ports.
- Inventory of each particular system by port
- Statistical view of the information compiled.

1.1 Definition of PCS and NSW in the context of e-Maritime

One of the e-Maritime objectives is to establish a framework[2] whereby the competitiveness of the EU maritime transport industry can be increased. There are several issues that give rise to this e-Maritime challenge:

- Administrative procedures in maritime transport are complex and time-consuming. They are still today often carried out on paper, and where they are carried out electronically, the systems differ from region to region.
- Maritime transport is insufficiently integrated in the logistics chain and its electronic exchange of messages and data is not well developed.
- Lack of interoperability results in increased costs because several different systems co-exist without real economies of scale. Consequently, ship, port and logistics operators and national administrations have to develop several adaptors (often with limited useful life) to integrate with a plethora of different systems they encounter in their day to day operations. Integration cost penalties affect SMEs in particular because they need access to information systems that are often closed and which vary from company to company or port to port.

[1] See www.espo.be. The authors are grateful to Martina Fontanet of ESPO for her cooperation in extending the invitation to participate to member ports.

[2] "e-Maritime: Concept and objectives" by Christos Pipitsoulis, Project Officer, European Commission, DG Energy and Transport, 26 March 2009

- Lack of interoperability creates barriers to utilizing ICT applications to increase the operational efficiency of ports and ships and to enable innovative solutions to increase sustainability performance. There is a need for supports to strategically manage maritime transport networks, plan shipments effectively and control the implementation of such strategies and plans to maintain optimum performance.

In accordance with an e-Maritime framework, it is not easy to define a port electronic data system because these systems differ from port to port. In principle, the different types of the Single Windows for the maritime community are:

- **Port Single Window (PSW):** System which provides local level information about the vessel to the authorities on a port level, that has B2G (Business to Government) character.
- **Port Community System (PCS):** A tool to exchange messages in port environment, having a commercial and logistic nature, that has B2B (Business to Business) character.

Only a general definition can be applied to a port electronic data system, such as 'an entity delivering information to supply chains operating in the port', and that definition could be given to both systems. The main difference between these systems is that some ports use PCS for commercial/merchant transactions and the PSW for administrative transactions, but other ports use both systems indistinctly for commercial and administrative transactions.
According to European Commission International Trade Procedures Working Group[3], the models of the port single windows[4] are:

- **A Single Authority**: Customs coordinates and/or enforces all border-related controls.
- **A Single System**: integrating the electronic collection, use, and dissemination of international trade data related to trade that crosses the border.
- **Automated system**: through which a trader can submit electronic trade declarations to various (controlling) authorities for processing and approval in a single application. In this approach the approved permits are transmitted electronically to the sender's computer.

The report "*Blueprint for a virtual port*" from Erasmus University Rotterdam describes three e-collaboration models. In this report the three models are looked at from different perspectives, which are infrastructure, messaging, security, and mobile perspective.
The three e-collaboration models are:

1. **Bilateral Information Model (BIM)**. In this model information is exchanged directly between the different actors on a bilateral basis.

[3] UN/CEFACT ITPWG-TBG15 http://www.unece.org/cefact/forum_grps/itp/welcome.htm
[4] Single Window repository http://www.unece.org/cefact/single_window/welcome.htm

2. **Centralised Information Model (CIM)**. In this model data is stored at a central information service provider. Information can be retrieved from this central information service provider by trading partners that have the right to do so.
3. **Decentralised Information Model (DIM)**. In this model data is stored and controlled by each individual party. A broker service can help in retrieving the information from the right source.

In conclusion, there are two basic systems, PSW and PCS, but their names, running, functions, procedures achieved etc, depend on the port that uses these systems. Likewise each port gives a different name to their system so the PSW is called National Single Window or Single Point of Contact, depending on the port, but in essence, it is the same system.
From the e-Maritime perspective a Single Window system must achieve the following functions to accomplish the increase the competitiveness of maritime transport:

- ⇨ Simplifying administrative procedures for co-modality, providing interoperability between this Single Windows platforms and regulatory compliance reporting systems.
- ⇨ Improving the utilization of maritime transport resources by supporting maritime transport stakeholders to establish and manage competitive business networks.
- ⇨ Supporting improved efficiency of shipping services (cost/ton-km) and enhancing the attractiveness of short sea shipping for efficient door-to-door supply chains (improved service reliability, environmental impact and ease of use).
- ⇨ Supporting the development of European Ports as key logistics hubs these systems.
- ⇨ Developing a competitive technology supplier industry in this field.

1.2 Acronym summary

ACRONYM	DEFINITION
AIS receiver	(Automatic Identification System) Short range coastal tracking system used on ships and by Vessel Traffic Services (VTS) for identifying and locating vessels by electronically exchanging data with other nearby ships and VTS stations.
B2B	(Business-To-Business). A transaction that occurs between two companies, as opposed to a transaction involving a consumer or a company that provides goods or services for another company.
DEFRA	Department for Environment, Food and Rural Affairs
DG Control	Multi-modal computer program for preparing and printing dangerous goods declarations.
DGTREN	European Commission Directorate-General for Energy and Transport
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
FTP	(File transfer protocol) Standard network protocol used to exchange and manipulate files over a TCP/IP based network, such as the Internet.
GS1 standards	Integrated system of global standards for identification and communication
HMRC	(Her Majesty's Revenue and Customs). Department of the British Government primarily responsible for the collection of taxes and the payment of some forms of state support.

ICS	Integrated Communication System
IMO/OMI	International Maritime Office
INTRASTAT	Intra-Community Trade Statistics System
IS	Information system
LAN	(Local area network) Computer network covering a small physical area.
MASP	Management advisory service and publications
NCTS	New control transit system / New Computerised Transit System
PCS	Port Community System
PSW	Port Single Window
RFID	Radio Frequency Identification
Safeseanet	European Platform for Maritime Data Exchange between Member States' maritime authorities, is a network/Internet solution based on the concept of a distributed database.
UKBA	UK Border Agency. Responsible for securing the United Kingdom borders and controlling migration in the United Kingdom.
VPN connection	Encrypted connection that can be used only with sufficient access rights.
VTS	(Vessel traffic service) Marine traffic monitoring system that provides active monitoring and navigational advice for vessels.
XML	(Hyper Text Markup Language). A markup language used to structure text and multimedia documents and to set up hypertext links between documents, used extensively on the World Wide Web.
ASP	Active Server Pages, a web-scripting interface by Microsoft
FTP	File Transfer Protocol commonly used protocol for exchanging files over any network
UN/EDIFACT	United Nations/Electronic Data Interchange For Administration, Commerce and Transport

1.3 Ports throughput

This shows information about the throughput of the ports that answered the survey and estimates the percentage they represent related to total European ports throughput. We have gathered this information from ESPO Annual Report 2007-2008. It must be pointed out that the percentage of total throughput has been calculated related to the total amount published by ESPO. This report contains all ESPO ports from which not all of them belong to European Union.

According to the ESPO Annual Report 2007-2008, the throughput in 2006 of the ports that cooperated with the project, was:

PORT	TEUS	CARGO TONNES	RORO TONNES	DRY BULK TONNES	LIQUID BULK TONNES
Antwerp Port	7.018.799	18.182.316	5.497.731	25.608.710	37.740.159
Cyprus Ports Authority		620.796	264.891		1.228.638
Dunkerque Port	204.835	1.822.795	11.091.142	27.875.719	14.143.238

Esbjerg Port	24.000	300.705	1.793.367	1.156.321	665.136
Grand Port Maritime de Bordeaux	54.648			2.328.932	5.037.992
Hamburg Port	9.889.792	2.333.083	376.976	28.718.146	14.164.479
Klaipeda Port	231.548	1.996.321	2.118.491	7.488.554	8.158.136
Luka Koper Port of Koper	218.970	1.110.894		10.077.490	2.078.241
Port Authority of Livorno	657.592	2.427.539	6.144.820	1.466.227	9.327.955
Rauma Port	163.504	3.211.630		1.679.783	
Southampton Port	1.500.306		1.537.235	2.287.678	28.240.766
Stockholm Port	37.214		2.691.092	1.197.581	955.825
Szczecin and Świnoujście Seaports Authority SA	42.425	2.642.979	3.053.228	9.280.000	655.025
+	20.043.633	34.649.058	34.568.973	119.165.141	122.395.590
Related to total	25'10%	13'39%	7'65%	11'77%	7'69%

Estimated total European TEUs throughput 79.840.000
Estimated total cargo tonnes 258.695.990
Estimated total RoRo tonnes 451.485.061
Estimated total dry bulk tones 1.012.442.989
Estimated total liquid bulk tonnes 1.591.198.433

2 General Inventory

2.1 Identification of the electronic systems used by the ports

Since each port has developed its own system, firstly, it was considered necessary to identify the electronic data processing systems used by the European Sea Ports surveyed, to have the widest knowledge of the different existing systems. The systems used by surveyed ports are:

1. Port Single window (PSW).
2. National Single Window (NSW).
3. Single Point of Contact (SPC).
4. Port Community System (PCS).
5. Harbour Authority System (HAS).
6. Cargo Community System (CCS).
7. Harbours Information & Control System (HICS)

2.2 Transactions produced by the systems, their function and the documents required

A key element of this research is the compilation of the transactions produced by the electronic data processing systems. In order to do this, it was necessary to understand the function of these transactions and the documents related to the reporting. The responses from ports were as follows:

Transactions produced by **Port Single Window:**

1. Advanced maritime medical declaration. Submits data by shipping agent and decision of authorities involved.
2. Berth demand. Manages the process of the demand of the berth.
3. Calls management. Coordinates all the stakeholders concerned with the vessels.
4. Cargo delivery. Enables the delivery of general cargo to the recipient. Required by this transaction are the following documents: Waybill, delivery order history.
5. Cargo handling certificate. Submits data by freight forwarder and decision of authorities involved.
6. Cargo management. Submits data about cargo handling.
7. Cargo receiver. Enables the receiving of cargo and produces the outturn report to be sent to customs and agents. Required by this transaction are the following documents: Manifests list, Manifest original cargo, Manifest outturn report, Corrigendum report and discrepancy report.
8. Certificate of stevedoring work. Submits data by stevedoring company and conformity by freight forwarder.
9. Certificate-notice of discrepancy. Submits data by freight forwarder and decision of authorities involved.
10. Consignment. Submits data by freight forwarder and decision of authorities involved.
11. Container handling. Records the importing and delivery of containers (not stowage). Required by this transaction are the following documents: Waybill, containers under plug list, cancelled waybills list, container stock, containers list (in from Island, leaving for Island, Loaded, discharged), seized containers list, container owners list, dangerous goods in containers list.
12. Coordination. Deals with the coordination of all port operations. It mostly concerns cargo and other port services. Required by this transaction are the following documents: ships arrivals list, applications requested list, applications planned list, applications actual list, stores plan, stores utilization, officers availability.
13. Customs. This module has been developed to enable custom officers to find information about containers. The blocking of container delivery can be triggered through this module. Required by this transaction are the following documents: Container history, seized container report, manifests list, ships arrivals report, ships departures report, open/closed manifest, list of containers stuffed/destuffed.
14. Dangerous cargo declaration. Submits data by shipping agent and decision of authorities involved.
15. Dangerous goods. Deals with monitoring and management of dangerous goods mainly from security officers. Required by this transaction are the following

documents: Dangerous goods manifests, Manifest list, dangerous goods in stores and containers, dangerous goods from vessel announcements, container history.

16. Document of phytosanitary traffic. Submits data by Phytosanitary service.
17. Experimental use of RFID (electronic seal) for container that are opened due to the inspection.
18. Export office module. Allows for the management of export manifest cargo. Required by this transaction are the following documents: Export manifests, voyages list, waybills to be loaded, loaded permit.
19. Freight Statement of Facts. Sets forward factual information about the freight. Required by this transaction are the documents of bill of landing, cargo manifest, certificate of quality, certificate of quantity, certificate of origin, receipt of documents mooring demand.
20. General declaration and T2L declaration. Submits data by freight forwarder and decision of authorities involved.
21. General ship declaration. Submits data by shipping agent and decision of authorities involved.
22. General ship enquiries. All data related to ship arrivals and cargo can be searched through this module. This is mainly used by external stakeholders. Required by this transaction are the following documents: Ships arrivals list, ships departures list, and general cargo and container statistics.
23. Harbour master request for berth. This transaction is achieved through one single application.
24. Hazmat declaration. Gives the nature and quantity of dangerous goods following the format described in the 2002/59/CE directive
25. IMO General Declaration. Gives general information about the vessel, freight and crew. Required by this transaction is the document FAL OMI Form n°1 (according to the 2002/6/CE directive).
26. Import, export and transit declarations. Submits data by freight forwarder and decision of authorities involved.
27. Invoice of the motor transport. Submits data by freight forwarder and decision of authorities involved.
28. Invoicing module. This is the module through which all invoicing related to cargo, containers and port operation services is made possible. Required by this transaction are the following documents: Invoices, credit notes, cash report, cash analysis report, accounting interface codes list, bad debts list.
29. Lists of the crew and the passengers of the vessel. Submits data by shipping agent and decision of authorities involved.
30. Machinery resources. Facilitates the request for tools.
31. Meeting module. Enables the programming and confirmation of movement of ships (berthing, unberthing, shifting). Required by this transaction are the following documents: port current situation, ships operations requested list, ships operations planned list and ships operations actual list.
32. Permit to enter the territory of the stevedoring company. Submits data by freight forwarder and decision of authorities involved.
33. Personnel resources. Concerned with human resources services.
34. Pilot incoming and outgoing orders. This transaction is achieved through one single application.

35. Police module. Enables the maritime police to find information about arrivals and cargo. Required by this transaction are the following documents: Port current situation, Ship announcements, ships arrivals list, ships departures list, ships particulars, manifests list.
36. Port service ordering. Control of stocks in the port, which is under special customs regime. Stores the stock by user, by warehouse, by commodity and by ownership.
37. Pratique officer Module. Deals with the data related to the charges of ships and of the relevant invoices. The sailing permit it also produced. Required by this transaction are the following documents: Ships particulars, Shipping lines, Ships arrivals list, Ships all operations list, port current situation, Sail clearance, Passengers List.
38. Pre-arrival/pre-departure notice. Submits data by shipping agent and decision of authorities involved. Required by this transaction is the pre-arrival/pre-departure notice.
39. Pre-clearing system extra-EU: The system allows the custom clearing for incoming and outgoing goods, in particular:
    - Incoming: The electronic clearing is done when the ship is approaching the port (Custom clearing at sea), and when the ship is at the berth the goods not requiring inspection can leave the terminal immediately. only the goods/containers that are to be inspected will be stored in a safe area.
    - Outgoing: Implementation of the electronic manifest, all the procedures are done electronically including the gate check at the terminal and on board. No paper documents are needed with the customs. The system is integrated with the customs procedures and information systems.
40. Pre-clearing system intra -EU: Electronic transmission and control of the custom bill of entry (A22) and statistics.
41. Quay inspector module. Enables the declaration of movement of ships. Required by this transaction are the following documents: port current situation, ships operations actual list.
42. Rail consignment note (KR-99, SMGS, CIM). Imports data from IT system of Railways Company.
43. Real-time tide measurement. Gives the tide information to the pilots.
44. Report of statistical information to national coastguard. Provides detailed information for vessel arrival and departure. Required by this transaction are the documents related to information vessels movements.
45. Report of statistical information to national statistic department. Provides detailed information delivered regarding amount of handled cargo. Required by this transaction are the documents related to cargo detailed information.
46. Request for cargo stevedoring. Request to load and unload the freight.
47. Request for departure. This transaction is achieved through one single application.
48. Request for permission to carry out the handling transactions of temporarily stored goods. Submits data by freight forwarder and decision of authorities involved.
49. Request to issue a phytosanitary document. Indicates that consignments of plants, plant products or other regulated articles meet specified phytosanitary import requirements and are in conformity with the certifying statement of the appropriate model certificate.

50. Request to issue Certificate of quality. Submits data by freight forwarder and decision of authorities involved.
51. Request to take the goods under customs supervision for inspection. Request to determine the cargo that will be required by customs inspection.
52. Senior Crane Driver. All crane movements are recorded (drivers, time, etc). Required by this transaction are the following documents: Vessels arrival list, use of cranes applications (requested list, planned list, and actual list), cranes availability report, cranes usage report, crane drivers plan list.
53. Cargo declaration. Submits data by shipping agent and decision of authorities involved.
54. Store declaration. Submits data by shipping agent and decision of authorities involved.
55. Unit specifications. Describes how freight is packaged for transportation.
56. Shipping agent module. Allows the submission of the arrival of ships and of the manifest as well as the general delivery order. Required by this transaction are the following documents: arrival declaration, cargo manifest, general delivery order and delivery order.
57. Ships control. This has been developed for the Department of Merchant Shipping Ministry of transport in order to facilitate data availability with regards to ships. Required by this transaction are the following documents: Ships announcements list, Ships arrivals list, ships departures list, vessels at berth list, port current situation.
58. Statistics module. All statistical reports meeting regulatory requirements are produced. Required by this transaction are the following documents: reports regarding ships arrivals and departures and also general cargo and container reports.
59. Packing/Unpacking module. Records all container packing and unpacking data. Required by this transaction are the following documents: Container applications list, list of containers to be unpacked, list of containers to be packed, list of containers packed.
60. Traffic information exchange. Communicates the real-time traffic to the national vessel tracking system (connected to SafeSeaNet).
61. Tugs orders. This transaction is achieved through one single application.
62. Vessel dates information. Submits information about the dates of arrivals and departure of ships.
63. Vessel stamps data.
64. Vessel time information. Provides real time vessel information.
65. Vessels tracking. All the vessels are tracked by the VTS and the AIS receivers.
66. Veterinary import permit. Submits data by Veterinary service.
67. VTS module. Allows the submission of arrivals and departure of ships together will all "Vessel traffic services" related data. Required by this transaction are the following documents: port current situation, ships announcements list, ships arrivals list and ships departures list.
68. Working orders. Submits work orders request to the recipient.

Transactions produced by **National Single Window:**

1. Anti-pollution certification. To protect the marine environment of the Baltic Sea area from pollution, every ship entering the area is urged to comply with the anti-pollution regulations of the Helsinki Convention.
2. Cargo declaration. Shall be made no later than one hour before mooring.
3. Certificates of competency of seamen. Determines the safe manning of ships.
4. Charts Renewal. Traditional Finnish charts are gradually replaced by modern INT charts. Traditional charts are updated as usual until the revision of the whole chart portfolio has been completed.
5. Deep-Sea pilot's licenses and deep sea pilot examinations.
6. Electronic charts. Provides commercially encrypted and digitally sign data.
7. Electronic navigation. Provides satellite navigation data.
8. Exemptions from compulsory pilotage.
9. Exemptions from the obligation to provide pilotage services.
10. Medical declarations and dispensations on medical grounds of seamen. Maintains a register of seamen.
11. Notification of dangerous or polluting goods. A Multimodal Dangerous Goods Form (Liquefied gases in bulk, solid bulk cargoes, dangerous chemicals in bulk), required for the transport of dangerous goods, shall be made 24 hours before entry into port. The container/vehicle packing certificate is also required.
12. Notification of ship-generated waste or a dispensation from obligation to leave ship-generated waste in port.
13. Pilot licenses, pilot exemption certificates and pilot examinations.
14. Subsidies for shipping according to national laws.
15. Vessel declaration. Shall be made 24 hours before entry into port.

Transactions produced by **Single Point of Contact:**

1. B2B communications. Common entry point for all the messages.
2. Notification of dangerous goods. Interface between Maritime Rescue Coordination Centre (MRCC) and Safe Sea Net.
3. Voyage details of vessel. Interface between Maritime Rescue Coordination Centre (MRCC) and Safe Sea Net.

Transactions produced by **Port Community System:**

1. Ad hoc reports as requested.
2. Cargo declaration. Gives detailed information about freight avoiding repetitive input of the same data.
3. Central Help Desk.
4. Creation and printing of all current versions of Single Administrative Documents:
   - EZT (electronic customs tariff).
   - Ten year automatic archiving.
   - Box interface for data integration.
5. Crossroads bank central database
6. Customs clearance procedures:
   - ATLAS Export System.
   - Surety bond management.

- Single customs declaration.
- Customs summary (supplementary customs declaration).
- Summary declaration.
- Simplified procedures.
- Transit (NCTS), dispatch and receipt.
- Customs warehouse.
- Inward processing.
- Processing under customs control.

7. Dangerous goods notifications:
   - Stowage for dangerous cargo. Checks which, of the requested dangerous goods, may be packed together in a container.
   - Segregation for dangerous cargo. Checks which, of the requested dangerous goods, may be packed in different containers.
   - Accident leaflets. Forwarders/shipper provides their hauliers with accident leaflets translated into their driver's respective native language and into the languages of all transit countries.
8. Freight and vessels taxes declaration. All the taxes (port and customs) are declared in the PCS.
9. Gate Pass. Indicates to shipping lines freedom to leave port.
10. Intrastat declarations. Fulfills intrastat requirements.
11. Landed & loaded messages to shipping lines. Its function is to pass to shipping line electronic systems.
12. Manifest Write off. Required by this transaction are travelling copies produced.
13. Maritime Statistical declarations. Fulfills Maritime Statistics requirements.
14. Organization of hold and examination facilities for other Government agencies. Alerts interested parties to documentary checks and examinations. Required by this transaction are hold notifications.
15. Preventive net for HMRC. Allows customs to search manifests.
16. Railway operations:
    - Receive and process waybills.
    - Transport orders.
    - Status information.
17. Receipt of export booking info (electronic and manual). Creates export inventory.
18. Receipt of Manifests. Creates import inventory, record for writing off Customs entries and record for scrutiny by all Government Agencies.
19. Reporting of cargo operations from ship operators. Relays cargo handling information to ship operators. Required by this transaction are the documents related to relay expedition reports.
20. Reporting of expected cargo from cargo operators. Relays cargo handling information to cargo operators. Required by this transaction are the documents related to relay expedition reports.
21. The SafeSeaNet system as a part of Microsoft Dynamics AX 4.0. Reports ship arrival and departure to the Navy.
22. Transportation and process of containers operations:
    - Transport orders and clearances.
    - Comparison and calculation of tariffs.
    - Calculation of distances for road and rail.

- Creation of invoices.
- Connection to accounting systems.
- Creation of forms and lists.
- Generation of statistics.
- Forthcoming transport notifications.
- Notification of errors or changes in the basic conditions, such as any delays or missing papers (clearance).

23. Transshipment processing. Moves units from import to export inventory.
24. Vehicle Booking. Allows hauliers to deliver and collect containers.

Transactions achieved by **Harbour Authority System:**

1. Dangerous goods declaration. Describes dangerous goods, localization, transit delay, keeping and safety dispositions. Required by this transaction are OMI/FAL documents.
2. Harbour instructions. Notifies the news and messages to the users. Required by this transaction are the harbour policy advises.
3. ISPS management. Gives personnel and visitors identification.
4. Locks management.
5. Ship's announcement. Describes ship's dimensions, goods, agent, ETA, ETD, required services, previsions loading/discharging operations. Required by this transaction are OMI/FAL documents of EDI messages BERMAN, VESDEP.
6. Ship's services reservations:
   - Reserves pilotage
   - Towering
   - Mooring
7. Vessels traffic management. Records ship location, date/time of the movements.

Transactions produced by **Cargo Community System:**

1. Arrival of goods. Goods arriving on harbour-input check point.
2. Checking of goods. Checks by terminal operator.
3. Confirmation of booking. Advises shipper.
4. Custom transit procedure on barge. Exchanges EDI messages among the Cargo Community System, barge management system and inland port.
5. Customs Status. Delivers EDI message interface between Customs and the Cargo Community System. Required by this transaction is the OK for unloading or OK to export.
6. Customs warehousing. Completes management of goods input and output.
7. Empty containers delivery.
8. On board confirmation. Exchanges EDI messages between terminal operator and shippers.
9. Other customs facilities. Inside harbour operations on goods under Customs control (unloading, repairs, maintenance).
10. Regular lines announcements. Describes ship's capacities, ports of charge and discharge, schedule and loading conditions.

11. Release of goods. Delivers EDI message interface between Customs and the Cargo Community System.
12. Ship cargo manifest export. Notifies when all goods are loaded on board. Required by this transaction is the OMI/FAL document.
13. Ship cargo manifest import. Delivers EDI messages import interface between shipper system information and the Cargo Community System.
14. Ships location and containers booking. Reserves empty container and positioning instructions.

Transactions produced by **Harbours Information & Control System:**

1. Dangerous goods info. Describes dangerous goods, localization, transit delay, keeping and safety dispositions. Required by this transaction are OMI/FAL documents.
2. Info for charging port dues.
3. Passengers and crew members movement control. Submits lists of the crew and the passengers of the vessel. Required by this transaction is the IMO General Declaration.
4. Ships traffic reporting. Hips traffic control and supervision.
5. Statistic information. Produces all statistical reports about port movements.

2.3 Interacting authorities and stakeholders

Another consideration is the stakeholders that use and interact with the electronic data processing systems.

Interacting authorities and stakeholders of the **Port Single Window:**

1. Border and transport state veterinary service.
2. Coastguard Office.
3. Customs.
4. Fire Department.
5. Freight forwarding enterprises.
6. Government services.
7. Harbour master.
8. Maritime agencies
9. Maritime Authority.
10. Maritime operators
11. Maritime Police.
12. Packers.
13. Pilots
14. Port Authority
15. Public health centre
16. Railways Companies.
17. Ship agency service rendering enterprises.
18. Shipping Agents.
19. State plant protection service
20. State Seaport Authority
21. Statistic Office.

22. Stevedoring enterprises.
23. Terminal operator
24. Tugs.
25. Vessels agents.

Interacting authorities and stakeholders of the **National Single Window:**

1. Customs.
2. Inland waterway authorities (River Information System RIS).
3. Maritime Administration.
4. Maritime Authority.
5. Pilots.
6. Port authorities.
7. Vessel traffic monitoring.
8. Vessel Traffic Services (VTS).

Interacting authorities and stakeholders of the **Single Point of Contact:**

1. Customs.
2. Maritime Agency.
3. MRCC
4. Safe Sea Net

Interacting authorities and stakeholders of the **Port Community System:**

1. Carriers
2. Compliance
3. Customer Relation Management (CRM)
4. Customs.
5. Defra Conformity Standards.
6. Environment Agency.
7. Federal Registration Centre (Hazmat)
8. Fire Brigade
9. Forestry Commission.
10. Forwarding agents.
11. Hauling companies
12. Importers & Exporters.
13. Freight services
14. IT systems
15. Maritime Police.
16. Packers.
17. Plant Health.
18. Port Authorities
19. Port Health.
20. Port State Control
21. Quay operators
22. Railway operators.
23. Ship operators.
24. Ship owners.
25. Shipping agents

26. Shipping Lines.
27. Statistics Service.
28. Stevedores.
29. Supply Chain Management (SCM)
30. Terminals
31. The National Navy SafeSeaNet.
32. Veterinary Office.
33. Warehouse

Interacting authorities and stakeholders of the **Harbour Authority System:**

1. Deputy Harbour Master
2. Harbour Master
3. Security Office
4. Shipping Intelligence Office

Interacting authorities and stakeholders of the **Cargo Community System:**

1. Container Terminal
2. Customs

Interacting authorities and stakeholders of the **Harbours Information & Control System:**

1. Border control
2. Custom office
3. Maritime Administration
4. Port authorities
5. Ships agents

2.3 Means to exchange the information

Another consideration is the technical issue as to how the stakeholders interact with the systems. This section examines the means by which the stakeholders exchange information through their electronic systems.

The means to exchange the information through **Port Single Window** are:

1. Electronic Data Information (EDI)
2. E-mail
3. Fax
4. Port LAN.
5. Specific Internet software
6. VPN connection.
7. Web services.
8. Web-interface.
9. XML messages.

The means to exchange the information through **National Single Window** are:

1. EDI

2. HTML

The means to exchange the information through **Single Point of Contact** are**:**

1. EDI
2. HTML

The means to exchange the information through **Port Community System** are:

1. ASP
2. Electronic Data Information.
3. E-mail.
4. Fax.
5. FTP.
6. HTML
7. Screen Interface.
8. Specific Internet software.
9. Telephone.
10. WEP
11. XML messages.

The means to exchange the information through **Harbour Authority System** are:

1. E-mail.
2. Mutually defined messages.
3. UN/EDIFACT messages.

The means to exchange the information through **Cargo Community System** are:

1. E-mail.
2. Mutually defined messages.
3. UN/EDIFACT messages.

The means to exchange the information through **Harbours Information & Control System:**

1. EDI.

2.4 Model of the system

The model of the systems used by the European Sea Ports surveyed are described in this section.

The most widely used model of the **Port Single Window** is the Automated Information Transaction System which was adopted by almost every of the users of this system. Only one

user answered that their PSW performed with a combination of the Single Authority, Single System and Automated Information Transaction System.

The model of the **National Single Window** most used is the Single Authority. However, this information may be unreliable due to the small sample who addressed this point.

The models of the **Single Point of Contact** most used are Single Authority and a combination of Single System and Automated Information Transaction System. Again the number of respondents was small so this may not be a reliable result.

The model of the **Port Community System** most used is the Centralized Information System Only a few use Bilateral and Decentralized Information System.

The model of the **Harbour Authority System** and **Cargo Community System** most used is the Bilateral Information System.

The model of the **Harbours Information & Control System** most used is the Centralized Information System.

2.5 Legal basis of the system

The survey further explored the foundation of the system and, in particular, whether it was grounded in law or created by the port itself.

The origin of most of **Port Single Windows** is not legal, with only a few responding that their system was a legal requirement.

The origin of all **National Single Windows** and **Single Point of Contact** was a creation of the port itself.

The origin of the **Port Community Systems** is almost half legal, half voluntary.

The origin of **Harbour Authority Systems** and **Cargo Community Systems** are legal of all the ports users of these systems responding to the survey.

The origin of **Harbours Information & Control System** is not legal.

2.6 Systems operation

This section lists which companies are responsible for providing and operating the systems. In some ports the same company is responsible for operating and providing the system, in others, both task are developed by different companies.

Port Single Window's companies:

- Operating company and its ownership (if provided):

    1. Grand Port Maritime de Bordeaux.
    2. IT department.
    3. Klaipeda State Seaport Authority (State enterprise)
    4. Port Authority of Livorno (Port Authority of Livorno)
    5. InPort Intelligent Port Systems

- Ownership of the system:
    1. Cyprus Ports Authority.
    2. Copenhagen Malmö Port.
    3. Antwerp Port Authority.
    4. Adveto Advanced Technology AB
- Provider Company:
    1. Actual I.T. d.d.
    2. In-house development with the assistance of external supplier (A.Th.Loizou Ltd).
    3. Alna Software.
    4. Port Authority of Livorno
    5. Antwerp Port Authority

National Single Window's companies:

- Operating company and its ownership (if provided):
- Ownership of the system:
    1. Flemish Government Vessel Traffic Monitoring (Management & Exploitation Team Scheldt Radar Chain) (BET-SRK)
    2. Finnish Maritime Administration.
    3. Provider Company: Logica

Single Point of Contact's companies:

- Operating company and its ownership (if provided): Actual I.T. d.d.
- Ownership of the system: Scheepvaartbegeleiding BET/SRK
- Provider Company: I.T. d.d.

Port Community System's companies:

- Operating company and its ownership (if provided):
    1. BIP+ (Port Community of Bordeaux).
    2. CNS Ltd which ownership is DP World Southampton.
    3. Søværnets Operative Kommando.
    4. Tideworks limited US (Tideworks limited US)
- Ownership of the system: Not provided
- Provider Company:
    1. Marseille Gyptis International (MGI).

2. CNS Ltd which ownership is DP World Southampton.
3. Tideworks limited US.

Harbour Authority System's companies:

- Operating company and its ownership (if provided): Not provided.
- Ownership of the system: Harbour Office.
- Provider Company: Not provided

Cargo Community System's companies:

- Operating company and its ownership (if provided): Not provided.
- Ownership of the system: Port Community.
- Provider Company: Not provided.

Harbours Information & Control System's companies:

- Operating company and its ownership (if provided): Maritime Office.
- Ownership of the system: State administration.
- Provider Company: Unknown.

2.7 Funding of the system

These port systems require resources and funding to operate effectively. The survey tried to discover whether these resources are provided internally by the port, or by external investment. The results were as follows:

Of the ports surveyed, nearly all respondents to the **Port Single Window system** used their own resources. Only one had external funding from local and European subsidies and from the State.

The **National Single Window's** funding question had a low response rate but those that did respond used both internal funding and external subsidies.

The **Single Point of Contact's** funding include internal sources for all the users of this system and external subsidies for some systems.

The **Port Community System's** funding is internal for all the users of this system. A few also have access to external local and European subsidies.

Every **Harbour Authority System's**, **Cargo Community System's** and **Harbours Information & Control System's** is funded by internal sources.

2.8 Performance of the system

Another issue was the performance of the electronic systems. The people managing the port's system were asked their opinions about its performance. More specifically they were

asked if the system satisfied their expectations, whether any changes are considered necessary and if these changes could be accomplished with the current system.

Almost all **Port Single Window's** performance is satisfactory. Almost all of the PSW users responded that it is necessary to include some additional transactions in the system, notably for:

- Waste alerts.
- Precise hazmat messages.
- Information from the customs and agencies.
- More stakeholders at the system via a web portal.
- Synchronization with the port community system.

All the ports that use the **National Single Window's** responded that its performance is satisfactory, and that no more transactions were necessary.

Every **Single Point of Contact's** user was satisfied with its performance, although one suggested that EDI communications among Customs and different agencies were also should be included.

Half of the users of **Port Community System's** were satisfied with performance but the remainder thought that more transactions should be included:

- Hazmat goods should be interfaced with the Port Single Window Software.
- ICS Facilities.
- DG Control.

The ports that use **Harbour Authority System's** and **Cargo Community System's** are satisfied with the system performance, but suggested the inclusion of transactions to interface customs systems, shippers and others terminal operator.

The ports users of the **Harbours Information & Control System** were also satisfied with performance and made no further suggestions for additional information.

2.9 Expectations for the future

The final question raised in the survey was expectations for the future of these systems in terms of evolution, technical and operational development.

Port Single Window's expectations**:**

1. Better tracking of dangerous goods.
2. All transactions in one Web Portal.
3. To be replaced by a new Port Community System to satisfy all maritime stakeholders in a single window e-portal.
4. To extend the system at National Level. The service is free of charge.
5. New platform IBM AS400 --> Unix / Oracle

National Single Window's expectations**:**

1. Fairway services.
2. Related oil spill prevention services.

Single Point of Contact's expectations: There were no suggestions and responses as to the future of the system.

Port Community System's expectations**:**

1. Following MASP.
2. Including regulations of other government bodies.
3. Interface to NCTS.
4. Ensure that the systems work together in an optimal way.
5. Development of new standards and messages.

Harbour Authority System's and **Cargo Community System's** expectation: Extension of interfaces with river port and inland multimodal platforms.

Harbours Information & Control System's expectations:

1. Adoption to actual demands of sea traffic regulations.
2. Increasing of the scope of information needed by all users of port community.

3 Inventory of Each System

3.1 Ports information and location

The ports that kindly responded to our survey and their locations are:

PORT	LOCATION
Antwerp Port	Town of Antwerp in Belgium
Copenhagen Malmoe Port	Town of Copenhagen, region of Sealand in Denmark and town of Malmoe, region of Skaene in Sweden
Cyprus Ports Authority	Towns of Limassol, Larnaca and Nicosia in Cyprus
Dunkerque Port	Town of Dunkerque, region of Calais in France
Esbjerg Port	Town of Esbjerg, region of Jylland in Denmark
Grand Port Maritime de Bordeaux	Town of Bordeaux, region of Aquitania in France
Hamburg Port	Town of Hamburg in Germany
Klaipeda Port	Town of Klaipeda in Lithuania
Luka Koper Port of Koper	Town of Koper, region of Istria in Slovenia
Port Authority of Livorno	Town of Livorno, region of Tuscany in Italy
Rauma Port	Town of Rauma in Finland
Southampton Port	Town of Southampton in the U.K
Stockholm Port	Town of Stockholm in Sweden
Szczecin and Świnoujście Seaports Authority SA	Towns of Szczecin and Świnoujście, in the region of Westpomeranian in Poland

3.2 Identification of the electronic systems used by the ports

The **systems** used by each port are:

PORT	SYSTEM(S)
Antwerp	Port Single Window, National Single Window, Single Point of Contact and Port Community System (under development).
Copenhagen Malmoe	Port Single Window and Port Community System
Cyprus Ports Authority	Port Single Window (CYPOS developed In-House)
Dunkerque	Harbour Authority System (SEXTANT [VTMIS]) and Cargo Community System (GEMINI). This is a PCS that incorporates vessel data through a VTMIS called SEXTANT and cargo information through a system called GEMINI.
Bordeaux	Port Single Window (VIGIE2, TRAFFIC200) and Port Community System (Ap+)
Esbjerg	Port Community System (SafeSeanet - SOK Information Portal)

Hamburg	Port Community System (Called Dakosy)
Klaipeda	Port Single Window (Called Kipis System that covers three systems: PSW, PCS and SPC)
Livorno Port Authority	Port Single Window
Luka Koper	Port Single Window and Single Point of Contact
Rauma Port	National Single Window
Southampton	Port Community System
Stockholm	Port Single Window (Called AIS) and National Single Window (Called Port-it)
Szczecin and Świnoujście Seaports Authority SA	Polish Harbours Information & Control System (PHICS)

3.3 Transactions achieved by the systems, their function and the documents required by those transactions

The transactions achieved by **Port Single Window**, its functions and documents related to these transactions, of each port are:

PORTS	TRANSACTIONS, FUNCTION AND DOCUMENTS
Antwerp	Pilot incoming and outgoing orders.
	Tugs orders.
	Harbour master request for berth..
	Request for departure.
Bordeaux	Calls management. Coordinates all the stakeholders concerned by the vessels.
	Hazmat declaration. Gives the nature and quantity of dangerous goods following the format described in the 2002/59/CE directive.
	Vessels tracking. All the vessels are tracked by the VTS and the AIS receivers.
	IMO General Declaration. Gives general information about the vessel, freight and crew. Required by this transaction is the document FAL OMI Form n°1 (according to the 2002/6/CE directive).
	Real-time tide measurement. Gives the tide information to the pilots.
	Berth demand. Manage the process of the demand of berth.
	Traffic information exchange. Communicates the real-time traffic to the national vessel tracking system (connected to Safeseanet).
Copenhagen Malmoe	Report statistic information to national statistic department. Provides detailed information delivered regarding amount of handled cargo. Required by this transaction are the documents related to cargo detailed information.
	Report statistic information to national coastguard. Provides detailed information for vessels arrival and departure. Required by this transaction are the documents related to information vessels movements.
Cyprus Ports Authority	Shipping agent module. Allows the submission of the arrival of ships and of the manifest as well as the general delivery order.
Klaipeda	Pre-arrival/pre-departure notice. Submits data by shipping agent and decision of authorities involved. Required by this transaction is the pre-

	arrival/pre-departure notice.
	General ship declaration. Submits data by shipping agent and decision of authorities involved.
	Ship cargo declaration. Submits data by shipping agent and decision of authorities involved.
	Lists of the crew and the passengers of the vessel. Submits data by shipping agent and decision of authorities involved.
	Ship store declaration. Submits data by shipping agent and decision of authorities involved.
	Dangerous cargo declaration. Submits data by shipping agent and decision of authorities involved.
	Advance maritime medical declaration. Submits data by shipping agent and decision of authorities involved.
	Consignment. Submits data by freight forwarder and decision of authorities involved.
	Invoice of the motor transport. Submits data by freight forwarder and decision of authorities involved.
	Rail consignment note (KR-99, SMGS, CIM). Imports data from IT system of Lithuanian Railways company.
	Request for cargo stevedoring. Submits data by freight forwarder and decision of authorities involved.
	Certificate of stevedoring work. Submits data by stevedoring company and conformity by freight forwarder.
	Certificate-notice of discrepancy. Submits data by freight forwarder and decision of authorities involved.
	Permit to enter the territory of the stevedoring company. Submits data by freight forwarder and decision of authorities involved.
	Permit to export goods. Submits data by freight forwarder and decision of authorities involved.
	General declaration (BDK) and T2L declaration. Submits data by freight forwarder and decision of authorities involved.
	Import, export and transit declarations. Submits data by freight forwarder and decision of authorities involved.
	Request to issue a phytosanitary document. Submits data by freight forwarder and decision of authorities involved.
	Phytosanitary certificate. Submits data by freight forwarder and decision of authorities involved.
	Request to issue Certificate of quality. Submits data by freight forwarder and decision of authorities involved.
	Document of phytosanitary traffic. Submits data by Phitosanitary service.
	Veterinary import permit. Submits data by Veterinary service.
	Request for permission to carry out the handling transactions of temporarily stored goods. Submits data by freight forwarder and decision of authorities involved.
	Cargo handling certificate. Submits data by freight forwarder and decision of authorities involved.
	Request to take the goods under customs supervision for inspection. Submits data by freight forwarder and decision of authorities involved.

Livorno	Pre-clearing system extra-EU: The system allows the custom clearing for incoming and outgoing goods, in particular: - Incoming: The electronic clearing is done when the ship is approaching the port (Custom clearing at sea), and when the ship is at the berth the goods without inspection can leave the terminal immediately only the goods/container that shall be inspected will be stocked in a safe area. - Outgoing: Implementation of the electronic manifest, all the procedures are done electronically including the gate check at the terminal and on board. No paper documents are needed with the customs. The system is integrated with the customs procedures and information systems.
	Pre-clearing system intra –EU: Electronic transmission and control of the custom bill of entry (A22) and statistics.
	Experimental use of RFID (electronic seal) for container that are opened due to the inspection.
Luka Koper	Port service ordering. Control of stocks in the port, which is under special customs regime. Stores the stock by user, by warehouse, by commodity and by ownership.
Stockholm	Working orders. Submits work orders request to the recipient.
	Personnel resources. Accomplish human resources services.
	Machinery resources. Facilitates the request for tools.
	Ship unit specifications. Describes how freight is packaged for transportation.
	Cargo management. Submits data about cargo handling.
	Vessel dates information. Submits information about the dates of arrivals and departure of ships.
	Vessel time information. Provides real time vessel information.
	Vessel stamps data
	Freight Statement of Facts. Sets forward factual information about the freight. Required by this transaction are the documents of bill of landing, cargo manifest, certificate of quality, certificate of quantity, certificate of origin, receipt of documents mooring demand.

The transactions achieved by **National Single Window**, its functions and documents related to these transactions, of each port are:

PORTS	TRANSACTIONS, FUNCTION AND DOCUMENTS
Antwerp	Standardized message sets between all Flemish ports through the Central Broker System information.
Rauma Port	Vessel declaration. Shall be made 24 before entry into port.
	Cargo declaration. Shall be made not later than one hour before mooring.
	Notification of dangerous or polluting goods. A Multimodal Dangerous Goods Form (Liquefied gases in bulk, solid bulk cargoes, dangerous chemicals in bulk), required for the transport of dangerous goods, shall be made 24 before entry into port. Required by this form is the container/vehicle packing certificate.
	Notification of ship-generated waste or a dispensation from obligation to leave ship-generated waste in port.
	Anti-pollution certification. To protect the marine environment of the Baltic Sea area from pollution, every ship entering the area is urged to comply with

	the anti-pollution regulations of the Helsinki Convention.
	Certificates of competency of seamen. Determines the safe manning of ships.
	Medical declarations and dispensations on medical grounds of seamen. Maintains a register of seamen.
	Subsidies for shipping according to Finnish laws.
	Charts Renewal. Traditional Finnish charts are gradually replaced by modern INT charts. Traditional charts are updated as usual until the revision of the whole chart portfolio has been completed.
	Pilot licences and pilotage exemption certificates and holds pilotage examinations.
	Exemptions from compulsory pilotage.
	Exemptions from the obligation to provide pilotage services.
	Deep-Sea pilot's licences and holds deep sea pilot examinations.
Stockholm	Electronic navigation. Provides satellite navigation data.
	Electronic charts. Provides commercially encrypt and digitally sign data.

The transactions achieved by **Single Point of Contact**, its functions and documents related to these transactions, of each port are:

PORTS	TRANSACTIONS, FUNCTION AND DOCUMENTS
Antwerp	Notification of dangerous goods. Interface between Maritime Rescue Coordination Centre (MRCC) and Safe Sea Net.
	Voyage details of vessel. Interface between Maritime Rescue Coordination Centre (MRCC) and Safe Sea Net.
Luka Koper	B2B communications. Common entry point for all the messages. In this port is defined as MSG book. Required by this transaction is the MSG book.

The transactions achieved by **Port Community System**, its functions and documents related to these transactions, of each port are:

PORTS	TRANSACTIONS, FUNCTION AND DOCUMENTS
Antwerp	Cargo information avoiding repetitive input of the same data.
	"Crossroads" bank central database
Bordeaux	Cargo Declaration. Gives detailed information about freight.
	Freight and vessels taxes declaration. All the taxes (port and customs) are declared in the PCS.
	Customs clearance. The clearance of the goods is made thanks to the links between the PCS and the Customs IS.
Copenhagen Malmoe	Reporting of cargo operations from ship operators. Relays cargo handling information to ship operators. Required by this transaction are the documents related to relay expedition reports.
	Reporting of expected cargo from cargo operators. Relays cargo handling information to cargo operators. Required by this transaction are the documents related to relay expedition reports.

Esbjerg	The SafeSeaNet system as a part of Microsoft Dynamics AX 4.0. Reports ship arrival and departure to the Royal Danish Navy SafeSeaNet (Danish: SOK).
Hamburg	Customs clearance procedures: - ATLAS Export System (level 1, level 2) - Surety bond management - Single customs declaration - Customs summary (supplementary customs declaration) - Summary declaration - Simplified procedures - Transit (NCTS), dispatch and receipt - Customs warehouse - Inward processing - Processing under customs control
	Creation and printing of all current versions of Single Administrative Documents: - EZT (electronic customs tariff) - Ten year automatic archiving - Box interface for data integration
	Railway operations: - Receive and process waybills. - Transport orders - Status information.
	Transportation and process of containers operations: - Transport orders and clearances - Comparison and calculation of tariffs - Calculation of distances for road and rail - Creation of invoices - Connection to accounting systems - Creation of forms and lists - Generation of statistics - Forthcoming transport notifications - Notification of errors or changes in the basic conditions, such as any delays or missing papers (clearance).
	Dangerous goods notifications: - Stowage for dangerous cargo. Checks which of the requested dangerous goods may be packed together in a container. - Segregation for dangerous cargo. Checks which of the requested dangerous goods may be packed in different containers. - Accident leaflets. Forwarders/shipper provide their hauliers with accident leaflets translated into their driver's respective native language and into the languages of all transit countries.

Southampton	Receipt of Manifests (electronic and manual). Creates import inventory, record for writing off Customs entries and record for scrutiny by all Government Agencies.
	Import Customs Declarations & Clearance. Sends to HMRC for processing then write off manifest. Required by this transaction are CHIEF (Customs) documents formatted.
	Export Customs declarations.
	Export clearance.
	Simplified UK Transit.
	Manifest Write off. Required by this transaction are travelling copies produced.
	Transshipment processing. Moves units from import to export inventory.
	Gate Pass. Indicates free to leave port.
	Landed & loaded messages to shipping lines. Its function is to pass to shipping line electronic systems.
	Gate messages to shipping lines. Its function is to pass to shipping line electronic systems.
	Receipt of export booking info (electronic and manual). Creates export inventory.
	Organization of hold and examination facilities for other Government agencies. Alerts interested parties to documentary checks and examinations. Required by this transaction are hold notifications.
	Preventive net for HMRC. Allows customs to search manifests.
	Vehicle Booking. Allows hauliers to deliver and collect containers.
	Central Help Desk.
	Ad hoc reports. Required by this transaction are ad hoc reports as requested.
	Intrastat declarations. Fulfills intrastat requirements.
	Maritime Statistical declarations. Fulfills Maritime Statistics requirements.

The transactions achieved by **Harbour Authority System**, its functions and documents related to these transactions, of each port are:

PORTS	TRANSACTIONS, FUNCTION AND DOCUMENTS
Dunkerque	Ship's announcement. Describes ship's dimensions, goods, agent, ETA, ETD, required services, previsions loading/discharging operations. Required by this transaction are OMI/FAL documents of EDI messages BERMAN, VESDEP.
	Dangerous goods declaration. Describes dangerous goods, localization, transit delay, keeping and safety dispositions. Required by this transaction are OMI/FAL documents.
	Vessels traffic management. Records ship location, date/time of the movements.

	Harbour instructions. Notifies the news and messages to the users. Required by this transaction are the harbour policy advises.
	Locks management.
	Ship's services reservations. Reserves piloting, towering, mooring...
	ISPS management. Gives personnel and visitors identification.

The transactions achieved by **Cargo Community System**, its functions and documents related to these transactions, of each port are:

PORTS	TRANSACTIONS, FUNCTION AND DOCUMENTS
Dunkerque	Regular lines announcements. Describes ship's capacities, ports of charge and discharge, schedule and loading conditions.
	Ships location and containers booking. Reserves empty container and its positioning instructions.
	Confirmation of booking. Accomplishes shipper advisement.
	Empty containers delivery.
	Arrival of goods. Goods arriving on harbour-input check point.
	Checking of goods. Checks by terminal operator.
	Customs Status. Delivers EDI message interface between Customs Informations system Delt@ and Gemini. Required by this transaction is the OK for unloading or OK to Export.
	Release of goods. Delivers EDI message interface between Customs Information system Delt@ and Gemini.
	Ship cargo manifest import. Delivers EDI messages import interface between shipper' system information and Gemini.
	Custom transit procedure on barge. Exchanges EDI messages between CCS Gemini, Barge management system and inland port.
	Customs warehousing. Completes management of goods input and output.
	Other customs facilities. Inside harbour operations on goods under Customs control (unloading, repairs, maintenance).
	On board confirmation. Exchanges EDI messages between terminal operator and shippers.
	Ship cargo manifest export. Notifies when all goods are loaded on board. Required by this transaction is the OMI/FAL document.

The transactions achieved by **Harbours Information & Control** System its functions and documents related to these transactions, of each port are:

PORTS	TRANSACTIONS, FUNCTION AND DOCUMENTS

Szczecin and Świnoujście Seaports Authority SA	Ships traffic reporting. Hips traffic control and supervision.
	Statistic info. Produces all statistical reports about port movements.
	Info for charging port dues.
	Dangerous goods info. Describes dangerous goods, localization, transit delay, keeping and safety dispositions. Required by this transaction are OMI/FAL documents.
	Passengers and crew members movement control. Submits lists of the crew and the passengers of the vessel. Required by this transaction is the IMO General Declaration.

3.4 Interacting authorities and stakeholders

Interacting authorities and stakeholders of the **Port Single Window** of each port:

PORTS	AUTHORITIES AND STAKEHOLDERS
Antwerp	Shipping agents
	Freight forwarders
	Port Authority
	Customs
Bordeaux	Harbour master
	Vessels agents
	Pilots
	Tugs
	Customs
	Packers
	Government services
Copenhagen Malmoe	The Danish and Swedish office for statistic.
	The Danish and Swedish coastguard office.
Cyprus Ports Authority	Shipping Agents.
	Customs.
	Maritime Police.
	Fire Department.
Klaipeda	Klaipeda State Seaport Authority
	Klaipeda public health center
	State plant protection service
	Coast guard detachment of the state border guard service
	Border and transport state veterinary service
	Customs department and customs seaport offices
	JSC "Lithuanian railways"
	Stevedoring enterprises
	Ship agency service rendering enterprises
	Freight forwarding enterprises
Livorno	Port Authority of Livorno

	Customs Agency
	Shipping agent
	Terminal operator
	Maritime agencies
	Customs agents
	Maritime operators
Luka Koper	Customs
	Freight forwarders
	Terminals
	Maritime Agency
Stockholm	Swedish Maritime Authority

Interacting authorities and stakeholders of the **National Single Window** of each port:

PORTS	AUTHORITIES AND STAKEHOLDERS
Antwerp	Port authorities
	Pilots (Flemish and Dutch)
	Vessel Traffic Services (VTS) / Vessel traffic monitoring
	Inland waterway authorities (River Information System RIS)
Rauma Port	Finnish ports
	Finnish Customs
	Finnish Maritime Administration
Stockholm	No answer

Interacting authorities and stakeholders of the **Single Point of Contact** of each port:

PORTS	AUTHORITIES AND STAKEHOLDERS
Antwerp	Entities linked to MRCC
	Entities linked to Safe Sea Net
Luka Koper	Customs
	Freight forwarders
	Terminals
	Maritime Agency

Interacting authorities and stakeholders of the **Port Community System** of each port:

PORT	AUTHORITIES AND STAKEHOLDERS
Antwerp	Port Authority
	Shipping agents
	Ship owners

	Freight forwarders
	Customs
	Maritime Police (Schengen)
Bordeaux	Port Authority Statistics Service
	Shippers
	Packers
	Customs
	Forwarding agents
	Stevedores
Copenhagen Malmoe	Ship operators
	Cargo operators
	Customs
	Veterinary office
Esbjerg	The Royal Danish Navy SafeSeaNet (SOK)
Hamburg	Agents
	Freight forwarders
	Terminals
	Railway operators
	Carriers
	Authorities
	IT systems
	Dangerous Goods Information System
	Hauling companies
	Water Police
	Fire Brigade
	Quay operators
	Federal Registration Centre (Hazmat)
	Customs clearance (ATLAS, Europe)
	BHT (Ports of Bremen central information system)
	ZAPP System (Port of Hamburg)
	TRAXON (EDI service providers in the airfreight area)
	CARGONAUT (Cargo Community System)
	UNIBOOK (Booking Confirmation System)
	INTTRA (Business-to-business ocean freight services)
	Management Information System (MIS)
	Supply Chain Management (SCM)
	Customer Relation Management (CRM)
	Warehouse

	Compliance
	Accounting system integration
Southampton	HMRC
	UKBA
	Port Health
	Plant Health
	Defra Conformity Standards
	Forestry Commission
	Police
	Environment Agency
	Shipping Lines
	Forwarders
	Hauliers
	Importers & Exporters

Interacting authorities and stakeholders of the **Harbour Authority System** of each port:

PORTS	AUTHORITIES AND STAKEHOLDERS
Dunkerque	Harbour Master
	Shipping Intelligence Office
	Deputy Harbour Master
	Security Office

Interacting authorities and stakeholders of the **Cargo Community System** of each port:

PORTS	AUTHORITIES AND STAKEHOLDERS
Dunkerque	Customs
	Container Terminal (which has its own system OSCAR)

Interacting authorities and stakeholders of the **Harbours Information & Control System** of each port:

PORTS	AUTHORITIES AND STAKEHOLDERS
Szczecin and Świnoujście	Maritime Administration

Seaports Authority SA	Port authorities
	Ships agents
	Border control
	Custom office

3.5 Means to exchange the information

The means to exchange the information through **Port Single Window** of each port are:

PORT	MEANS
Antwerp	EDI
Bordeaux	XML messages
	Internet software called VIGIE2
Copenhagen Malmoe	EDI
	E-mail
	FAX
Cyprus Ports Authority	The exchange of information is done through clients running on user PC's.
	Connection of agents, is achieved through VPN connection.
	The rest use the Port LAN.
Klaipeda	Web-interface
	XML messaging
Livorno	Web services
Luka Koper	EDI
Stockholm	E-mail

The means to exchange the information through **National Single Window** of each port are:

PORT	MEANS
Antwerp	EDI
	HTML
Rauma Port	No answer
Stockholm	No answer

The means to exchange the information through **Single Point of Contact** of each port are:

PORT	MEANS
Antwerp	EDI
	HTML

Luka Koper	EDI

The means to exchange the information through **Port Community System** of each port are:

PORT	MEANS
Antwerp	HTML
Bordeaux	XML messages
	Internet
Copenhagen Malmoe	EDI
	WEP
Esbjerg	EDI
Hamburg	ASP
	Licence
	EDI
	Internet
Southampton	E-mail
	Fax
	EDI
	Telephone
	Screen interface
	FTP

The means to exchange the information through **Harbour Authority System** of each port are:

PORT	MEANS
Dunkerque	E-mail
	UN/EDIFACT messages
	Mutually defined messages.

The means to exchange the information through **Cargo Community System** of each port are:

PORT	MEANS
Dunkerque	E-mail
	UN/EDIFACT messages
	Mutually defined messages.

The means to exchange the information through **Harbours Information & Control System** of each port are:

PORT	MEANS
Szczecin and Świnoujście Seaports Authority SA	EDI

3.6 Model of the system

The models of the **Port Single Window** of each Port are:

PORT	MODEL
Antwerp	Single Automated System
Bordeaux	Automated Information Transaction System
Copenhagen Malmoe	Automated Information Transaction System
Cyprus Ports Authority	Automated Information Transaction System
Klaipeda	A mixing of SA, SAS and AITS.
Livorno	Automated Information Transaction System
Luka Koper	Automated Information Transaction System
Stockholm	No answer

The models of the **National Single Window** of each Port that uses this system, are:

PORT	MODEL
Antwerp	Single Authority
Rauma Port	No answer
Stockholm	No answer

The models of the **Single Point of Contact** of each Port that uses this system, are:

PORT	MODEL
Antwerp	Single Authority
Luka Koper	A mixing between CIM and DIM

The models of the **Port Community System** of each Port are:

PORT	MODEL
Antwerp	Not defined yet
Bordeaux	Centralized Information Model
Copenhagen Malmoe	Bilateral Information Model
Esbjerg	Decentralized Information Model
Hamburg	Centralized Information System
Southampton	Centralized Information Model

The models of the **Harbour Authority System** of each Port that uses this system, are:

PORT	MODEL
Dunkerque	Bilateral: information exchanged between the actors.

The models of the **Cargo Community System** of each Port that uses this system, are:

PORT	MODEL
Dunkerque	Bilateral: information exchanged between the actors.

The models of the **Harbours Information & Control System** of each Port that uses this system, are:

PORT	MODEL
Szczecin and Świnoujście Seaports Authority SA	Centralized: Maritime administration collects and register information for control/supervising of vessels traffic, for statistic data and safety and security reasons. Port authorities use the info for charging dues

3.7 Legal basis of system

Whether the **Port Single Windows** were created by a Law or not:

PORT	ORIGIN
Antwerp	No
Bordeaux	No
Copenhagen Malmoe	Yes
Cyprus Ports Authority	No
Klaipeda	No
Livorno	Yes
Luka Koper	No (Internal regulations)
Stockholm	No answer

Whether the **National Single Window** were created by a Law or not:

PORT	ORIGIN
Antwerp	No
Rauma Port	No answer
Stockholm	No aswer

Whether the **Single Point of Contact** were created by a Law or not:

PORT	ORIGIN
Antwerp	No
Luka Koper	Own standards “Law on Free Zone”.

Whether the **Port Community Systems** were created by a Law or not:

PORT	ORIGIN
Antwerp	No
Bordeaux	No
Copenhagen Malmoe	Yes
Esbjerg	Yes, by Søfartsstyrelsens BEK nr.9061 af27/01/2004.
Hamburg	No
Southampton	No

Whether the **Harbour Authority System** were created by a Law or not:

PORT	ORIGIN
Dunkerque	Legal

Whether the **Cargo Community System** were created by a Law or not:

PORT	ORIGIN
Dunkerque	Legal

Whether the **Harbours Information & Control System** were created by a Law or not:

PORT	ORIGIN
Szczecin and Świnoujście Seaports Authority SA	No. The origin was an agreement between Polish and British government to adjust to European standards/regulations and IMO regulations.

3.8 Systems operation

Port Single Window’s operating and provider companies:

PORT	OPERATING COMPANY		SYSTEM’S OWNERSHIP	PROVIDER COMPANY
	NAME	OWNERSHIP		
Antwerp			Antwerp Port Authority	Antwerp Port Authority
Bordeaux	Grand Port Maritime de Bordeaux	Grand Port Maritime de Bordeaux		

Copenhagen Malmoe	IT department	Copenhagen Malmö Port		
Cyprus Ports Authority			Cyprus Ports Authority	In-house development assisted by A.Th.Loizou Ltd
Klaipeda	Klaipeda State Seaport Authority	State enterprise		Alna Software
Livorno	Port Authority of Livorno	Port Authority of Livorno		Port Authority of Livorno
Luka Koper	Actual I.T. d.d.	Outsourcing company		Actual I.T. d.d.
Stockholm	InPort Intelligent Port Systems		Adveto Advanced Technology AB	

National Single Window's operating and provider companies:

PORT	OPERATING COMPANY		SYSTEM'S OWNERSHIP	PROVIDER COMPANY
	NAME	OWNERSHIP		
Antwerp			Flemish Government Vessel Traffic Monitoring (Management & Exploitation Team Scheldt Radar Chain) (BET-SRK)	Logica
Rauma Port		Finnish Maritime Administration (From January 2010 on Ministry of Transport and Communications)		
Stockholm	No answer			

Single Point of Contact's operating and provider companies:

PORT	OPERATING COMPANY		SYSTEM'S OWNERSHIP	PROVIDER COMPANY
	NAME	OWNERSHIP		
Antwerp			Scheepvaart-begeleiding BET/SRK	
Luka Koper	Actual I.T. d.d.			Actual I.T. d.d.

Port Community System's operating and provider companies:

PORT	OPERATING COMPANY		SYSTEM'S OWNERSHIP	PROVIDER COMPANY
	NAME	OWNERSHIP		
Antwerp			Not defined yet	
Bordeaux	BIP+	Port Community of Bordeaux		Marseille Gyptis International (MGI)
Copenhagen Malmoe	Tideworks limited US.	Tideworks limited US.		Tideworks limited US.
Esbjerg	Søværnets Operative Kommando	Søværnets Operative Kommando		
Hamburg	No answer			
Southampton	CNS Ltd	DP World Southampton		CNS Ltd

Harbour Authority System's operating and provider companies:

PORT	OPERATING COMPANY		SYSTEM'S OWNERSHIP	PROVIDER COMPANY
	NAME	OWNERSHIP		
Dunkerque			Harbour Office	

Cargo Community System's operating and provider companies:

PORT	OPERATING COMPANY		SYSTEM'S OWNERSHIP	PROVIDER COMPANY
	NAME	OWNERSHIP		
Dunkerque			Port Community	

Harbours Information & Control System's operating and provider companies:

PORT	OPERATING COMPANY		SYSTEM'S OWNERSHIP	PROVIDER COMPANY
	NAME	OWNERSHIP		
Szczecin and Świnoujście Seaports Authority SA	Maritime Office		State administration	Unknown

3.9 Funding of the system

Port Single Window's funding:

PORTS	FUNDING SOURCES	
	OWN	EXTERNAL
Antwerp	Yes	Flemish Government subsidies
Bordeaux	Yes	
Copenhagen Malmoe	Yes	
Cyprus Ports Authority	Yes	
Klaipeda	Yes	European and regional subsidies.
Livorno	Yes	
Luka Koper	Yes	
Stockholm		No answer

National Single Window's funding:

PORTS	FUNDING SOURCES	
	OWN	EXTERNAL
Antwerp	Yes	Flemish Government
Rauma Port		No answer
Stockholm		No answer

Single Point of Contact's funding:

PORTS	FUNDING SOURCES	
	OWN	EXTERNAL
Antwerp	Yes	Flemish Government
Luka Koper	Yes	Ownership divided 50:50 between Luka Koper and Actual, their outsourcing Company

Port Community System's funding:

PORTS	FUNDING SOURCES	
	OWN	EXTERNAL
Antwerp	Yes	Not defined yet
Bordeaux	Yes	Subsidities from Europe, Aquitaine Region and Port Authority of Bordeaux.
Copenhagen Malmoe	Yes	
Esbjerg	Yes	

Hamburg	Yes	Only private funding
Southampton	Yes	

Harbour Authority System's funding:

PORTS	FUNDING SOURCES	
	OWN	EXTERNAL
Dunkerque	Yes	

Cargo Community System's funding:

PORTS	FUNDING SOURCES	
	OWN	EXTERNAL
Dunkerque	Yes	

Harbours Information & Control System's funding:

PORTS	FUNDING SOURCES	
	OWN	EXTERNAL
Szczecin and Świnoujście Seaports Authority SA	Own (state budget)	

3.10 Performance of the system

Port Single Window's performance**:**

PORTS	RUNNING	NECESSARY TRANSACTIONS TO INCLUDE	POSIBILITY TO INCLUDE THE TRANSACTION?
Antwerp	Adequate		
Bordeaux	Adequate	Waste alerts	Yes
		Precise hazmat messages	
Copenhagen Malmoe	Adequate		
Cyprus Ports Authority	Adequate	More stakeholders at the system via a web portal	No
		A port community system is intended to be applied	
Klaipeda	Under	Technically there will be possibility to	

	implentation	upgrade the system with new transactions.	
Livorno	Adequate	No	
Luka Koper	Adequate	Information from Customs	Yes
		Information from the different agencies	
Stockholm	No answer		

National Single Window's performance:

PORTS	RUNNING	NECESSARY TRANSACTIONS TO INCLUDE	POSIBILITY TO INCLUDE THE TRANSACTION?
Antwerp	Adequate		
Rauma Port	No answer		
Stockholm	No answer		

Single Point of Contact's performance:

PORTS	RUNNING	NECESSARY TRANSACTIONS TO INCLUDE	POSIBILITY TO INCLUDE THE TRANSACTION?
Antwerp	Adequate		
Luka Koper	Adequate	EDI from Customs	Yes
		EDI from the different agencies	

Port Community System's performance**:**

PORTS	RUNNING	NECESSARY TRANSACTIONS TO INCLUDE	POSIBILITY TO INCLUDE THE TRANSACTION?
Antwerp	Not running yet		
Bordeaux	Adequate	Hazmat goods should be interfaced with the Port Single Window Software	Yes
Copenhagen Malmoe	Under implementatio		

	n		
Esbjerg	With failures		
Hamburg	No answer		
Southampton	Adequate	ICS Facilities DG Control	

Harbour Authority System's performance**:**

PORTS	RUNNING	NECESSARY TRANSACTIONS TO INCLUDE	POSIBILITY TO INCLUDE THE TRANSACTION?
Dunkerque	Adequate	To interface customs systems, shippers and others terminal operator	Yes

Cargo Community System's performance**:**

PORTS	RUNNING	NECESSARY TRANSACTIONS TO INCLUDE	POSIBILITY TO INCLUDE THE TRANSACTION?
Dunkerque	Adequate	To interface customs systems, shippers and others terminal operator	Yes

Harbours Information & Control System's performance:

PORTS	RUNNING	NECESSARY TRANSACTIONS TO INCLUDE	POSIBILITY TO INCLUDE THE TRANSACTION?
Szczecin and Świnoujście Seaports Authority SA	Adequate. The system has a character of the single window, however, limited with the scope of information needed by the operator/Maritime Office.		

3.11 Expectations for the future

Port Single Window's expectations**:**

PORTS	EVOLUTION EXPECTED
Antwerp	No answer
Bordeaux	A better tracking of dangerous goods
Copenhagen Malmoe	None
Cyprus Ports Authority	The system is intended to be replaced by a new Port Community System to satisfy all maritime stakeholders in a single window e-portal.
Klaipeda	None
Livorno	To extend the system at National Level. The service is free of charge.
Luka Koper	To include all the information regarding the Port, Customs, Agencies, Port Authority, Weather Forecasts, etc. in one Web Portal
Stockholm	No answer

National Single Window's expectations:

PORTS	EVOLUTION EXPECTED
Antwerp	No answer
Rauma Port	Fairway services and
	Related oil spill prevention services with their advanced equipment

Single Point of Contact's expectations:

PORTS	EVOLUTION EXPECTED
Antwerp	
Luka Koper	None

Port Community System's expectations**:**

PORTS	EVOLUTION EXPECTED
Antwerp	None
Bordeaux	None
Copenhagen Malmoe	None
Esbjerg	Make SafeSeaNet and Navy SSN work together optimally
Hamburg	Development of new standards and messages.
Southampton	Following MASP
	Including other government bodies regulations
	Interface to NCTS
Stockholm	No answer

Harbour Authority System's expectations**:**

PORTS	EVOLUTION EXPECTED
Dunkerque	Extend of interfaces with river port and inland multimodal platforms.

Cargo Community System's expectations**:**

PORTS	EVOLUTION EXPECTED
Dunkerque	Extend of interfaces with others logistics and transports systems like railways operators.

Harbours Information & Control System's expectations:

PORTS	EVOLUTION EXPECTED
Szczecin and Świnoujście Seaports Authority SA	Adoption to actual demands of sea traffic regulations.
	Increasing of the scope of information needed by all users of port community.

4 Statistical Analysis

4.1 Identification of the electronic systems used by the ports

The percentage of the electronic data processing systems used by the European Sea Ports that responded, pointing out that some ports use more than one system, the survey, are:

1. Port Single window: 57'14%
2. National Single window: 21'42%
3. Single Point of Contact: 14'28%
4. Port Community System: 42'85%
5. Harbour Authority System: 7'14%
6. Cargo Community System: 7'14%
7. Harbours Information & Control System: 7'14%

4.2 Transactions achieved by the systems, their function and the documents required by those transactions

The percentage of transactions achieved by each electronic data processing systems, related to the total electronic transactions, are:

Transactions achieved by **Port Single Window:** 61'81%

Transactions achieved by **National Single Window**: 13'63%

Transactions achieved by **Single Point of Contact:** 2'72%

Transactions achieved by **Port Community System:** 21'81%

Transactions achieved by **Harbour Authority System:** 6'36%

Transactions achieved by **Cargo Community System:** 12'72%

Transactions achieved by **Harbours Information & Control System:** 4'54%

4.3 Interacting authorities and stakeholders

The percentage of the characters that use and interact with the electronic data processing systems, related to the total interacting subjects, are:

Interacting authorities and stakeholders of the **Port Single Window:** 44'64%

Interacting authorities and stakeholders of the **National Single Window:** 14'28%

Interacting authorities and stakeholders of the **Single Point of Contact:** 7'14%

Interacting authorities and stakeholders of the **Port Community System:** 58'92%

Interacting authorities and stakeholders of the **Harbour Authority System:** 7'14%

Interacting authorities and stakeholders of the **Cargo Community System:** 3'57%

Interacting authorities and stakeholders of the **Harbours Information & Control System:** 8'92%

4.4 Means to exchange the information

The percentage of the means which the stakeholders exchange information through their electronic systems, related to the total means used, are:

The percentage of means used to exchange the information through **Port Single Window** are: 52'94%

The percentage of means used to exchange the information through **National Single Window** are: 11'76%

The percentage of means used to exchange the information through **Single Point of Contact** are: 11'76%

The percentage of means used to exchange the information through **Port Community System** are: 64'70%

The percentage of means used to exchange the information through **Harbour Authority System** are: 17'64%

The percentage of means used to exchange the information through **Cargo Community System** are: 17'64%

The percentage of means used to exchange the information through **Harbours Information & Control System** are: 5'88%

4.5 Model of the system

The percentage of models of the systems used by the European Sea Ports surveyed that use the system and answered the question, are:

The models of the **Port Single Window**:

- Single Authority: 0%
- Single Automated System: 12'5%
- Automated Information Transaction System: 62'5%
- Mixing of these three: 12'5%
- No answer: 12'5%

The models of the **National Single Window**:

- Single Authority: 3'33%
- Single Automated System: 0%
- Automated Information Transaction System: 0%
- No answer: 66'66%

The models of the **Single Point of Contact**:

- Single Authority: 50%
- Single Automated System: 0%
- Automated Information Transaction System: 0%
- Mixing SAS and AITS: 50%

The model of the **Port Community System**:

- BIM: 16'66%
- CIM: 50%
- DIM: 16'66%
- Not defined yet: 16'66%

The model of the **Harbour Authority System** most used:

- BIM: 100%
- CIM: 0%
- DIM: 0%

The model of the **Cargo Community System** most used:

- BIM: 100%
- CIM: 0%
- DIM: 0%

The model of the **Harbours Information & Control System** most used:

- BIM: 0%
- CIM: 100%
- DIM: 0%

4.6 Legal basis of system

The average of the system created by a Law is:

Legal origin of **Port Single Windows**:

- No: 62'5%
- Yes: 25%
- No answer: 12'5%

Origin of **National Single Windows**:

- No: 33'33%

- Yes: 0%
- No answer: 66'66%

Origin of **Single Point of Contact**:
- No: 100%
- Yes: 0%

Origin of **Port Community System**:
- No: 66'66%
- Yes: 33'33%

Origin of **Harbour Authority System**:
- No: 0%
- Yes: 100%

Origin of **Cargo Community System**:
- No: 0%
- Yes: 100%

Origin of **Harbours Information & Control System**:
- No: 100%
- Yes: 0%

4.7 Systems operation

The average of the ports that have different companies responsible for operating the systems, ownership of the system and providing the systems, and the average of ports that have the same company, are:

Port Single Window's companies:
- Same company responsible and provider: 25%
- Different companies: 25%
- Same ownership and provider of the system: 12'5%
- Different companies: 12'5%
- No operating company: 12'5%
- No answer: 12'5%

National Single Window's companies:
- Same company responsible and provider: 0%
- Different companies: 0%
- Same ownership and provider of the system: 0%
- Different companies: 33'33%
- No answer: 66'66%

Single Point of Contact's companies:
- Same company responsible and provider: 50%

- Different companies: 0%
- Same ownership and provider of the system: 0%
- Different companies: 0%
- No operating company: 0%
- No answer: 50%

Port Community System's companies:

- Same company responsible and provider: 40%
- Different companies: 20%
- Same ownership and provider of the system: 0%
- Different companies: 0%
- No answer: 20%
- Not defined yet: 20%

Harbour Authority System's companies:

- Same company responsible and provider: 100% (total PCS)
- Different companies: 0%
- Same ownership and provider of the system: 0%
- Different companies: 0%
- No answer: 0%

Cargo Community System's companies:

- Same company responsible and provider: 100%
- Different companies: 0%
- Same ownership and provider of the system: 0%
- Different companies: 0%
- No answer: 0%

Harbours Information & Control System's companies:

- Same company responsible and provider: 0%
- Different companies: 100%
- Same ownership and provider of the system: 0%
- Different companies: 100%
- No answer: 0%

4.8 Funding of the system

The average of the system's funding sources used by the European ports, pointing out that some may have different sources, are:

Port Single Window's funding**:**

- Internal sources: 87'5%
- External sources: 25%
- No answer: 12'5%

National Single Window's funding**:**

- Internal sources: 33'33%
- External sources: 33'33%

- No answer: 66'66%

Single Point of Contact's funding**:**
- Internal sources: 100%
- External sources: 50%

Port Community System's funding**:**
- Internal sources: 100%
- External sources: 40%

Harbour Authority System's funding**:**
- Internal sources: 100%
- External sources: 0%

Cargo Community System's funding**:**
- Internal sources: 100%
- External sources: 0%

Harbours Information & Control System's funding**:**
- Internal sources: 100%
- External sources: 0%

4.9 Performance of the system

The percentage of the systems that satisfies users' expectations of the systems that are considered to include any changes; and of the systems that are prepared to include these changes, are:

Port Single Window's performance**:**
- Systems which performance is satisfactory: 65'71%
- Systems that need to include any transaction: 57'14%
- Systems prepared to include these transactions: 75% (of ports that need to include transactions)

National Single Window's performance**:**
- Systems which performance is satisfactory: 33'33%
- Systems that need to include any transaction: 0%
- Systems prepared to include these transactions: 0% (no answer 100%)
- No answer at all: 66'66%

Single Point of Contact's performance**:**
- Systems which performance is satisfactory: 100%
- Systems that need to include any transaction: 50%
- Systems prepared to include these transactions: 50%

Port Community System's performance**:**
- Systems which performance is satisfactory: 40%
- Systems that need to include any transaction: 40%

- Systems prepared to include these transactions: 100% (no answer 40%)
- Not running yet: 20%

Harbour Authority System's performance**:**
- Systems which performance is satisfactory: 100%
- Systems that need to include any transaction: 100%
- Systems prepared to include these transactions: 100% (no answer 0%)

Cargo Community System's performance**:**
- Systems which performance is satisfactory: 100%
- Systems that need to include any transaction: 0%
- Systems prepared to include these transactions: 0% (no answer 0%)

Harbours Information & Control System's performance:
- Systems which performance is satisfactory: 100%
- Systems that need to include any transaction: 0%
- Systems prepared to include these transactions: 0% (no answer 100%)

4.10 Expectations for the future

The percentages of the systems that are expected to develop, technical or functional, in the future, are:

Port Single Window's expectations**:**
- Yes: 71'42%
- No expectations: 28'57%

National Single Window's expectations**:**
- Yes: 33'33%
- No expectations: 33'33%
- No answer: 33'33%

Single Point of Contact's expectations**:**
- Yes: 0%
- No expectations: 100%

Port Community System's expectations**:**
- Yes: 50%
- No expectations: 50%

Harbour Authority System's expectations**:**
- Yes: 100%
- No expectations: 0%

Cargo Community System's expectations**:**
- Yes: 100%
- No expectations: 0%

Harbours Information & Control System's expectations**:**
- Yes: 100%

- No expectations: 0%

5 Conclusions

The study reveals that although the port systems manage many transactions, the ports and the providers of these systems are trying to improve performance by planning changes to meet expectations for the future.

One of these objectives of the e-maritime initiative is to improve the safety and security of maritime transport services and assets and enhance environmental protection. In order to reach that target, e-Maritime proposes, among other means, the integration and intelligent processing of data from heterogeneous sensors and other information sources for safety, security and environmental risk management at EU, regional and organizational levels. In this regard, the ports expected to include into their systems:

- A better tracking of dangerous goods.
- Fairway services.
- Related oil spill prevention services.
- Adoption to actual demands of sea traffic regulations.

Another e-Maritime objective is to increase the competitiveness of the EU maritime transport. This can be accomplished by simplifying administrative procedures, by supporting maritime transport stakeholders in the establishment of competitive business networks, and supporting improved efficiency of shipping services. In this respect, improvements can be made such as:

- Inclusion of all the transactions in one Web Portal.
- Replacement of Port Single Window by a new Port Community System to satisfy all maritime stakeholders in a single window e-portal.
- Extension of the system at National Level. The service is free of charge.
- Inclusion of regulation of government bodies.
- Ensuring the systems involved work together in an optimal way.
- Development of new standards and messages.
- Extension of interfaces with river port and inland multimodal platforms.
- Increasing of the scope of information needed by all users of port community.
- Following management advisory service and publications.
- Interface to new control transit system.

It is clear that e-Maritime objectives tie in closely with port needs and system expectations and would have benefits in terms of performance and competitiveness.

Examining this in more depth, a SWOT analysis from all the data compiled identifies the internal and external factors that are favorable and unfavorable for achieving e-Maritime objectives. The strengths, weaknesses, opportunities and threats that surround PSW and PCS, are the following.

INTERNAL FACTORS	Strengths	Ease of maritime procedures
		Improvement of shipping services
		Avoiding face to face dealing
		Gives security to the transactions
		Different means of exchanging data
		Elimination of transactions carried out on paper
		Sustainable development of the transactions
		Avoiding repetitive input of data
		Improvement of the integration of the logistic chain
		Enhance of the interaction of maritime entities and shipping agents.
		Increase of the operational efficiency
	Weaknesses	As an electronic system can produce failures
		Needing of maintenance of the system
		Lack of training and skilled personnel in some of the companies.
		Collapse of the system
		High costs
EXTERNAL FACTORS	Opportunities	Chance of including new means of exchanging information.
		Chance of including new transactions
		Chance of including new users.
		Creation of a common system in Europe and world while.
		Incorporation of e-Government in citizen's and companies' day by day.
		Simplification of administrative and merchant transactions
	Threats	External attacks to the system
		Possible new systems more simple and cheaper
		Possible new systems with extra services
		Users resistance to change and add new working development
		Possible lack of confidentiality in the transactions that should be ensured.

It can be seen from this SWOT analysis that the advantages of the single windows systems are greater than the disadvantages. Great progress in the efficiency of ports services and maritime procedures, merchant and administrative, providing a huge incentive to maritime transport and its sustainable development, could be promoted by the e-Maritime Initiative. This would involve also breaking down of some of the barriers that have hampered maritime transport. However, there are weaknesses and threats. The cost of the systems could be prohibitive and deprive certain ports of the opportunity to improve their output, leaving them at a disadvantage. Such systems quickly become obsolete without continual updates and embracing of the new technologies. The issues of confidentiality of information also need to be addressed. It should also be emphasised that the Single Window development has a huge potential as long as its use remains free. The diversity of systems used by European ports and the level of satisfaction with these systems may also prove to be an obstacle in the development of a global system.

This study is based on information from only 14 ports so may not be indicative of the general picture in European. Nevertheless it provides some useful feedback on the incorporation of electronic management systems. Port Community and Port Single Windows Systems are a step forward in themselves and have contributed to an improvement in maritime transactions, competitiveness of the ports and the promotion of maritime transport, in accordance with e-Maritime aims. However, there are still issues that must be resolved in the development of a more uniform approach which can easily be accepted by all stakeholders.