

European Maritime Single Window

Overview and system context

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Document History

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List of abbreviations

CHD	Central Hazmat Database
CLD	Central Location Database
CMC	Common Management Console
CSD	Central Ship Database
EMSW	European Maritime Single Window
EMSW2B	EMSW to Business
EMSW2G	EMSW to Government
IFCD	Interface and Functionalities Control Document
HLSG	High Level Steering Group
MS	Member State
NCA	National Competent Authority
NSW	National single Window
PCS	Port Community System
RFD	Reporting Formalities Directive 2010/65/EU
SSL	Secure Sockets Layer
SSN	SafeSeaNet (including the central SSN hosted by EMSA and the national SSN)
VTMIS	Vessel Traffic Monitoring and Information System

References

1. European Maritime Single Window: a vision paper, SSN HLSG 16 agenda item 6, 12 October 2016.
2. National Single Window guidelines, final version, 17 April 2015.
3. Directive 2010/65/EU on Reporting Formalities - Data Mapping Report, version 1.6, 25 February 2015.
4. eManifest Business Rules, version TBD
5. SafeSeaNet Interface and Functionalities Control Document, version 1.1.2, 7 July 2016.

1. Introduction

The purpose of the document is to provide an overview of the expected set-up of the European Maritime Single Window (EMSW) as defined in the EMSW vision paper (Ref. 1). It provides an overview description of the requirements of the EMSW and of its interactions with other ICT systems at EMSA and external parties (e.g. Member States and ship data providers).

The document will serve as an input to the EMSW study which will be launched by May 2017 to elaborate a plan for the development of the EMSW and to evaluate the necessary resources, budget and time and the liabilities involved in managing and operating it.

2. High-level requirements

The EMSW will comply with the principles set out in the EMSW vision paper (Ref. 1), in particular:

1. (section 3.4) On the basis of the RFD, the maritime Single Window performs two main functions: a) Collect information from the operators ('interface' function); and b) Make available the information received to any competent and relevant authority, as well as to the SafeSeaNet system for sharing of relevant information between MSs ('gateway' function).
2. (section 3.4, point a) **Fully harmonised interface.** The EMSW will offer a totally harmonised 'interface' available to ship operators to provide information in the same way and format across the EU. Common standards are used for the collection and storage of information at central level.
3. (section 3.4, point b) **Nationally adapted gateways.** The gateway function does not concern the interaction with maritime operators, but rather the exchanges between national administrations. There is less need for a standardised EU approach and greater scope for national systems (NSWs) that are better adapted to national and local environments.
4. (section 3.4, point c) **Reporting once principle at EU level.** Storing data at central level would facilitate the reporting once principle. A ship operator would report once to the EMSW, which would distribute the information to the relevant authorities along the route of the vessels, without requiring re-submission of the same information to each port of destination. This principle will apply only to information that does not change along the ship's voyage.
5. (section 3.4, point d) **Clearance functions managed at national level, but communicated through the EMSW.** The EMSW can also be used to provide feedback to operators and report decisions taken by national authorities. The authorities' systems used to process the information received will not be affected by the EMSW.
6. (section 3.4, point e) **Operators managed by the MSs.** MSs are responsible to determine the operators who are authorised to submit reporting formalities. In order to facilitate the re-use of data between MSs, operators recognised as a trusted party to submit reporting formalities in a MS should likewise be recognised as a trusted party in the other MSs.
7. (section 3.4, point f) **Authorities defined by the MSs.** MSs define and manage the authorities who would be authorised to view and process the information received from operators or who may be authorised to only consult such information. MSs may configure their authorities to either view all the information or only limited information in accordance with their roles and legislative responsibilities.
8. (section 3.4, point g) **EMSW interface with the NSW and the national authorities.** The data submitted by the operators to the EMSW will be sent to the NSW of the MSs concerned which then stores and process the data according its needs. The MS should also develop its links with the Authorities either via the web or a system2system interface in accordance with their needs. As an alternative function, and if decided by the MS concerned, the EMSW may offer to the MS a functionality to the Authorities defined (see par. f above)

the relevant data via a web functionality of the EMSW. This alternative could be considered as less expensive alternative to providing harmonised reporting in ports with limited electronic capability.

9. (section 3.4, point h) **Reporting directly to the NSW**. Ship operators should always have the possibility to report to the MSs in a harmonised way via the EMSW interface. However, the possibility to submit information through the NSWs or through the PCSs could be maintained as an option, alongside the EMSW channel. Indeed, one can imagine a scenario in which ships calling regularly at a certain port might be satisfied with the use of port-specific systems, whereas ships calling at different ports might prefer to use the EMSW. In such case, the 'reporting only once principle' would only work if NSWs/PCSs are fully aligned with the specifications of the EMSW and adequately connected
10. (section 3.7, bullet 2) The EMSW would be **easier to maintain**, as changes to the system will be done at EU level (for example when there are changes to EU legal acts or international instruments covered by the RFD);
11. (section 3.7, bullet 3) For the ship operators there would be a **reduction in administrative costs** as they would only have to be connected to one system and any changes in the system will be the same for all MSs irrespective of the port they will visit;
12. (section 3.7, bullet 7) Even for a perfectly functioning nationally harmonised system, the EMSW would provide **valuable redundancy** deriving from the availability of an alternative reporting channel and information system

The EMSW will also comply with the NSW Guidelines document (Ref.2) prepared for the implementation of the RFD.

3. System context

This chapter introduces the ICT systems that will interact with the EMSW.

The EMSW's system context is depicted in Figure 1 below:

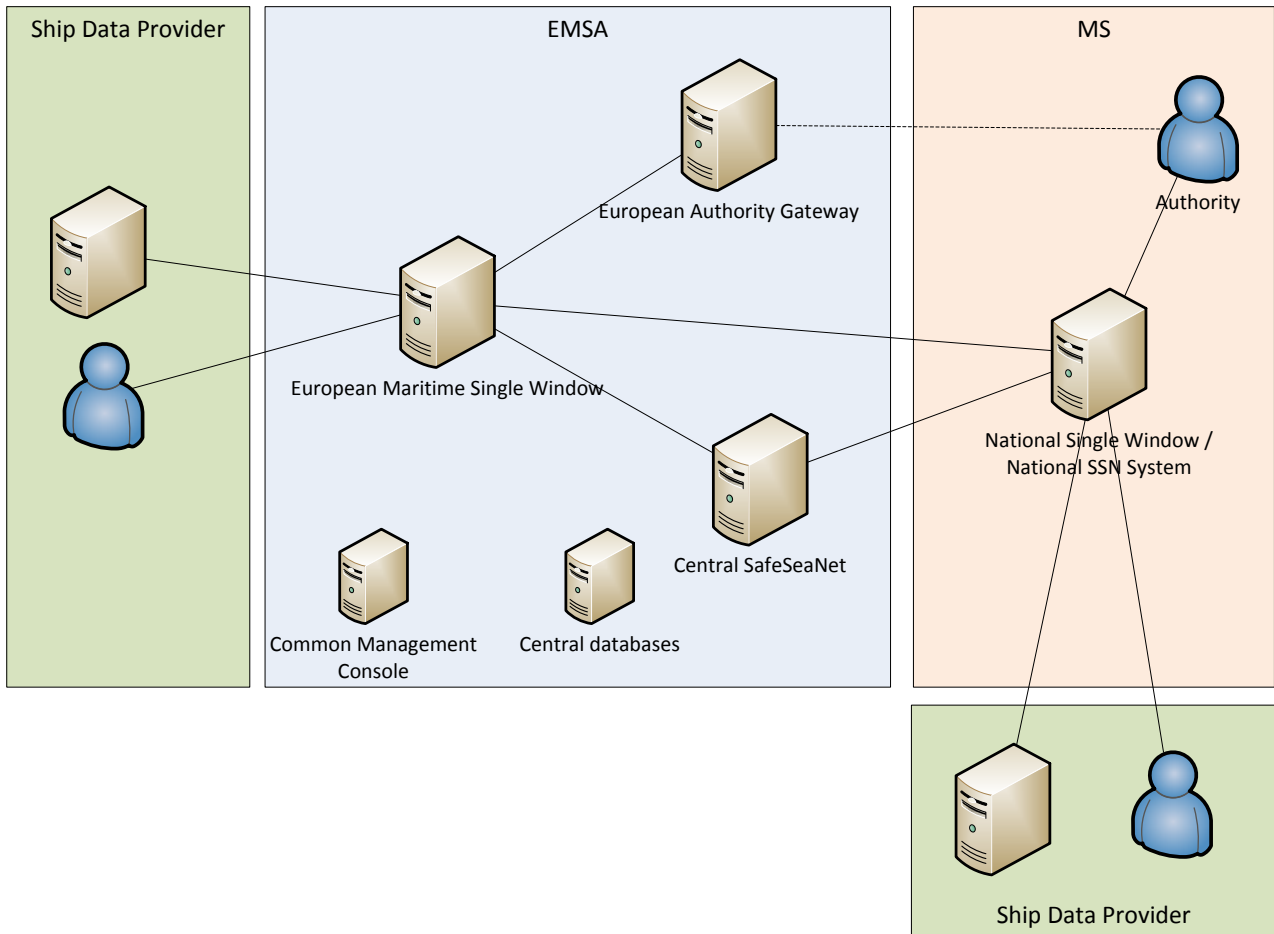


Figure 1: System context of the EMSW

3.1 European Maritime Single Window (EMSW)

The EMSW, managed by EMSA, will be the place where ship data providers may fulfill the reporting formalities as identified in section 4.1 for ships arriving in and departing from any port of the Member States, and be communicated with the decisions and feedback from the relevant authorities.

The ship data provider may interact with the EMSW either directly via a web user interface or indirectly by using the ship data provider's ICT system.

The EMSW communicates the information received from the ship data provider to the NSW system (see section 3.3 below) of the MS where the port is located, or to the EAG (see section 3.2 below).

3.2 European Authorities Gateway (EAG)

The EAG is the place where authorities may consult the information submitted by the ship data providers and record their decisions and feedback. The authority users interact with the EAG via its user interface.

The EAG is managed by EMSA. It is only relevant for MS which have decided to make this service available to their authorities as an alternative to their NSW.

3.3 National Single Window (NSW)

The NSW is the system set up by each MS to fulfil the obligations from the RFD for the receipt of reporting formalities from ship data providers. However for the purposes of this document the NSW is considered to have the functionalities described in the NSW Guidelines – i.e. the NSW should serve as a two-way communication channel between authorities and data providers, Therefore, the NSW can be the place where:

- a) Ship data providers may fulfill the reporting formalities as identified in section 4.1 for ships arriving in and departing from any port of the Member State, and be communicated with the decisions and feedback from the relevant authorities.
- b) Relevant authorities record their decisions and feedback regarding the information submitted by the ship data provider.

There is one unique NSW system per MS.

Information from ship data providers may be reported to the NSW through Port Community Systems or other port systems. These two possibilities depend solely on the NSW implementation and therefore the use of such systems are not depicted in this document.

3.4 SafeSeaNet (SSN) – central and national

SafeSeaNet is the Union platform for maritime data exchange between maritime administrations in the Member States. It aims at supporting EU and MS activities by enabling the receipt, storage, retrieval and exchange of information for the purpose of maritime safety, port and maritime security, marine environment protection and the efficiency of maritime traffic and maritime transport. It comprises a network of national SSN systems in Member States and a central SSN system acting as a nodal point between the national systems. The central SSN system is managed by EMSA.

The functionalities and interfaces of SSN are described in the SSN IFCD document (Ref. 5).

For the purpose of this document, SSN supports the exchange of the following information:

- Port call information: Pre-arrival information sent to ports 24 hours in advance and information on ship arrivals and departures (as per Article 4 of Directive 2002/59/EC as amended and Articles 9 and 24 of Directive 2009/16/EC). In addition, 72 hours pre-arrival information if no other national arrangement is in place.
- Dangerous and polluting goods information: Information on the carriage of dangerous and marine polluting goods (as per Articles 4, 13 and 14 of Directive 2002/59/EC as amended).
- Security information: Prior to ship's entry into a port of a Member State, security information should be sent in accordance with Article 6 of Regulation (EC) 725/2004.
- Waste and cargo residues information: Prior to ship's entry into a port of a Member State, ship-generated waste and cargo residues information should be sent in accordance with Article 6 of Directive 2000/59/EC.

There is one unique National SSN System per MS. In some MS, the NSW and National SSN System are integrated as one unique system.

3.5 Central databases

The following three databases are hosted and maintained by EMSA: the Central Location Database (CLD), the Central Ship Database (CSD) and the Central Hazmat Database (CHD).

The CLD holds a reference list of location codes which include UN/LOCODEs and SSN-specific codes. It also holds the list of port facility codes as registered in the IMO database GISIS. The CLD is used to facilitate the submission of information by the ship data provider as it allows searching location codes and port facility codes by their name or code. It is also used by the EMSW for data quality checks.

The CSD holds a reference list of ship particulars. It is automatically updated from the information received by the maritime applications hosted by EMSA (SSN, LRIT EU CDC, THETIS, as well as the EMSW). The CSD is used to facilitate the submission of information by the ship data provider as it allows searching for a ship (by its IMO number, name, MMSI or call sign) and it provides the ship's particulars which can be re-used to fill in reporting formalities information (e.g. ship's flag, length, type).

The CHD incorporates a list of dangerous and polluting goods that have to be notified in accordance with Directive 2002/59/EC, as amended, and IMO FAL Form 7, taking into consideration the relevant data elements from the IMO Conventions and Codes. It also includes a link to the relevant entries in the MAR-CIS database which includes information on associated hazards and risks of dangerous and polluting goods. The CHD can be used both as a reference and a verification tool, at national and Union level, during the reporting process.

3.6 Common Management Console (CMC)

The CMC is the place where the nominated Competent Authority of the MS will register the Ship Data Providers for the EMSW and authorities for the EAG. Registration of authorities will only be necessary for MS using the EAG. MS using their own NSW for recoding decision by authorities do not need to register Authorities in the CMC for the purposes of the EMSW.

The CMC is common to all ICT systems and services managed and hosted by EMSA, including the central SSN system. It serves as a common access point for enforcing access control policies for all the users accessing EMSA ICT systems.

4. Data content and storage

4.1 Reporting formalities information

The following reporting formalities will be handled by the EMSW:

- Formalities identified in the Data Mapping report (Ref.3): i.e. formalities from parts A and B of the annex of Directive 2010/65/EU and notifications required in terms of Directive 2009/16/EC, and
- Depending on the outcome of the eManifest pilot project, customs formalities forming part of the eManifest. As identified in the eManifest business rules document (Ref.4).
- Common national requirements required by public authorities in accordance with EU, international and national legislation. The EMSW will not cover information necessary for business related operations (e.g. cargo handling operations and port services).

According to the NSW Guidelines (Ref.2, section 9.2), the ship data provider may provide all the information required to fulfil the reporting formalities above at once in one unique notification or over a period of time in several notifications.

The EMSW will, depending on the solution chosen by the MS, communicate the information reported by the ship data provider to the NSW of the MS or to the EAG which will then store it for processing by the authorities. The EMSW will not process the information, but it will keep it for technical processing purposes to facilitate the data

providing (e.g. reuse of information for other port calls) and updating (for the same port call) processes. The information in the EMSW is only accessible by the ship data providers.

4.2 SSN information

The information introduced in section 3.4 above is made available to other MS via SafeSeaNet. It mainly consist in port call information, dangerous and polluting goods information, security information, and waste and cargo residues information. The detailed description of the information is provided in the data mapping report (Ref.3, annex 2, column “made available via SSN”).

- In the case where the ship data provider fulfilled the reporting formalities in a NSW, the port call information and waste and cargo residues information are communicated to the central SSN system, while dangerous and polluting goods information and security information, are stored in the national SSN system and provided to the central SSN system on request. The information provided on request by the national SSN system is identified in Ref.3, annex 2, column “to be provided on request”.
- In the case where the ship data provider fulfilled the reporting formalities in the EMSW, the whole information (port call information, as well as dangerous and polluting goods, security and waste and cargo residues information) is communicated to the central SSN system. If the information is communicated also to the NSW, the MS will not need to store the information for SSN purposes.

4.3 Authorities decisions and feedback

The reporting formalities information will be made available by the NSW or the EAG to the relevant authorities. They will record their decisions and feedback regarding the information received in the same system which provided them with the information (NSW or EAG).

A decision from an authority may be to approve the information received, reject the information, or request for additional information. The authorities using the EAG will also be able to include an additional textual feedback.

Each decision and feedback may relate to the whole reporting formalities information submitted or to a part.

The authorities decisions and feedback are stored in the corresponding NSW or in the EAG. In the case where the reporting formalities information was submitted in the EMSW, the authorities decisions and feedback are communicated to the EMSW and made available to the ship data providers.

Note: This section will need to be further developed with customs decisions depending on the outcome of the eManifest project.

4.4 Port call information from authorities

Depending on MS national legislation, port call information, such as updates of estimated times of arrival and departure and the actual times of arrival and departure, may be reported by authorities.

The information is recorded in the relevant system in the MS (e.g. NSW or other system) or the EAG if the MS opted for it.

In the case where the reporting formalities information was submitted in the EMSW, the port call information from authorities is communicated to the EMSW and is kept in the EMSW for the purpose of making the information available to the ship data providers (re-use functionality).

5. Process description – Reporting formalities and authorities decisions and feedback

This section describes the overall process involving the submission by the ship data provider of information required by report formalities and the communication of authorities decisions and feedback to the ship data provider. The process may be summarised into three following processes:

5.1 Process 1: EMSW and NSW

The process below describes how the ship data provider reports the information in the EMSW and the EMSW communicates with the NSW:

- 1) The ship data provider reports the reporting formalities information in the EMSW.
- 2) The EMSW performs technical quality checks, sends a receipt to the ship data provider.
- 3) The EMSW communicates the relevant information for the port call to the Central SSN System.
- 4) The EMSW communicates the information for the port call to the NSW of the MS of the port of call.
- 5) The relevant authorities in the MS record their feedback and decisions in the NSW, which communicates them to the EMSW.
- 6) The EMSW communicates the feedback and decisions to the ship data provider.
- 7) Every time that a ship data provider updates the previous information, the EMSW will consolidate the data and the same process is followed. Decisions recorded in respect of the updated information will be deleted and the respective authorities have to reconsider the updated information.

Figure 2 below identifies the systems from the EMSW context which are involved in the process:

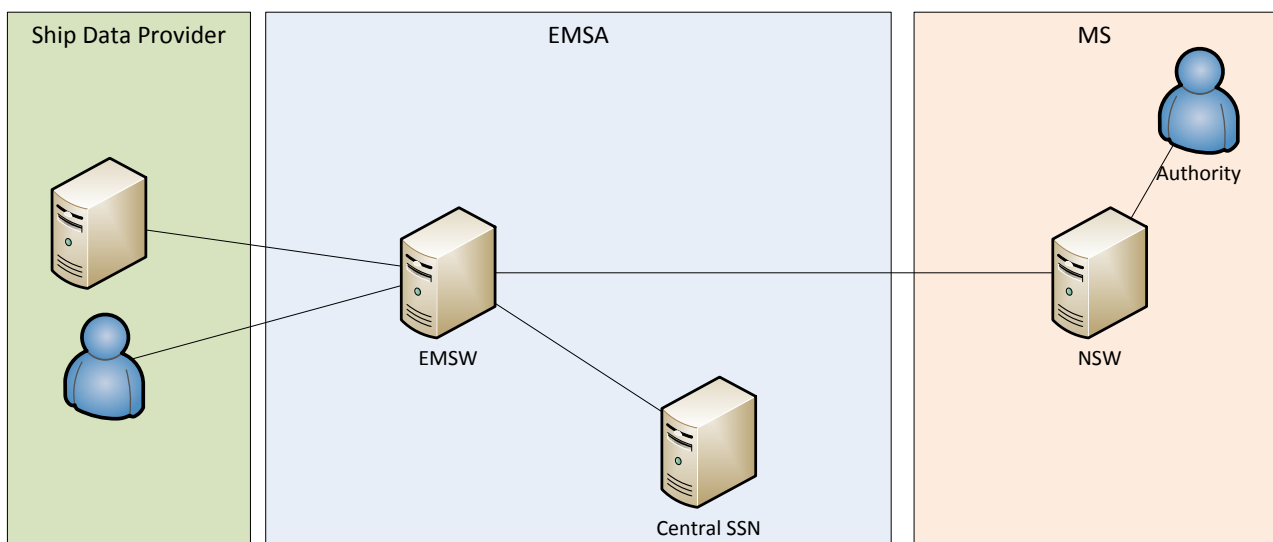


Figure 2: System context for process 1 (EMSW and NSW)

Figure 3 below presents the process 1 using the Business Process Model and Notation:

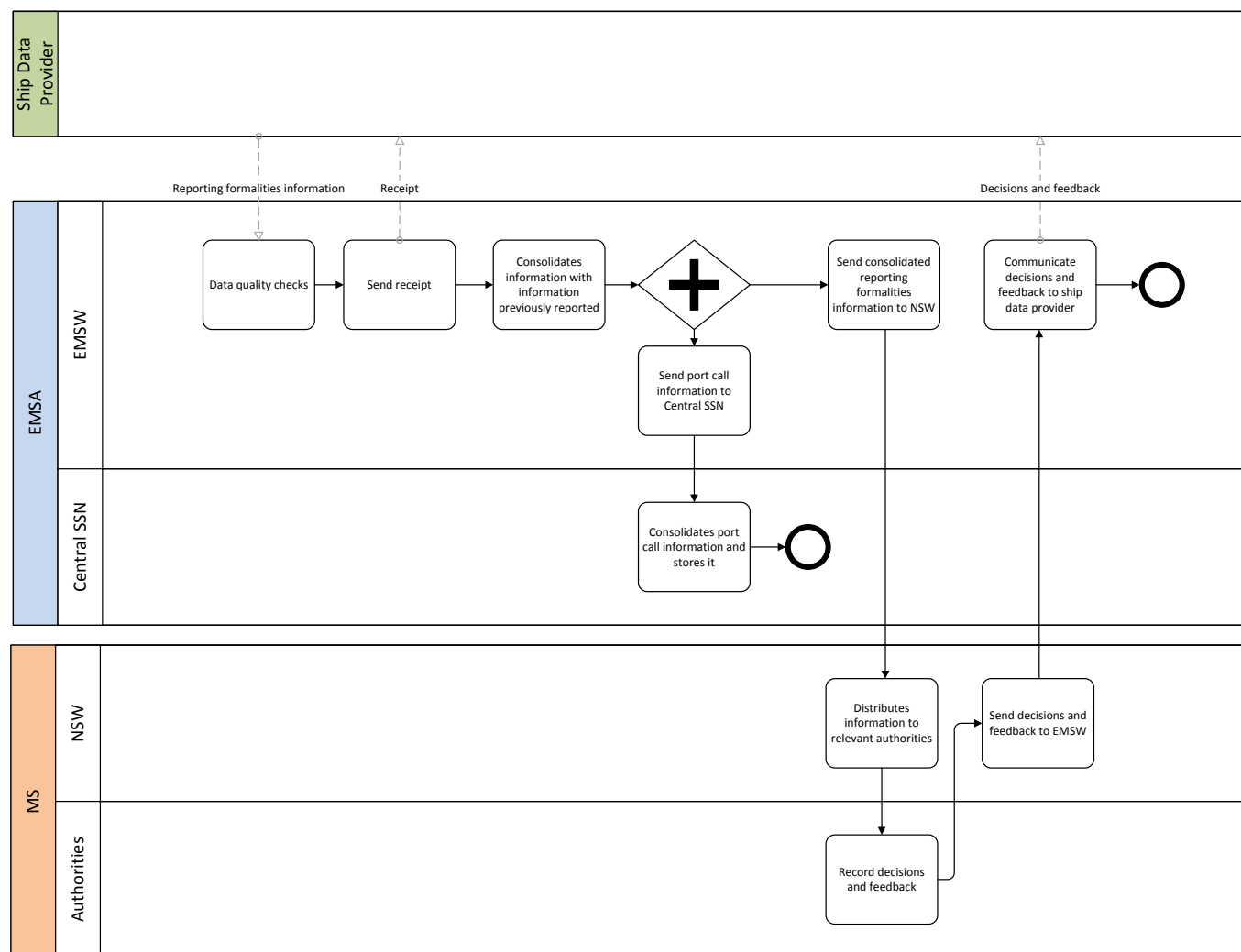


Figure 3: Business Process 1 model (EMSW and NSW)

5.2 Process 2: EMSW and EAG

The process below describes the case how the ship data provider reports the information in the EMSW and the MS authorities use the EAG:

- 1) The ship data provider reports the reporting formalities information in the EMSW.
- 2) The EMSW performs data quality checks, sends a receipt to the ship data provider and consolidates the information with the information previously reported for that port call, if any.
- 3) The EMSW communicates the consolidated information for the port call to the Central SSN System.
- 4) The EMSW communicates the consolidated information for the port call to the EAG.
- 5) The relevant authorities in the MS record their feedback and decisions in the EAG, which relates them to the EMSW.
- 6) The EMSW communicates the feedback and decisions to the ship data provider.

Figure 4 below identifies the systems from the EMSW context which are involved in the process:

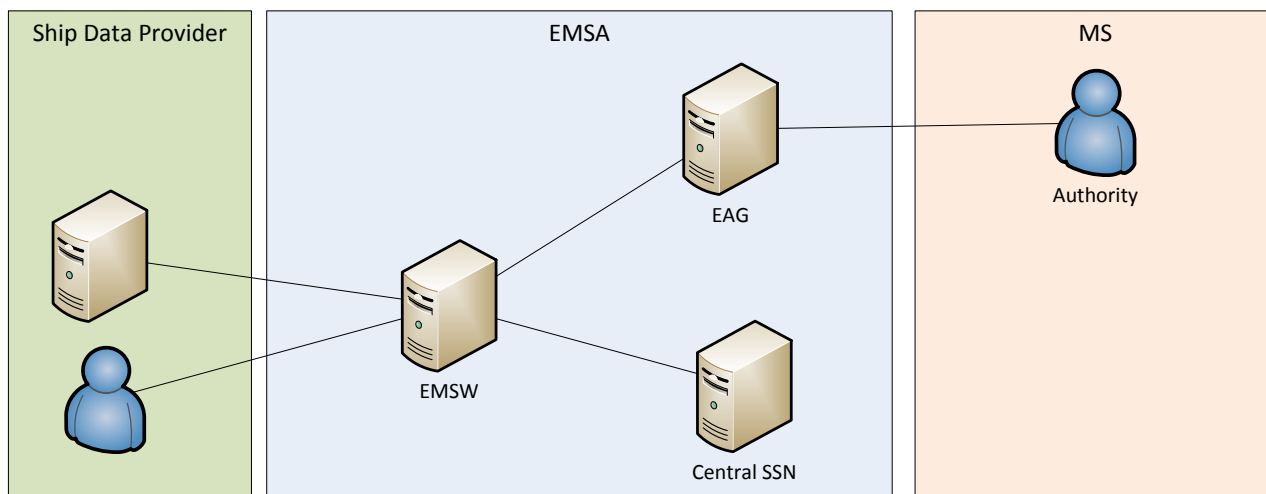


Figure 4: System context for process 2 (EMSW and EAG)

Figure 3 below presents the process 2 using the Business Process Model and Notation:

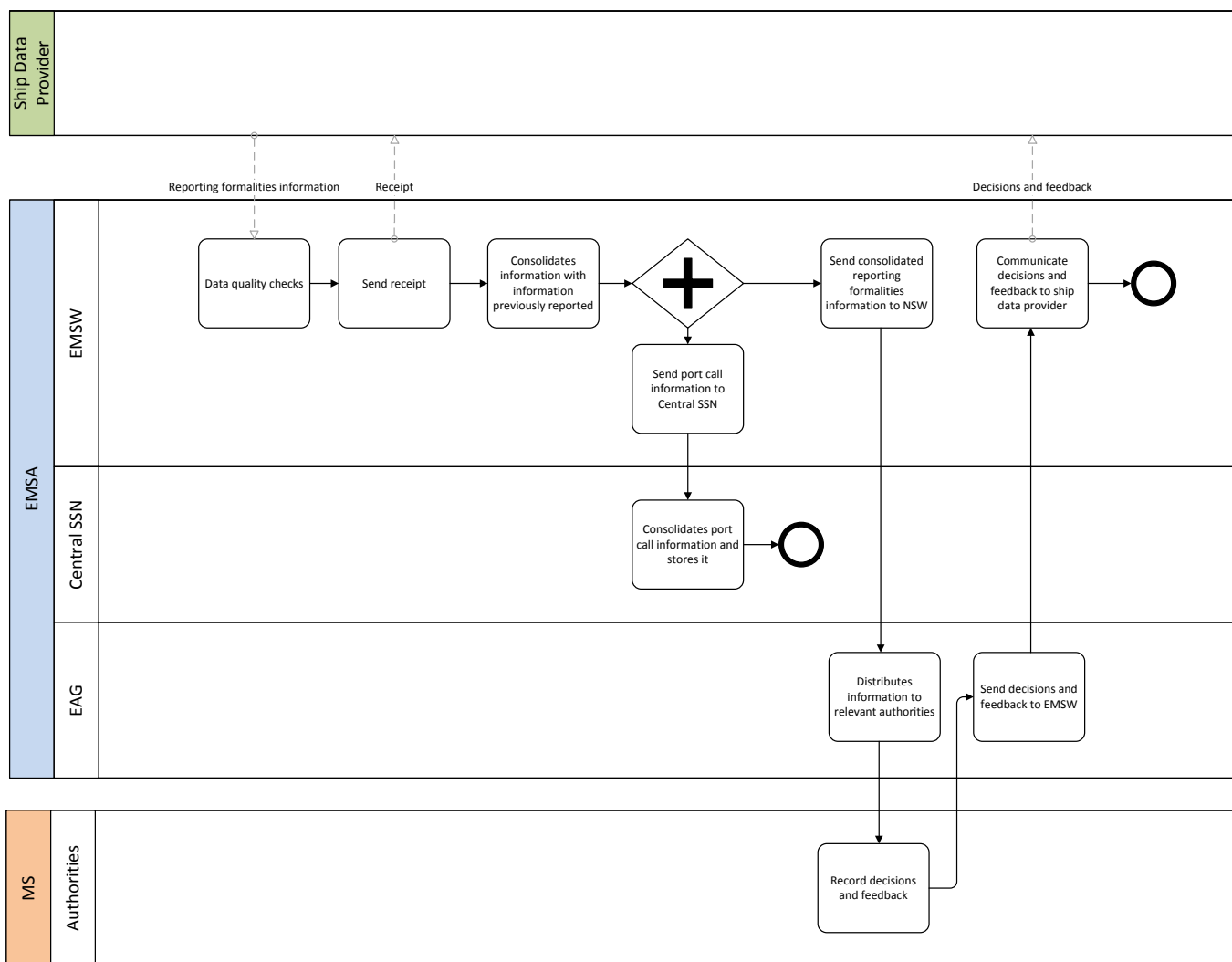


Figure 5: Business Process 2 model (EMSW and EAG)

5.3 Process 3: NSW

The process describing how the ship data provider reports the information in a NSW depends on the implementation of the NSW and is out of scope of the EMSW. It is therefore not described in this document.

Figure 6 below identifies the systems from the EMSW context which are involved in this process:

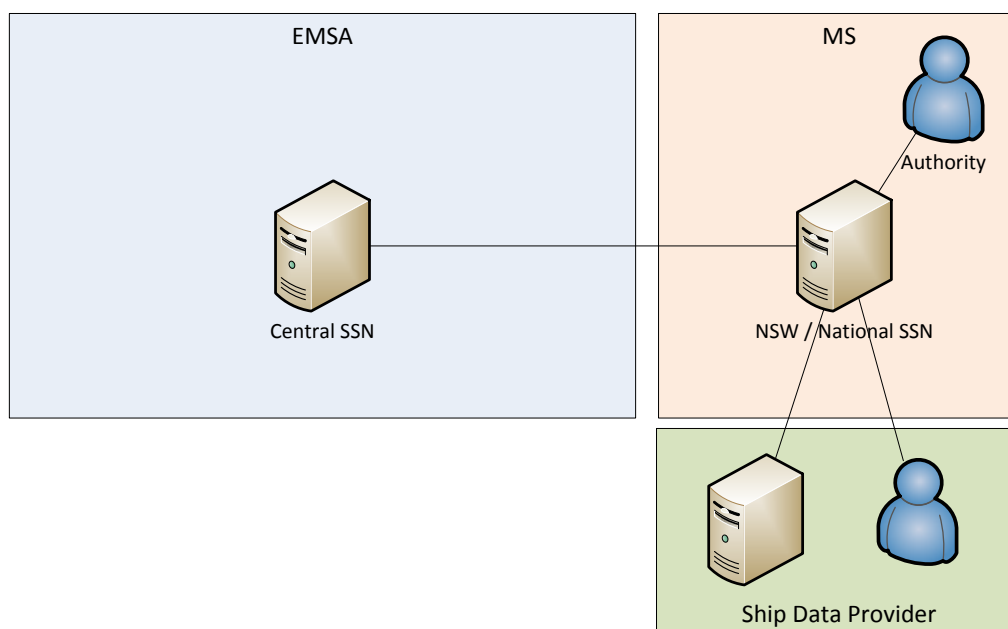


Figure 6: System context for process 3 (NSW)

6. Process description – Authorities port call information

This section describes the overall process involving the submission of port call information by the authorities (as described in paragraph 4.4). It is applicable depending on the national legislation in place in the MS. The process may be summarised into the following processes:

6.1 Process 1: EMSW and NSW

The process below describes how the authority reports the port call information to their national system which makes it available, through the NSW and the EMSW, to the ship data provider:

- 1) The relevant authority reports the port call information in the relevant national system, which relays the information to the NSW.
- 2) The NSW communicates the information to the EMSW.
- 3) The EMSW performs data quality checks, sends a receipt to the NSW and consolidates the information with the information previously reported for that port call.
- 4) The EMSW communicates the consolidated information to the Central SSN System.
- 5) The EMSW makes the consolidated information available to the ship data provider.

6.2 Process 2: EMSW and EAG

The process below describes how the authority reports the port call information to the EAG which makes it available, through the EMSW, to the ship data provider:

- 1) The relevant authority reports the port call information in the EAG.
- 2) The EAG performs data quality checks and sends a receipt to the Authority.
- 3) The EAG communicates the information to the EMSW.
- 4) The EMSW consolidates the information with the information previously reported for that port call.
- 5) The EMSW communicates the consolidated information to the Central SSN System.
- 6) The EMSW makes the consolidated information available to the ship data provider.

6.3 Process 3: NSW

The process describing how the authority reports the port call information to their national system which makes it available to the NSW (without involving the EMSW) to the ship data provider is out of scope of the EMSW. It is therefore not described in this document.

7. Information flow

This section describes the information exchanged between the actors and systems involved in the EMSW context. The information is communicated in the form of messages. The messages exchanged at national level (e.g. with NSW and National SSN Systems) are not included because they depend on the implementation in each MS.

7.1 Between ship data providers and the EMSW

B2EMSW Clearance request

The message includes the reporting formalities information introduced in section 4.1. It is sent by the ship data provider to the EMSW to fulfil some or all reporting formalities applicable for a ship arrival in a port or a ship departure from a port. The message is also used to update, complement or cancel information previously reported.

EMSW2B Receipt

Each time a ship data provider sends a B2EMSW clearance request message to the EMSW, the data provider receives a EMSW2B Receipt message from the EMSW. The receipt message will signify one of two cases:

- a) Positive receipt: The information received from the data provider is free of syntax errors and sufficiently complete to be forwarded to some or all relevant authorities. As soon as the positive receipt is communicated to the data provider, the EMSW forwards the information to the relevant NSW or to the EAG.
- b) Negative receipt: The information from the data provider contained syntax errors, was incomplete as regards its structure or format, or contained information that cannot be processed by the EMSW. The information will not be forwarded to the authorities and will not cause any further processing. The information needs to be corrected and resent.

EMSW2B Acknowledgment

This message is used to communicate the authorities' decisions and feedback to the ship data provider. All ship data providers who have contributed to a clearance request receive the message.

Note: This section will need to be further developed with customs decisions depending on the outcome of the eManifest project.

B2EMSW: Request for data from previous calls

Ship data providers may request the information from previous requests. This feature may be used for the purpose of re-using the information to prepare a new clearance request in another port for the same ship, prepare a departure requests by reusing the information from an arrival request, or to amend the information to submit an update.

EMSW2B: Request results

This message provides the information from previous requests requested by the ship data provider, as stored in the EMSW. The EMSW will only provide the information that the ship data provider is entitled to.

7.2 Between the EMSW and Authorities systems (NSW or EAG)

EMSW2G: Consolidated request

Each time that the EMSW receives a “B2EMSW Clearance request” message which it accepts (positive receipt), it consolidates the information with the information previously reported for that port call and communicates the consolidated reporting formalities information to the NSW. If the MS has made the choice to use the EAG, it communicates the information to the EAG.

The NSW or EAG will make the information available to the relevant authorities.

G2EMSW: Acknowledgment

Each time that an authority records a decision or feedback in the NSW or EAG for a request which was submitted in the EMSW, the NSW or EAG will communicate the decision and feedback to the EMSW, which will then forward it to the relevant ship data providers (in a “EMSW2B Acknowledgment” message).

7.3 Data provision to SSN

MS2SSN PortPlus_Not

This is the message used by national SSN systems to provide information to the central SSN system. It is sent each time that the information is updated in the national SSN system (because updated information has been received either from the NSW or from relevant authorities in the MS). The message also includes limited information regarding dangerous and polluting goods, security and waste and cargo residues.

This message is already in place according to the SSN IFCD document.

MS2SSN ShipCall_Req, SSN2MS ShipCall_Req, MS2SSN ShipCall_Res and SSN2MS ShipCall_Res

These messages are used to exchange port call, dangerous and polluting goods, security and waste and cargo residues information between national SSN systems through the central SSN system. When a national SSN system requests some dangerous and polluting goods, security or waste and cargo residues information to the central SSN system, the central SSN system will request the information to the relevant national SSN system and send it back to the requesting national SSN system when received. This is known as the “request/response mechanism” of SSN for detailed information.

This message is already in place according to the SSN IFCD document.

EMSW2SSN: SSN information

This message is used by the EMSW to provide the central SSN system with the SSN information as identified in section 4.2.

The message is sent to SSN as soon as the information is reported by the data provider and accepted by the EMSW (positive receipt). The whole SSN information (including port call, waste, security and dangerous and polluting goods details) is sent in the message to SSN which then stores it for the purposes of the exchange of data between MS. There is no need for a request/response mechanism between SSN and the EMSW for detailed information.

8. Non functional requirements

This chapter describes the mechanisms and the non functional requirements which will be put in place to ensure that the information is processed and exchanged properly.

Note: This section will need to be further developed.

8.1 Access control

MSs are responsible to determine the operators who are authorised to submit reporting formalities and view reporting formalities and decisions in the EMSW as well as in the NSW. In order to facilitate the re-use of data between MSs, operators recognised as a trusted party to submit reporting formalities in a MS should likewise be recognised as a trusted party in the other MSs.

MSs are responsible to determine the operators who are authorised to access the EAG.

8.2 Authentication

A reliable authentication mechanism shall be implemented to uniquely identify the ship data provider users of the EMSW and the authority users of the EAG.

The EMSW and of the EAG shall guarantee the authenticity of the web interface by appropriate means based on industrial best practices (e.g. 1-way SSL authentication).

The system-to-system interfaces of the EMSW and of the EAG shall guarantee the authenticity by appropriate means based on industrial best practices (e.g. system interfaces with NSW using 2-way SSL authentication, other equivalent mechanisms which do not need installation of electronic certificates for system interfaces with ship data providers).

8.3 Traceability and accountability

The EMSW and EAG shall ensure the non-repudiation and traceability of actions performed by ship data providers and authority users accessing the systems by means of both system-to-system interface and web interface.

The EMSW and EAG shall allow the verification of the history, location, or application of information from ship data providers and from authorities by means of documented recorded identification.

8.4 Continuity of services

To cover the services continuity which be hampered due to disasters or general disruptions to normal system operations, business continuity measures should be put in place in order to ensure continuity of service of both the EMSW and the EAG.

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