Overview of Standardization Activities

ISTS Report R4.1
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MARITIME ITS

Intelligent Ship Transport System

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Table of Contents

Executive Summary

This report gives a summary of the standardisation work that has been done in the ISTS-project, especially related to the development and maintenance of the IMO Compendium and the ISO 28005 standard on Electronic Port Clearance.

The starting point for this work was the agreement between IMO (International Maritime Organization), WCO (World Customs Organization), ISO (International Organization for Standardization and UNECE (the United Nations Economic Commission for Europe) to develop and maintain a new version of the IMO Compendium that describes the information requirements covering the IMO FAL Convention. The IMO Compendium started out with covering administrative data as defined by IMO, but it has later been extended with operational and nautical data. This as lead to more organizations from different domains being part of the same development, and therefore, improved collaboration between a large number of stakeholders involved in maritime transport, both from regulatory side, standardization side, ship, port, customs, class societies, technology providers, and several interest organizations.

The IMO Compendium now contains about 680 data elements from 24 different data sets:

- General Declaration
- Cargo Declaration
- Ships Stores Declaration
- Crew's Effects Declaration
- Crew List
- Passenger List
- Dangerous Goods Manifest
- Security Report
- Advance Notification Waste Delivery
- Maritime Declaration Health
- Just In Time Concept
- Stowaways
- Ship and Company Certificates
- Acknowledgement Receipt
- Maritime Services
- Ship Registry & Company Details
- Inspections
- PSC Inspection History Data
- Ship Reporting Systems
- Ballast Water Report
- Waste Delivery Receipt
- Advanced Passenger Information
- Verified Gross Mass
- Noon Data Report

The IMO compendium consists of a Reference Model and a Data Set, which together give a conceptual model of the reporting requirements and business processes. The compendium supports the semantic

harmonization between the various reporting requirements and relevant international standards from various domains related to ship-shore reporting.

The IMO Compendium is mapped to three different technical standards, namely to the customs domain (the World Customs Organization (WCO) data model), the trade domain (the United Nations Economic Commission for Europe (UNECE/UNCEFACT) Core Component library) and the standard for electronic port clearance (ISO TC8's 28005 standard). In this work package, we have developed new a version of Part 1 of ISO28005 covering "Message structures and application programming interface" and a new Part 3 which contains new data types needed to cover all data elements in the IMO Compendium, in addition to updates of existing data types.

Since the IMO compendium is a conceptual model, not a technical standard, but rather a tool to harmonize existing standards across various domains and systems.

This document is an updated version of the text reported in *Data Modelling Status and Requirements*[1] in the AEGIS project to cover the latest developments regarding this standardization.

[1] https://aegis.autonomous-ship.org/wp-content/uploads/2023/11/aegis_859992_d5-6-data-modelling-status-and-requirements.pdf

1 Definitions and abbreviations

API: Application Programming Interface / Advance Passenger Information

DCSA: Digital Container Shipping Association

EC: European Commission

EGDH: Expert Group on Data Harmonization

EMSA: European Maritime safety Agency

FAL: Facilitation committee in IMO

FONASBA: The Federation of National Associations of Ship Brokers and Agents

HTTP: Hypertext Transfer Protocol, an Internet protocol used to transfer information from display client to server.

HTTPS: Hypertext Transfer Protocol Secure, HTTP using TLS for security

IALA: International Association of Marine Aids to Navigation and Lighthouse Authorities

IAPH: International Association of Ports and Harbors

ICS: International Chamber of Shipping

IFSMA: International Federation of Shipmasters' Associations

IHMA: International Harbour Masters Association

IMO: International Maritime Organization

IPCSA: International Port Community Systems Association

ISO: International Organisation for Standardization

JIT: Just in Time

MCP: Maritime Connectivity Platform

MRS: Mandatory Ship Reporting as defined by IMO MSC.

MSC: Maritime Safety Committee in IMO

PCS: Port Community System

SMN: Smart Maritime Network

TLS: Transport Layer Security used to encrypt communication over HTTPS.

UNECE: United Nations Economic Commission for Europe

UNTDED: The United Nations Trade Data Element Directory (UNTDED) is a Directory comprising a set of data elements intended to facilitate an open interchange of data in international trade.

WCO: World Customs Organisation

WHO: World Health Organisation

2 Introduction

2.1 IMO Compendium: Reference Model and Data Set

2.1.1 Background

The IMO FAL Compendium was first set up by Japan as a set of EDIFACT messages that covered the reporting requirements in the seven FAL forms. Then, WCO took over the maintenance, but it was soon realised that maintenance of the IMO compendium in that current format was too complicated. To meet these challenges, at their 43rd Plenary meeting in April 2019, the IMO FAL Committee approved the revised and updated IMO Compendium on Facilitation and Electronic Business, to support harmonization and standardization of electronic messages for exchange of information when ships arrive at and depart from ports. This new IMO Compendium consists of both an IMO Reference Model (this is a hierarchical UML model describing the most important relations between the identified data items) and an IMO Data Set, which is a list of data elements with a number, name definition, type and if relevant, the code list and a business rule.

The current (November 2024) IMO FAL Compendium covers mandatory reporting formalities for ships, cargo and persons as defined by the following by IMO:

- All FAL standard declarations (FAL 1 to 7) as defined in the IMO FAL Convention and that are within the scope of a Maritime Single Window:
    - General Declaration (FAL 1)
    - Cargo Declaration (FAL 2)
    - Ship's Stores Declaration (FAL 3)
    - Crew's Effects Declaration (FAL 4)
    - Crew List (FAL 5)
    - Passenger List (FAL 6)
    - Dangerous Goods Manifest (FAL 7)
    - WHO Maritime Declaration of Health (FAL 43/INF.3)
    - Security-related information as required under SOLAS regulation XI-2/9.2.2 (MSC.1/Circ.1305)
    - Advance Notification for Waste Delivery to Port Reception Facilities (MEPC.1/Circ.834/Rev.1, appendix 2, Standard format of the Advance Notification Form for waste delivery to port reception facilities)

This is related to the mandatory requirement in the FAL Convention saying that national governments must introduce electronic information exchange between ships and ports, from April 2019. In the revised Compendium, an updated IMO Data Set identifies and defines all data elements related to this reporting information requirements, and the underlying hierarchical data structure is described in the IMO Reference Model.

The IMO Reference Model and the IMO Data Set give a conceptual model of the ship-shore authority reporting requirements. This model supports the semantic harmonization between the various reporting requirements and relevant international standards from various domains related to ship-shore reporting. The IMO Data Set is mapped to three different technical standards, namely to the customs domain (the World Customs Organization (WCO) data model), the trade domain (the United Nations Economic Commission for Europe (UNECE/UNCEFACT) Core Component library) and the

standard for electronic port clearance (ISO TC8's 28005 standard). This harmonized list of data elements and the related reference model, together with the mapping to the technical standards (WCO, UNECE and ISO 28005), support the interoperability among maritime single window systems.

The IMO Reference model and data set are maintained by IMO through EGDH. The latest IMO Compendium is found in [9] and further described in [10]. The current (November 2024) compendium was approved by IMO FAL in April 2024 in [28] and the following data sets have been added after the initial version from 2019:

- Just in Time concept
- Form of stowaway details referred to in Recommended Practice 4.6.2 and appendix 3 of the FAL Convention [29]
- Ship registry and company details
- Ship and company certificates
- Acknowledgement receipt
- Ship and company inspections
- Port State control inspection history data
- Ship reporting systems [30]
- Verified Gross Mass [31]
- Ballast water arrival report [32]
- Waste delivery receipt [33]
- Advance Passenger Information (API)
- Maritime services
- Noon Data report

The just in time data set is especially important when it comes to covering operational data and to ensure a clear overlap between administrative, operational, and nautical data. This is needed for the IMO Reference Model to be a conceptual model that can be used across several reporting schemes and domains to ensure interoperability among systems and improved information exchange in addition to reduced administrative burden for maritime transport actors. More data sets are to be included, for instance for ship particulars (IMO Safety information), for fuel consumption, for electronic Bill of Lading, and others. Note that the IMO Reference Model is not a new standard but rather a tool to harmonize existing standards across various domains and systems.

Updates on the IMO Compendium are decided by the IMO FAL Committee after being proposed by the IMO EGDH meeting. The detailed modelling is done in an informal modelling group consisting of all interested parties, but at least IMO, ISO, WCO and UNECE participate in this work, in addition to IMO member states, the EC and relevant organizations as for instance BIMCO, IPCSA, and other organizations that have special knowledge on each particular data set.

2.1.2 Purpose of IMO Reference Model

The IMO Reference Model and the IMO Data Set contain a conceptual model of information needed to support authority reporting requirements and business processes related to ship-shore data exchange. This model supports the semantic harmonization between the various reporting requirements and business processes (left side in Figure 1) and relevant international standards from various domains related to ship-shore reporting. The right side in Figure 1 shows the mapping to the

customs domain (the World Customs Organization (WCO) data model), the trade domain (the United Nations Economic Commission for Europe (UNECE/UNCEFACT) Core Component library) and the standard for electronic port clearance (ISO TC8's 28005 standard).

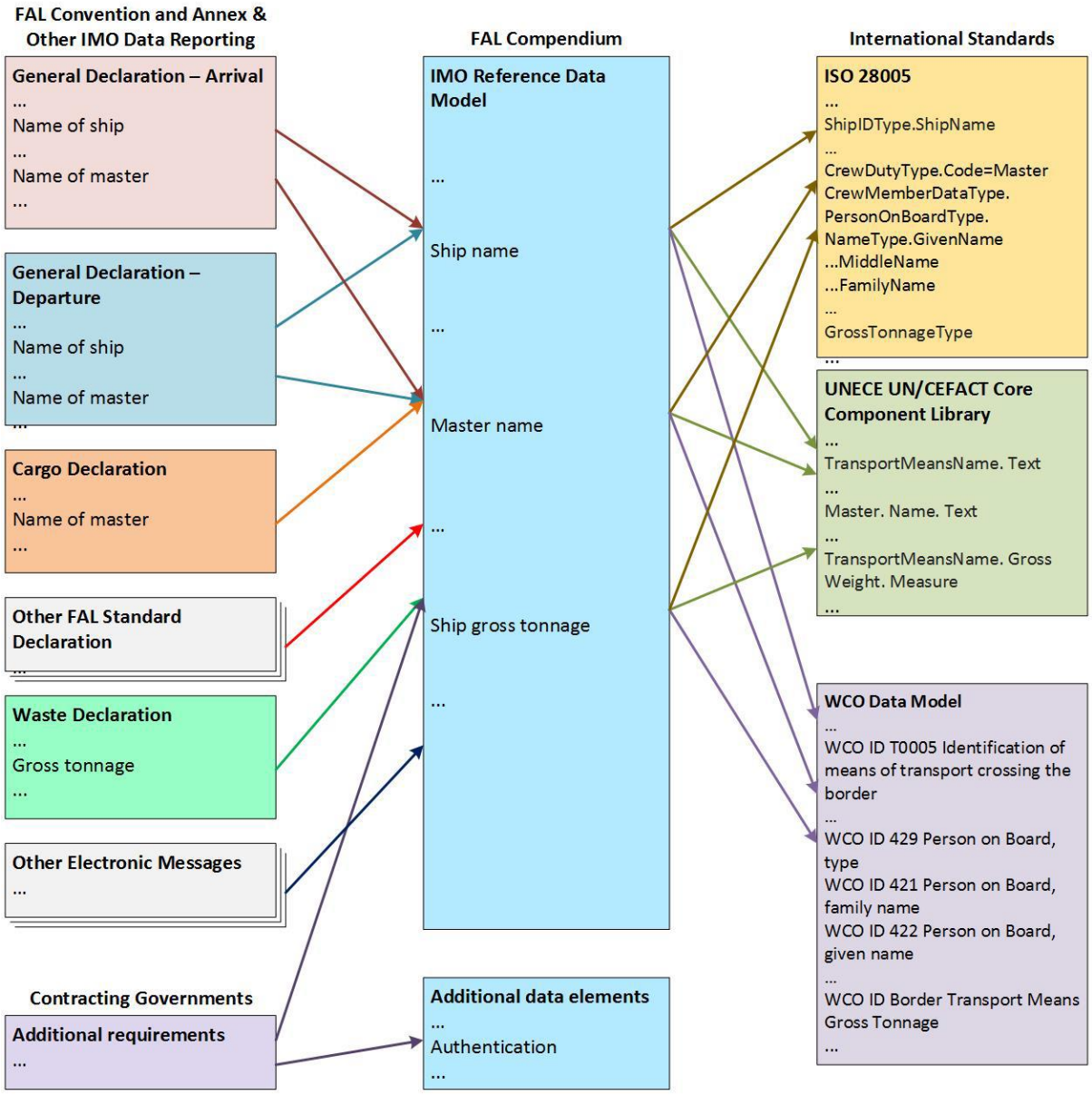

Figure 1 IMO Reference Model [9]

2.2 IMO Definitions of Port Call Processes and Functions

Table 1 gives an overview of the tasks and processes needed to be performed by each role during a port call. The tasks are divided into the phases Marketing/Contracting, Planning, and Execution. This table is based on work done in AEGIS by giving input to the IMO FAL correspondence group on developing Guidelines on Electronic Signature Systems and Operational Port Data [4] and [36].

The **Marketing/Contracting** phase includes creating the contact between the actors that have a need for transport or a service, and those who can offer transport and services that fulfil the demand. It

consists of publishing the needs or offered services, establishing contact between the parties, agreeing on the terms of the service and the sale of the service. For container transport, this will take the form of a booking (carriage contract), meaning that information about the container handling must be agreed with the vessel and cargo service providers in the terminal. For bulk, this will involve chartering of a ship and deciding on which ports to call at for this type of bulk and the chosen ship (sale of goods contract). If there is no fixed contract with the terminal, this must be arranged with the vessel and cargo service providers in the terminal.

In the **Planning phase**, the transport and services are planned and managed based on actual and foreseen demands and information about the infrastructure and the traffic conditions. The planning includes decisions about

- Voyage/Passage planning
- Berth arrival planning, including VTS/pilotage area planning
- Port arrival planning, including VTS/pilotage area planning
- Vessel and cargo service planning
- Nautical service planning
- Request clearance
- Berth departure planning, including VTS/pilotage area planning
- Port departure planning, including VTS/pilotage area planning

Voyage/Passage Planning: According to SOLAS Chapter V Regulation 34, the master shall ensure that the intended voyage has been planned by using appropriate nautical charts and nautical publications. This is done based on nautical charts and publications from the hydrographic service provider, port information from the port planner, and berth information from the berth planner.

Berth planning arrival: The ETA Berth (Estimated Time of Arrival) is normally sent by the ship master to the ship agent by e-mail, which then forwards this to all parties ashore on behalf of the vessel [3]. More generally, the party having the role of the ship manager provides the ETA Berth to the berth planner, which decides on the RTA Berth (Requested Time of Arrival) and then provides this back to the ship manager. If the ship manager accepts the RTA Berth, this becomes the PTA Berth (Planned Time of Arrival).

Port arrival planning: The vessel (via the ship manager role) advises the port planner on the ETA pilot boarding place based on the PTA berth. The port planner provides back an RTA pilot boarding place to the ship manager, which becomes the PTA pilot boarding place, if accepted.

Vessel and Cargo service planning: The timing and location of vessel and cargo services during the ship visit to a berth is very important to be able to complete all necessary services on time.

Nautical service planning: The ship manager role (eg. vessel or agent) orders nautical services from nautical service providers, like pilots, tugs and linesmen at a certain time before they are needed, to avoid financial consequences or unavailability at the time when the services are required.

Request clearance: The ship manager (e.g. ship agent on behalf of the ship master) requests clearance to enter the port, and the port authorities give clearance to a ship to call at a specific berth in the port. The port authorities forward the clearances to other authorities, as customs, immigration, and health.

The timing of clearance is important; some are given prior to the port call (e.g. pre-arrival notification and health), while others are needed prior to the start of the operations (e.g. customs). Certain services also need to be reported to the authorities, for instance waste (due to MARPOL), bunkers, and vessel repairs (e.g. main engines). For ships operating on fixed routes, this procedure may be simplified.

Berth and Port Departure Planning: This involves similar information exchanges as for arrival planning.

Execution: The exchange of operational data during the port call includes times for actual arrivals and departures to and from port (pilot boarding place, VTS area) and berth, and the actual start time and completion time for vessel and cargo services performed during the port call.

Table 1 Port Call Tasks for relevant parties

Party/Role	Marketing /Contracting	Planning	Execution
Authorities		Handle requests for clearance to port call, Forward notifications and declarations to other authorities, Forward declarations needed regarding certain services.	
Berth planner	Provide berth information to ship charterer	Provide berth information for voyage/passage planning, berth planning of arrivals, provide RTA Berth to ship manager during berth planning.	
Hydrographic service provider		Provide nautical charts and nautical publications for voyage/passage planning	
Nautical service providers		Plan safe and efficient port approach and port call	
Port planner	Provide port information to ship charterer	Provide port information for voyage/passage planning, Provide RTA pilot boarding place to ship manager, Provide RTD berth to ship manager	
Ship charterer	Contract for chartering ships		
Ship manager		Voyage/Passage Planning (IMO Res893(A21)), Provide ISPS information to berth planner and port planner, Provide ETD Berth from previous port for berth planning at the next port, Provide ETA Berth for berth planning, Accept RTA Berth (confirm PTA Berth), Provide ETA pilot boarding place to port planner, Accept RTA pilot boarding place (confirm PTA pilot boarding place), Request clearance for port call, Report on certain services, Order nautical services, Order vessel and cargo services, Set RTS of service based on ETS, Set RTC service based on ETC service, Provide ETD from current berth, Confirm PTD berth	Ship master notes ATA pilot boarding place in log book, ATA given by AIS, Provide ATA Berth, Provide ATD Berth, Provide ATD pilot boarding place.
Ship operator	Carriage contract, Sale of goods contract	Contract for hiring terminal services,	Ship owner sends notice of readiness to ship charterer to confirm ATA pilot

Party/Role	Marketing /Contracting	Planning	Execution
			boarding place (for tramp shipping)
Vessel or cargo service providers		Provide ETS for vessel or cargo services, Confirm PTS for service, Provide ETC service to ship manager, Confirm PTC service.	Provide ATS service, Provide ATC service

Based on Table 1, relevant ICT functionalities related to nautical, operational, and administrative data are summarized in Table 2. The left-most columns list the typical functionalities that need ICT support, while the right-most column lists typical systems that cover the various functionalities.

Table 2 ICT Functions for Port Calls (from [36])

ICT Functions	Systems
Nautical functions	
Provide nautical charts and nautical publications for voyage/passage planning	ECDIS
Plan safe and efficient port approach and port call	ECDIS, VTIS
Booking of nautical services (e.g. pilots, tugs, linesmen, boatmen)	VTIS, PMIS, MSW
Operational functions	
Provide berth information for voyage/passage planning,	PCS, TOS
Provide port information for voyage/passage planning,	PCS, PMIS
Port planning at arrival (exchange ETA, RTA, PTA for pilot boarding place)	PCS, PMIS
Berth planning at arrival (exchange ETA, RTA, PTA for berth)	PCS, TOS
Berth planning at departure (exchange ETD, RTD, PTD for berth)	PCS, TOS
Port planning at departure (exchange ETD, RTD, PTD for pilot boarding place)	PCS, PMIS
Booking of vessel and cargo services	PCS, TOS, PMIS
Cargo manifest: Generate import & export cargo manifest	PCS, TOS
Hazardous cargo declaration	PCS, TOS
Payments and invoices	PCS, PMIS
Administrative functions	
Handle requests for ship clearance to port call,	PCS, PMIS, MSW
Report on certain vessel/cargo services	PCS, PMIS, MSW
Forward notifications and declarations to relevant authorities,	PCS, PMIS, MSW
Forward declarations needed regarding certain services.	PCS, PMIS, MSW
Port state reporting/reporting to MSW	PCS, PMIS, MSW
Crew/passenger reporting	PCS, PMIS, MSW
Handle ISPS information	PCS, PMIS, MSW

3 Development of Technical Standards

3.1 Introduction

This chapter describes the work that has been done on the technical standards related to ship-shore communication (ISO 28005 Electronic Port Clearance). As these technical standards are not freely available, all the text cannot be copied in this deliverable since this is an open document.

The work done on onboard communication (IEC 61162) during this project is described in report *R3.1 Onboard Maritime ICT Architecture and Standards*.

3.1.1 ISO 28005 Overview

The ISO 28005 Series of Standards (Part 1 and 2) was first published in 2011 as a standard to define the protocol and the data exchange needed for Electronic Port Clearance (EPC) as required to set up a Maritime Single Window as defined by IMO in the FAL Convention. During this work, we have published an updated version of Part 1 (Message structures and application programming interface) that is out as a Draft International Standard (DIS) (November 2023) and as an International Standard (IS) in November 2024, and a new Part 3 (Data Eléments for Ship and Port Operation) which is out as a Draft International Standard (DIS) (November 2023) and as an International Standard (IS) in November 2024.

The ISO 28005 series of standards contain data elements to cover the requirements for ship-to-shore and shore-to-ship data exchange for reporting of authority information and also operational processes during a port call. Part 1 describes the communication protocol (messages and the protocol for how to exchange these different messages, including clearance, update, cancellation, receipt and acknowledgement messages), Part 2 contains data types describing the various information elements needed, Part 3 contains additional data types needed to support operational processes during the port call and also to cover additional data sets contained in the IMO Compendium.

The information in ISO 28005 is described as XML types in an XSD and also as classes in UML diagrams.

One of the novelties with the 28005-series of standards is that it was designed to cover the machine-to-machine communication initiated by the ship to get clearance to the authorities for a port call, and also to cover data needed by operational processes during a port call. This is as opposed to some shore-based stakeholders, for instance ship agents, doing the reporting and arrangements on behalf of the ship. In the context of a MSW, the 28005-standards can be used to report from the ship to an MSW. Another motivation for the 28005-standards was to have an XML-based standard, since the structure then could be validated by an XML schema (XSD). This is not possible with EDIFACT-messages.

The complete text of the three parts of 28005 are available for purchase from ISO, when approved [37]. The ISO28005 standard has been documented in the UML tool Enterprise Architect from Sparx, and the full UML is found in [21]. The corresponding XSD's published as ISO 28005 are found in [21]. Some of the content from this standard is listed in the appendices:

- Annex A: The mapping between in ISO 28005 and the IMO Compendium as approved by IMO FAL 47 in March 2023
- Annex B: The data model of the Just in Time Data set as defined in 28005-3
- Annex C: The data model of the Maritime Services data set as defined in 28005-3.
- Annex D: The data model of the Acknowledgement data set as defined in 28005-1.

The following legend for the class diagrams is used, Figure 2:

- The filled arrow from Class3 to Class1 indicates that Class1 is a specialization of Class3, meaning that Class1 has additional data elements compared to Class 3.
- The open arrow from Class1 to Class2 named DataElement indicates that DataElement is a data element in Class1. This data element can be a complex data element (XSDcomplexType) or an enumeration, that is, a data element having a code list.

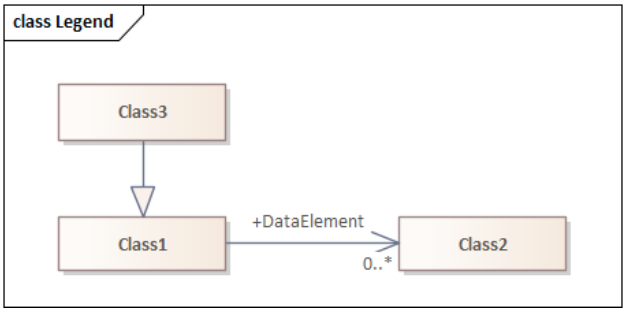

Figure 2 Legend for class diagrams

3.1.2 ISO 28005-1

Part 1 of ISO 28005 was first published in 2011 under the name "Message Structures". A new version called "Message structures and application programming interface" was published as a Draft International Standard (DIS) in 2023, and this will be published as International Standard (IS) in 2024. The new version of Part 1 includes the definition of message structures, including how the data content is assembled from other parts of the ISO 28005 series, and how digital signatures for authentication, integrity and confidentiality of the message shall be used. It also includes specification of basic message exchange patterns and the responsibilities of each party in the message exchange. Furthermore, it specifies how more specific message implementation guides shall be provided for each type of use cases, for instance for Maritime Single Window (MSW), for Mandatory Ship Reporting Systems (MRS) or for Just in Time arrival/departure (JIT). The specifications in this part are conformant to the requirements in ISO-standard 23807 on General requirements for the asynchronous time-insensitive ship-shore data transmission and uses message exchange patterns defined in IMO FAL.5/Circ.46 [8]. The message transfer protocol described in Part 1 uses HTTP over TLS, where REST (Representational State Transfer) is not guaranteed.

3.1.3 ISO 28005-2

Part 2 defines data types for the data elements to be used in the message exchange between ship and shore, and covers the following data sets:

- Most required information sets as defined in the FAL Convention to be sent at arrival or departure:
  - General Declaration (FAL Form 1)
  - Cargo Declaration (FAL Form 2)
  - Ship's Stores Declaration (FAL Form 3)
  - Crew's Effects Declaration (FAL Form 4)
  - Crew List (FAL Form 5)
  - Passenger List (FAL Form 6)
  - Dangerous Goods Manifest (FAL Form 7)

- The document required under the Universal Postal Convention for mail (a reference to the physical or electronic document)
- Maritime Declaration of Health as based on the Maritime Declaration of Health (MDH) from WHO, 58th World Health Assembly, WHA58.3.
- Security-related information as required under SOLAS regulation XI-2/9.2.2 (ISPS code).
- Advanced electronic cargo information for customs risk assessment purposes
- Advanced Notification Form for Waste Delivery to Port Reception Facilities, based on the recommended reporting on ship-generated waste as defined in MEPC 644, which is mandatory within the European Union, as described in EU/2000/59.
- Required reporting as defined in the bulk loading and unloading code IMO Resolution A.862.
- Mandatory ship reporting system (MRS) requirements as defined in IMO Resolution A.851.
- ETA reporting to pilot station as defined in IMO Resolution A.960.

3.1.4 ISO 28005-3

Part-3 contains additional data types compared to Part 2, and this covers the data elements in the data sets defined in the IMO Reference Model as decided by IMO up till FAL 47 which was held in March 2023. This includes the following data sets:

- Maritime Declaration Health
- Just in Time Concept
- Stowaways
- Ship and Company certificates
- Acknowledgment Receipt
- Maritime Service
- Ship registry and Company details
- Inspections
- PSC Inspection History Data
- Ship Reporting Systems
- Ballast Water Arrival Reporting
- Waste Delivery Report
- Advanced Passenger Information
- Verified Gross Mass

In addition to the new data types, some data types are updated, and some are replaced with new data types. However, the depreciated data elements can still be included in the messages, to ensure backwards compatibility. An important part of the work done with ISO 28005 Part-3 is the mapping from this data model to the IMO Compendium, see Annex A. A total of 346 new data items from the IMO Compendium were mapped to the ISO 28005 data model to cover several iterations of the IMO Compendium.

3.2 Nautical Data

IHO decided in its Council meeting in October 2022 [23] to prioritize the S-100 product specifications as shown in Figure 3. This is to be able to achieve the goals set up in the updated performance standard for ECDIS that has been approved by IMO during NCSR9 in the documents *NCSR 9-24-Add.1 - Report to the Maritime Safety Committee* and *NCSR 9-16-1 - Proposed amendments to resolution*

MSC.232(82), and approved by IMO during MSC in Nov 2022 (MSC 106/19/Add.1). These updates states that between 1st of January 2026 and 1st of January 2029, ECDIS-systems can comply either to the old S-57 or new S-100 standard, while after 1st of January 2029, new installations of ECDIS-es must comply with the new S-100-standard. In this project, ECC has checked how S-131 relates to the Norwegian Havnedata description, in addition to giving input to others of the S-100-standards.

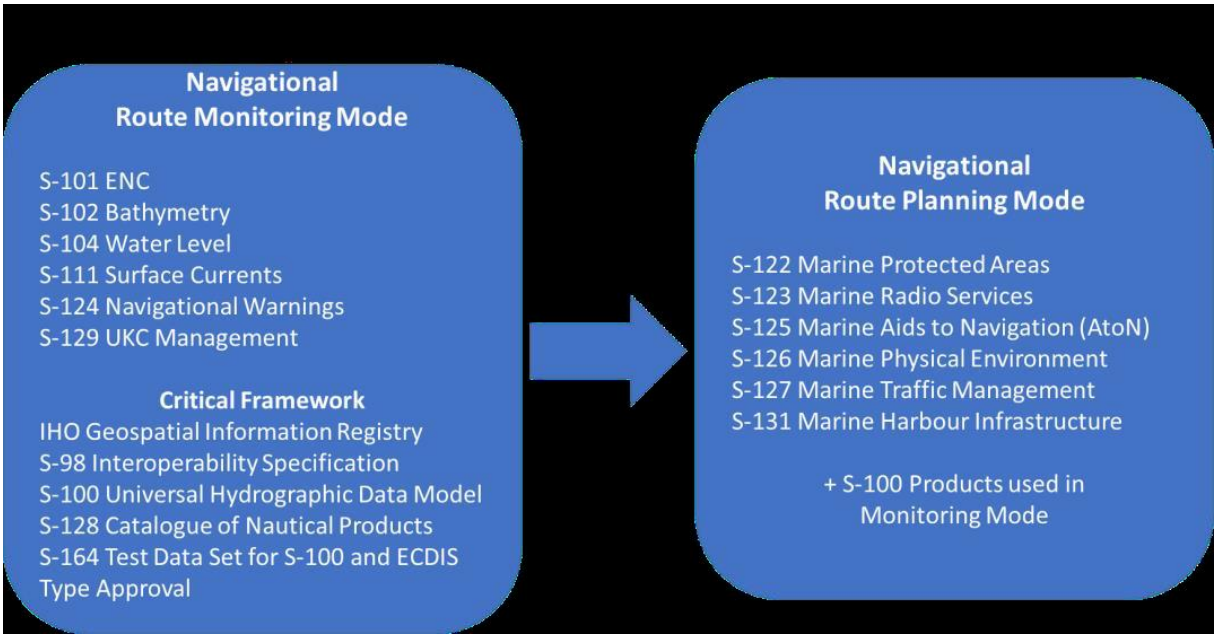

Figure 3 S-100 standards for route monitoring and planning

4 Overview of Stakeholders and Initiatives

Figure 4 gives a summary of some selected initiatives related to the standardisation of ship-shore communication. The overview lists both organisations, systems and other initiatives, and some further descriptions are given in the following.

<table>
<tr><th></th><th>Nautical Data</th><th>Administrative Data</th><th>Operational Data</th></tr>
<tr><td rowspan="2">Regulatory Body</td><td></td><td colspan="2">IMO Reference Model</td></tr>
<tr><td></td><td>SafeSeaNet/EMSWe
WCO Data Model</td><td></td></tr>
<tr><td rowspan="2">Industry Initiative</td><td></td><td colspan="2">PortBase (Rotterdam)
NxtPort (Antwerp)
MCP</td></tr>
<tr><td></td><td></td><td>DCSA (Data model, processes, APIs, for container transport)
PortXchange (Pronto)
TIC 4.0 (terminals)
BIMCO (contribution to other organisations)
ITPCO (contribution on JIT data in IMO)
IPCSA and PROTECT (port authority EDIFACTs)
SMN (noon reporting, other)</td></tr>
<tr><td rowspan="2">Standardisation Body</td><td rowspan="2">IHO S-100 standards</td><td></td><td>ISO/IEC 19987 (supply chain)
IALA S-211 (Port call messages for liner sector)</td></tr>
<tr><td colspan="2">ISO28005
UNECE CCL(trade)</td></tr>
<tr><td>Project Initiatives</td><td colspan="3">Green Digital Corridor Rotterdam-Singapore
Maritime ITS
Dynaport
Mission</td></tr>
</table>

Figure 4 Selected Initiatives related to standardisation of ship-shore data exchange

4.1 Regulatory Bodies

WCO maintains a data model that covers customs data related to cross-border data exchange and the enabling of Single Window systems implementation for customs. Their data model is mapped to the United Nations Trade Data Elements Directory (UN/TDED), same as the UN/ECE data model. WCO has a MoU with IMO to maintain a mapping from the IMO Reference model to their data model and is also an important contributor to the maintenance of this.

IMO is an important player in the standardization work as it maintains the IMO Compendium through its Expert Group on Data Harmonization (EGDH) in the Facilitation committee (FAL). Also important is the agreement between IMO, ISO, UN/ECE and WCO on the maintenance of the IMO Compendium and the updating of the mappings from the reference model to the three technical standards.

IMO FAL has had two important correspondence groups related to this work:

- The IMO FAL correspondence group on developing Guidelines on Electronic Signature Systems and Operational Port Data [4] which gave their input to FAL 27 in March 2023. The group reported on a review of the description of the Maritime Service 4 (Port support service) as defined by IMO, and it developed guidelines for harmonized communication and electronic exchange of operational data for port calls, within the framework of the IMO Reference Model.
- IMO, during FAL47 in March 2023 decided to establish a correspondence group on the Development of Guidelines on Operational Port Data to develop guidelines on Port Community Systems and aligning this with the IMO Guidelines for setting up a maritime single window. This was reported in the document FAL48/7*: Development of Guidelines on Port Community Systems: Report of the Correspondence Group on the Development of Guidelines on Port Community Systems* to FAL48 in April 2024.

SafeSeaNet is the platform for exchanging maritime information on ships and their cargoes between the EU member states, Norway and Iceland. It is based on EU directive 2002/59/EC, and the system is maintained by EMSA on behalf of DG MOVE (department for mobility and transport) [13]. SafeSeaNet is a vessel traffic monitoring and information system, established to improve port and maritime safety, and security.

EMSWe has been put forward through the EU Regulation (EU) 2019/1239 to be the new European Maritime Single Window environment from 2025 [13]. This will replace the SafeSeaNet system, and the purpose is to provide improved interoperability between national single window systems by giving stricter requirements on the technical implementation of each national single window system. This is done by ensuring that each national EMSWe node follows the technical specifications, standards and procedures defined in an implementation regulation, and also that the interfaces follow the message implementation guidelines and data sets provided. The EMSWe data set is aligned with the IMO Compendium, and EMSA and EC are important contributors to the development of the IMO Compendium. Also, the EMSWe data set will be mapped to technical standards, ISO 28005 being one of them.

4.2 Standardization Bodies

ISO maintains the **ISO 28005** series of standards through Technical Committee TC8 Ships and marine technology /SC11 Intermodal and Short Sea Shipping/WG2 Maritime operational data model. ISO also has a MoU with IMO to maintain a mapping from the IMO Compendium to the 28005 technical data model. Further, the **ISO/IEC standard 19987** on creating and sharing of event data will be used as a starting point for a new work item in ISO TC8/SC11 to propose a new standard on Track and trace events for vessels and cargo in maritime transport.

The **UN/CEFACT**, the United Nations Centre for Trade Facilitation and Electronic Business, is a subsidiary, intergovernmental body of the United Nations Economic Commission for Europe (UNECE) which provides a wide range of recommendations, standards and technical specifications relevant for

the maritime domain. UNECE has a MoU with IMO to maintain a mapping from the IMO Reference model to the Core Component Library CCL [19]. The CCL data model covers both governmental and business information for the trade domain, covering the Buy, Ship and Pay business processes.

UNECE, through the **SMDG** group, maintains EDIFACT messages related to containers (COPRAR, COARRI, COPARN, CODECO, COREOR, COSTOR, COSTCO, COHAOR), for ship planning (BAPLIE, MOVINS), and others. Also, UN/CEFACT also maintains its Core Component Library (CCL) which is the basis for their Multi-Modal Transport Reference Data Model (MMT RDM), and also for the modelling format applied in the IMO Compendium.

IHO is responsible for the S-100 framework of standards that IMO has approved to be the basis for the ECDIS performance standard that will be mandatory for all ships. In the context of this report, the product specifications **S-131** Marine Harbour Infrastructure and **S-421** Route are the most important. S-421 is also published as IEC 63173-1. S-131 is developed by the IHO sub-committee NIPWG (Nautical Information Provision Working Group). S-421 was published in 2021, and it is currently under revision by IEC/TC80.

IALA is responsible for the standards S-201 to S-299, among them, **S-211** on Port Call Messages is the most important as this is a S-100 product specification of ship-port data exchanges. This standard was developed and validated as a part of the STM (Sea Traffic Management) project called Port Collaborative Decision Making (PortCDM), but it has not been further maintained or aligned with the IMO Compendium.

The **IALA Guideline G1159** Ship Reporting from a Shore-Based Perspective from December 2022 [5] provides guidance on approaches on how to facilitate harmonized ship reporting using digital systems covering IMO FAL Conventions and Mandatory Ship Reporting from IMO MSC. This guideline identifies the IMO Compendium as the basis to be used for defining the data elements that are to be exchanged from ship to shore regarding authority reporting. It also recognizes ISO 28005 as a suitable standard for MRS reporting. In addition to this, the guideline proposes that on-board ship reporting equipment is used to discover the URL of web services used to do specific reporting, for instance when entering an MRS area during a voyage.

4.3 Industry Initiatives

BIMCO, as the world's largest direct-membership organisation for shipowners, charterers, shipbrokers and agents, is very active in the standardization work with the goal to improve interoperability for the ICT systems on the ship' side and the shore side. BIMCO is very active in supporting the development and maintenance of the IMO Compendium and also to put new data sets on the table that can improve the semantic alignment between operational and administrative data.

ITPCO [11] is an initiative from the industry lead by Port of Rotterdam with the focus on describing the process from the contracting phase where a ship is chartered either for bulk or container and all the way through the port call and departure from the port [18]. This process focuses on covering both bulk and container cargo and also to ensure that the processes handle the fact that decisions regarding the ship operation is made by the captain, including the timing and ordering of services in the port and terminal.

DCSA [12] is an industry driven organization representing nine[2] container shipping companies with the focus to develop digital standards for container ships to enable end-to-end digitalisation of trade documentation needed by all stakeholders in the transport chain. They focus on container ships covering functionalities for Electronic Bill of Lading, Just-in-Time Port Calls, Load List and Bay Plan, Operational Vessel Schedules, Reefer Events, and Track and Trace. They provide a portal with APIs for implementation of message exchange between ship and shore. Even if DCSA has its main focus on container shipping, they are closely related to work done in UNECE and also active in IMO EGDH.

IPCSA has more than 50 members which are the operators of PCSs, Cargo Community Systems, Single Windows, and also including Seaport and Airport Authorities. ICT providers are not members of IPCSA. IPCSA is active in their contributions to the development of IMO Compendium. From January 2020, the **PROTECT** group was integrated into IPCSA. The PROTECT group maintains EDIFACT messages related to port authorities (IFTDGN (Dangerous Goods), BERMAN (Berth Management) and WASDIS (Waste Disposal)).

The **Smart Maritime Network (SMN)** proposed in [6] a standardized vessel data set for noon reports that is also included as a new data set in the IMO Compendium. The reason why the noon report was selected to be standardised is that noon reports are very common (provided by all ships every day), they contain relatively simple information and are a useful data set for doing harmonized data analytics in the shipping companies. The description of the noon report standard is based on the ISO 19848 standard of onboard automation data.

PortBase is the PCS provided by Port of Rotterdam and used in this port and also in Port of Amsterdam. PortBase provides ICT services to support data exchange needed for port calls, export and import of cargo, and hinterland transportation. It also provides interface for the Port Authorities to forward voyage and dangerous goods information to the Dutch SafeSeaNet node (SPOC NL). **PortXchange** as an independent company was established in 2019 to provide a Port Call Optimization system called **Pronto** to align all parties during a port call and to optimize port processes through sharing of information, ensure communication during a port call, and to facilitate Just-in-Time arrivals. The system has been used in Port of Rotterdam since 2018.

In the Port of Antwerp-Bruges, **NxtPort** provides PCS services to achieve efficient digital communication to support data exchange during administrative and operational work.

MCP [14] is provided by the Navelink consortium involving Wartsila, Kongsberg and SAAB to provide an ICT platform for discovery of ICT services (discovery service for APIs), and a messaging service to support data exchange between ship and shore regarding navigation and reporting. This includes Port Collaborative Decision Making (PortCDM), and voyage management. This work started as part of the STM project MONALISA and STM Validation project [15], and has been tested on ECDIS installations on several ships operating in the Baltic. MCP will also be used as the starting point for the Finish MSW system called Nemo.

[2] MSC, Maersk, CMA CGM, Hapag-Lloyd, ONE, Evergreen, Yang Ming, HMM and ZIM

4.4 Project Demonstrations

As part of the **Green&Digital Shipping Corridor** to reduce emissions from shipping on the route between Rotterdam and Singapore, the Maritime and Port Authority of Singapore (MPA), the Port of Rotterdam and 20 other partners established a project in August 2022 to bring together partners across the supply chain to develop and use zero and near-zero emission fuels in combination with operational and digital efficiencies [34]. As part of this digital corridor, the Ports of Rotterdam and Singapore will share port and vessel information such as arrival and departure timings, use electronic bills of lading and also introduce digital solutions for exchange of data related to just-in-time planning. The data related to just in time planning will follow the concepts in the IMO Compendium and also the technical specifications in the ISO 28005 standard. For nautical information, eg. depths in ports, IHO standards will be used. NAVTOR is one of the participants in this project, contributing with their Navstation system to generate and send messages from ship to shore.

Maritime ITS Architecture

This is further described in report R2.1 Introduction to the Maritime ICT Architecture.

5 Summary of Standardization Contributions

5.1 Participating in Standardization Committees

Most of the standardization work in ISTS has been done as **ISO** representatives and members in ISO TC8 *Ships and Marine Technology* and especially the committees ISO TC8/SC11/WG2 *Maritime Operational Data Model* where the development of ISO28005 has been done, and ISO TC8/WG10 *Smart Shipping*. We have also followed up on the Norwegian related committees. In addition, we have followed the relevant committees in IEC:

- IEC TC80/WG6 *Digital interfaces for navigational equipment within a ship*:
    - Maintains IEC 61162 Digital interfaces for navigational equipment within a ship, including NMEA interfaces and ethernet communication onboard
    - Maintains IEC 61174, Electronic chart display and information system (ECDIS) – Operational and performance requirements, methods of testing and required test results, which is important since IMO has approved S-100 as the new ECDIS standard.
- IEC TC80/WG17 *Common Maritime Data Structure (CMDS)* which maintains part of the S-100 standard (eg. S-421 on route exchange).

5.2 Development of IMO Compendium

Through ISTS, we have continued our contribution to the development and maintenance of the IMO compendium[3] that started in 2018, and that was approved in its first version by IMO FAL in April 2019. We have contributed through participating in IMO FAL (Facilitation committee) and the group EGDH (Expert Group on Data Harmonization) in IMO, and also in the informal modelling team that does the actual data modelling as requested by EGDH.

5.3 Development of Technical/Conceptual Mapping IMO-ISO

Through the ISTS project, we have set up the mapping between the IMO Compendium and the ISO 28005 standard.

5.4 Giving input to IMO FAL and IMO EGDH

As an ISO-representative, the ISTS project has delivered several input papers to IMO FAL and IMO EGDH, as listed in the following:

- FAL 46: Mai 2022
    - REVIEW AND REVISION OF THE IMO COMPENDIUM ON FACILITATION AND ELECTRONIC BUSINESS, INCLUDING ADDITIONAL E-BUSINESS SOLUTIONS, New IMO data set on "Ship reporting systems (resolution A.851(20))" (FAL 46/6/4, together with NORWAY, UNECE, WCO, BIMCO and IPCSA)
- FAL 47, March2022:
    - APPLICATION OF SINGLE WINDOW CONCEPT, Recommendations from a workshop on international maritime single window implementation (FAL 47/6/4, together with BIMCO and IPCSA) that reports on the outcome of the join workshop between the ISTS and AEGIS projects held in October 2022 [15][17]

[3] https://www.imo.org/en/OurWork/Facilitation/Pages/IMOCompendium.aspx

- REVIEW AND REVISION OF THE IMO COMPENDIUM ON FACILITATION AND ELECTRONIC BUSINESS, INCLUDING ADDITIONAL E-BUSINESS SOLUTIONS, IMO data set related to ”Ballast water arrival reporting" (FAL 47/7/1, together with UNECE, WCO, BIMCO and IPCSA)
- REVIEW AND REVISION OF THE IMO COMPENDIUM ON FACILITATION AND ELECTRONIC BUSINESS, INCLUDING ADDITIONAL E-BUSINESS SOLUTIONS, IMO data set related to "Waste delivery receipt" (FAL 47/7/2, together with Norway, Singapore, UNECE, WCO, BIMCO and IPCSA)
- REVIEW AND REVISION OF THE IMO COMPENDIUM ON FACILITATION AND ELECTRONIC BUSINESS, INCLUDING ADDITIONAL E-BUSINESS SOLUTIONS, IMO data set related to ”Verified Gross Mass (VGM)” (FAL 47/7/3, together with Norway, Singapore, UNECE, WCO, BIMCO and IPCSA)
- REVIEW AND REVISION OF THE IMO COMPENDIUM ON FACILITATION AND ELECTRONIC BUSINESS, INCLUDING ADDITIONAL E-BUSINESS SOLUTIONS, IMO data set related to "Advance Passenger Information (API)" (FAL 47/7/4, together with Norway, Singapore, UNECE, WCO, BIMCO and IPCSA)
- REVIEW AND REVISION OF THE IMO COMPENDIUM ON FACILITATION AND ELECTRONIC BUSINESS, INCLUDING ADDITIONAL E-BUSINESS SOLUTIONS, Just-In-Time arrival sub-model (FAL 47/7/5, together with Norway, Singapore, UNECE, WCO, BIMCO and IPCSA)
- REVIEW AND REVISION OF THE IMO COMPENDIUM ON FACILITATION AND ELECTRONIC BUSINESS, INCLUDING ADDITIONAL E-BUSINESS SOLUTIONS, Amendments to the IMO data set and IMO reference model (FAL 47/7/6, together with Norway, Singapore, UNECE, WCO, BIMCO and IPCSA)
- Consideration of Descriptions of Maritime Services in the Context of E-Navigation - Development of Guidelines for Harmonized Communication and Electronic Exchange of Operational Data for Port Calls (FAL 47/9, contribution to IMO FAL correspondence group)

- FAL 48, April 2024
  - REVIEW AND REVISION OF THE IMO COMPENDIUM ON FACILITATION AND ELECTRONIC BUSINESS, INCLUDING ADDITIONAL E-BUSINESS SOLUTIONS, Just In Time sub-model, (FAL48/6/3, Submitted together with Singapore, UNECE, BIMCO and IPCSA)
  - REVIEW AND REVISION OF THE IMO COMPENDIUM ON FACILITATION AND ELECTRONIC BUSINESS, INCLUDING ADDITIONAL E-BUSINESS SOLUTIONS, IMO data set on "Advance Passenger Information", (FAL48/6/2, submitted together with UNECE, WCO, BIMCO and IPCSA)
  - REVIEW AND REVISION OF THE IMO COMPENDIUM ON FACILITATION AND ELECTRONIC BUSINESS, INCLUDING ADDITIONAL E-BUSINESS SOLUTIONS, Updated IMO data set on "Ballast water report", (FAL48/6/1, Submitted together with Singapore, UNECE, BIMCO and IPCSA)
  - APPLICATION OF SINGLE WINDOW CONCEPT, Proposed revision of FAL.5/Circ.46 on Guidelines on authentication, integrity and confidentiality of information exchanges via maritime single windows and related services (FAL48/5)
  - REVIEW AND REVISION OF THE IMO COMPENDIUM ON FACILITATION AND ELECTRONIC BUSINESS, INCLUDING ADDITIONAL E-BUSINESS SOLUTIONS,

Amendments to the IMO Data Set and Reference Model, Submitted together with Singapore, BIMCO, IPCSA, and UNECE

- EGDH, May 2022.
    - ANY OTHER BUSINESS, Proposed way forward for the extension of the IMO Compendium (EGDH 6/9, together with UNECE, WCO, BIMCO, and IPCSA)
    - ANY OTHER BUSINESS, New work item on just in time arrival in ISO TC8 (EGDH 6/9/1)
- EGDH 7, October 2022:
    - ANY OTHER BUSINESS, Proposed way forward for the extension of the IMO Compendium (EGDH 7/12, together with Singapore, UNECE, WCO, BIMCO and IPCSA)
- EGDH 8, March 2023:
    - ANY OTHER BUSINESS, Observations on the IMO Compendium data set based on ISO 28005-1 standards development (EGDH 8/12)
    - AMENDMENTS TO THE IMO DATA SET RELATED TO "IMO SAFETY INFORMATION" (E.G. SHIP PARTICULARS), IMO data set related to "noon data reporting" (EGDH 8/3/1, together with BIMCO)
- EGDH 9, October 2023:
    - ANY OTHER BUSINESS, Observations on the IMO Compendium based on ISO 28005-1 and ISO 28005-3 Standards Development (EGDH 9/13/2)
    - ANY OTHER BUSINESS, Maintenance of the IMO Compendium on Facilitation and Electronic Business (EGDH 9/13/3, together with UNECE and WCO)
- EGDH 10, April 2024:
    - ANY OTHER BUSINESS, Observations on the IMO Compendium based on ISO 28005 Standards Development (EGDH 10/13/1)
- EGDH 11, October 2024:
    - CARGO INFORMATION, IMO Data Set Related To “Electronic Bill Of Lading” (EGDH 11/6, together with BIMCO and UNECE)
    - SUB-MODEL APPROACH, Simple Message Implementation Guide for Just In Time Arrival Dataset (EGDH 11/9)

6 Summary and Conclusions

The most important result of the standardisation work done in ISTS is the contribution to the development and maintenance of the IMO Compendium and the development of the technical standard ISO 28005. The development and maintenance of the IMO compendium has become an important arena for collaboration between different stakeholders when it comes to digitalization of maritime transport and the automation of processes related to port calls. During the last years, more and more stakeholders from both standardisations bodies, industry and regulatory side continuously work together to achieve improved data exchange to support digitalization of ship and port processes. From the ship side, harmonization of reporting when being on voyages between different ports on different continents are important. For the efficient planning of port calls and safe navigation when approaching the port, harmonization of charts in ports and open sea is important. In addition to this comes the need to describe the architecture of the maritime ICT systems related to port calls and the

ship-shore communication, which also includes a clear identification of the roles of the ICT system used.

7 References

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[3] IEC-61162-460 Ed. 2.0. Maritime navigation and radiocommunication equipment and systems - Digital interfaces - Part 460: Multiple talkers and multiple listeners - Ethernet interconnection - Safety and security.

[4] IMO FAL 47/9, Input paper on “Consideration of Descriptions of Maritime Services in the Context of E-Navigation - Development of Guidelines for Harmonized Communication and Electronic Exchange of Operational Data for Port Calls"

[5] IALA Guideline G1159 Ship Reporting from a Shore-Based Perspective https://www.iala-aism.org/product/g1159/

[6] A Standardized Vessel Dataset for Noon Reports, Smart Maritime Network https://smartmaritimenetwork.com/standardised-vessel-dataset-for-noon-reports/

[7] NMEA 2000 Tutorial https://www.csselectronics.com/pages/nmea-2000-n2k-intro-tutorial

[8] IMO FAL Circular FAL.5/Circ.46 (June 2022): Guidelines on Authentication, Integrity and Confidentiality of Information Exchanges via Maritime Single Windows and Related Services

[9] https://wwwcdn.imo.org/localresources/en/OurWork/Facilitation/PublishingImages/Pages/IMOCompendium/IMO%20Compendium%20approved%20by%20FAL%2047.xlsx

[10] https://www.imo.org/en/OurWork/Facilitation/Pages/IMOCompendium.aspx

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[27]FAL 43/INF.3: REVIEW AND REVISION OF THE IMO COMPENDIUM ON FACILITATION AND ELECTRONIC BUSINESS, INCLUDING ADDITIONAL E-BUSINESS SOLUTIONS Proposal for amendments to the IMO Compendium on Facilitation and Electronic Business

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[31]MSC.1/Circ.1475: GUIDELINES REGARDING THE VERIFIED GROSS MASS OF A CONTAINER CARRYING CARGO

[32]BWM.2/Circ.80: INTERNATIONAL CONVENTION FOR THE CONTROL AND MANAGEMENT OF SHIPS' BALLAST WATER AND SEDIMENTS, 2004 Guidance on ballast water record-keeping and reporting

[33]MEPC.1/Circ.834/Rev.1: CONSOLIDATED GUIDANCE FOR PORT RECEPTION FACILITY PROVIDERS AND USERS

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Annex A: Mapping between ISO 28005 and the IMO Compendium

IMO data number	Data element	Mapping to this document
IMO0001	Agent City	/Agent/Address/CityName
IMO0002	Agent Contact Family Name	/Agent/Person/FamilyName
IMO0003	Agent country code	/Agent/Address/CountryCode
IMO0004	Agent country sub-division name	/Agent/Address/CountrySubdivisionName
IMO0006	Agent email	/Agent/ContactNumbers/Email
IMO0007	Agent identification number	/Agent/CompanyId
IMO0008	Agent landline number	/Agent/ContactNumbers/BusinessTelephone
IMO0009	Agent mobile number	/Agent/ContactNumbers/MobileTelephone
IMO0010	Agent name	/Agent/Company
IMO0011	Agent postcode	/Agent/Address/PostCode
IMO0012	Agent street and number	/Agent/Address/StreetName /Agent/Address/StreetNumber
IMO0013	Arrival/departure code	/ArrivalDeparture
IMO0014	Authentication date	/Authenticator/AuthenticationDate
IMO0015	Authenticator location	/Authenticator/AuthenticatorLocation/CountryCode /Authenticator/AuthenticatorLocation/UNLoCode Plus "At sea" as a possible value for the name of the location: /Authenticator/AuthenticatorLocation/Name="At sea"
IMO0016	Authenticator family name	/Authenticator/Person/FamilyName
IMO0017	Authenticator party identification number	/Authenticator/CompanyId
IMO0019	Cargo brief description	/CargoOverview
IMO0021	Transport equipment identification number	Can be used in two different contexts: 1) /CargoData/Consignment/CargoItem/TransportEquipment/MarksAndNumbers 2) /CargoData/TransportEquipment/MarksAndNumber
IMO0022	Cargo item description of goods	/CargoData/Consignment/CargoItem/GoodsType/Description
IMO0023	Cargo item gross volume	/CargoData/Consignment/CargoItem/GrossVolume/Content From/to IMO0077: /CargoData/Consignment/CargoItem/GrossVolume/UnitCode
IMO0024	Cargo item gross weight	/CargoData/Consignment/CargoItem/GrossWeight/Content From/to IMO0077: /CargoData/Consignment/CargoItem/GrossWeight/UnitCode
IMO0025	Cargo item HS (harmonized commodity description and coding system) code	/CargoData/Consignment/CargoItem/GoodsType/HSCode
IMO0026	Cargo item marks and numbers	/CargoData/Consignment/CargoItem/MarksAndNumber
IMO0028	Cargo item number of packages	/CargoData/Consignment/CargoItem/NoOfPackages
IMO0029	Cargo item package type, coded	/CargoData/Consignment/CargoItem/PackageType
IMO0031	IMO Company number	/Company/IMOCompanyId
IMO0032	IMO Company name	/Company/Organisation/Name
IMO0033	Company security officer email	/CSO/ContactNumbers/Email

IMO data number	Data element	Mapping to this document
IMO0034	Company security officer landline number	/CSO/ContactNumbers/BusinessTelephone
IMO0035	Company security officer mobile number	/CSO/ContactNumbers/MobileTelephone
IMO0036	Company security officer family name	/CSO/Person/FamilyName
IMO0037	Crew effect description, coded	/DutiableCrewEffect/CrewEffectItem/CrewEffectItemCode
IMO0039	Crew effect quantity onboard	/DutiableCrewEffect/CrewEffectItem/Measurement/Content From/to IMO0077: /DutiableCrewEffect/CrewEffectItem/Measurement/UnitCode
IMO0040	Crew effects description	/DutiableCrewEffect/CrewEffectItem/EffectDescription
IMO0041	Crew effects sequence number	/DutiableCrewEffect/CrewEffectItem/SequenceNumber
IMO0042	Crewmember rank or rating name	/CrewList/CrewMemberData/Duty/Text
IMO0043	Crewmember rank or rating, coded	/CrewList/CrewMemberData/Duty/Code
IMO0044	Person on board sequence number	/CrewList/CrewMemberData/PersonReference
IMO0045	Stowage position onboard	Can be used in two different contexts: 1) /CargoData/Consignment/CargoItem/TransportEquipment/OnBoardLocation 2) /CargoData/TransportEquipment/OnBoardLocation
IMO0046	Dangerous goods carried indicator	/DangerousGoodsCargoIndicator 1=Yes, 0=No.
IMO0047	Dangerous goods EmS (emergency schedule) number	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/EmergencyInstruction
IMO0048	Dangerous goods flashpoint	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/FlashPoint/Content From/to IMO0077: The unit is either Celsius or Fahrenheit /CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/FlashPoint/UnitCode
IMO0049	Dangerous goods hazard class, coded	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/UNClass
IMO0051	Dangerous goods marine pollutant type, coded	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/MARPOLPollutionCode
IMO0052	Dangerous goods mass	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/Mass/Content From/to IMO0077: /CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/Mass/UnitCode
IMO0053	Dangerous goods number of packages	/CargoData/Consignment/CargoItem/SpecialCargoDetails/NoOfPackages
IMO0054	Dangerous goods packing group	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/PackingGroup
IMO0055	Dangerous goods proper shipping name	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/ProperShippingName
IMO0056	Dangerous goods shipper's reference number	/CargoData/Consignment/DangerousGoodsShippersReferenceNumber
IMO0058	Dangerous goods subsidiary risks, coded	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/SubsidiaryRisks
IMO0059	Dangerous goods technical specifications	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/TechnicalSpecification
IMO0060	Dangerous goods UNDG (United Nations dangerous goods identifier) number	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/UNNumber
IMO0061	Dangerous goods volume	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/Volume/Content From/to IMO0077: /CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/Volume/UnitCode

IMO data number	Data element	Mapping to this document
IMO0063	Date and time of arrival - actual	/PortOfArrival/Arrival[TimeType="Actual"] or /PortOfDeparture/Arrival[TimeType="Actual"] Or actual arrival to other locations.
IMO0064	Date and time of arrival - estimated	/PortOfArrival/Arrival[TimeType="Estimated"] /PortOfDeparture/Arrival[TimeType="Estimated"] Or estimated arrival to other locations.
IMO0065	Date and time of departure - actual	/PortOfArrival/Departure[TimeType="Actual"] /PortOfDeparture/Departure[TimeType="Actual"] Or actual departure from other locations.
IMO0066	Date and time of departure - estimated	/PortOfArrival/Departure[TimeType="Estimated"] /PortOfDeparture/Departure[TimeType="Estimated"] Or estimated departure from other locations.
IMO0067	Valid certificate indicator	For ship certificates: /ShipCertificateList/Certificate/ValidCertificateIndicator For ship company certificate: /Company/Certificate/ ValidCertificateIndicator
IMO0068	Reason why ship has no valid ISSC (international ship security certificate) or interim ISSC	/ISSCertificateStatus/CertificateStatusReasonNotValid
IMO0069	Reason why ship has no valid ISSC or interim ISSC, coded	/ISSCertificateStatus/CertificateStatusReasonNotValidCode
IMO0070	Certificate issuer flag State, coded	For ship certificates: /ShipCertificateList/Certificate/Issuer/RegistrationCountryCode For ship company certificate: /Company/Certificate/Issuer/RegistrationCountryCode
IMO0071	Certificate expiry date	For ship certificates: /ShipCertificateList/Certificate/ExpiryDate For ship company certificate: /Company/Certificate/ExpiryDate
IMO0075	Last port of call name	Use the country code to find the country name: /LastPortOfCall/CountryCode /LastPortOfCall/Name
IMO0076	Last port of call, coded	/LastPortOfCall/CountryCode /LastPortOfCall/UNLoCode
IMO0077	Measurement unit, coded	See mapping for each of the values. Mapping is done to UnitCode
IMO0078	Message Date Time	In EPCMessageHeader: /SentTime
IMO0082	Message sender identifier	In EPCMessageHeader: /EPCMessageHeader/SenderId/Company
IMO0083	Name of master	Select the crew with CrewDutyType.Code="Master":: /CrewList/CrewMemberData/Name/FamilyName
IMO0084	Next port of call, coded	/NextPortOfCall/CountryCode /NextPortOfCall/UNLoCode
IMO0085	Next port of call, name	Use the country code to find the country name: /NextPortOfCall/CountryCode /NextPortOfCall/Name
IMO0086	Number of crew	/PersonsOnBoardNumber/Crew
IMO0087	Number of passengers	/PersonsOnBoardNumber/Passengers
IMO0088	Number of persons on board	/PersonsOnBoardNumber/NumberOfPersonsOnboard
IMO0089	Person in transit indicator	/PassengerList/PassengerData/Transit
IMO0091	Person port of embarkation, coded	/PassengerList/PassengerData/Embarkation/Location/CountryCode /PassengerList/PassengerData/Embarkation/Location/UNLoCode OtherPersonList.OtherPersonData.Embarkation.Location.CountryCode[OtherPersonStatus="Stowaway"] OtherPersonList.OtherPersonData.Embarkation.Location.UNLoCode[OtherPersonStatus="Stowaway"]

IMO data number	Data element	Mapping to this document
IMO0092	Person port of disembarkation, name	Use the country code to find the country name: /PassengerList/PassengerData/Debarkation/Location/CountryCode /PassengerList/PassengerData/Debarkation/Location/Name
IMO0093	Person port of disembarkation, coded	/PassengerList/PassengerData/Debarkation/Location/CountryCode /PassengerList/PassengerData/Debarkation/Location/UNLoCode
IMO0094	Person port of embarkation, name	Use the country code to find the country name: /PassengerList/PassengerData/Embarkation/Location/CountryCode /PassengerList/PassengerData/Embarkation/Location/Name /OtherPersonList/OtherPersonData/Embarkation/Location/CountryCode[OtherPersonStatus="Stowawa y"] /OtherPersonList/OtherPersonData/Embarkation/Location/Name[OtherPersonStatus="Stowaway"]
IMO0095	Person visa number	/PassengerList/PassengerData/VisaNumber/IdNumber
IMO0096	Person country of birth, coded	Check the person type in IMO0107 to know whether it is a crew (including master) or passenger or stowaway: /CrewList/CrewMemberData/CountryOfBirth /PassengerList/PassengerData/CountryOfBerth /OtherPersonList/OtherPersonData/CountryOfBirth[OtherPersonStatus="Stowaway"]
IMO0097	Person date of birth	Check the person type in IMO0107 to know whether it is a crew (including master) or passenger or stowaway: /CrewList/CrewMemberData/DateOfBirth /PassengerList/PassengerData/DateOfBerth /OtherPersonList/OtherPersonData/DateOfBerth[OtherPersonStatus="Stowaway"]
IMO0098	Person family name	Check the person type in IMO0107 to know whether it is a crew (including master) or passenger or stowaway: /CrewList/ CrewMemberData/Name/FamilyName /PassengerList/PassengerData/Name/FamilyName /OtherPersonList/OtherPersonData/Name/FamilyName[OtherPersonStatus="Stowaway"]
IMO0099	Person gender, coded	Check the person type in IMO0107 to know whether it is a crew (including master) or passenger or stowaway: /CrewList/CrewMemberData/Gender /PassengerList/PassengerData/Gender /OtherPersonData/Gender[OtherPersonStatus="Stowaway"]
IMO0100	Person given name	Check the person type in IMO0107 to know whether it is a crew (including master) or passenger or stowaway: /CrewList/CrewMemberData/Name/GivenName /PassengerList/PassengerData/Name/GivenName OtherPersonList/OtherPersonData/Name/GivenName[OtherPersonStatus="Stowaway"]
IMO0101	Person identity or travel document expiry date	Check the person type in IMO0107 to know whether it is a crew (including master) or passenger or stowaway: /CrewList/CrewMemberData/PersonIdDocument/ExpirationDate /PassengerList/PassengerData/PersonIdDocument/ExpirationDate /OtherPersonList/OtherPersonData/PersonIdDocument/ExpirationDate[OtherPersonStatus="Stowaway "]
IMO0102	Person identity or travel document issuing nation, coded	Check the person type in IMO0107 to know whether it is a crew (including master) or passenger or other: /CrewList/CrewMemberData/PersonIdDocument/IssuingCountry /PassengerList/PassengerData/PersonIdDocument/IssuingCountry /OtherPersonList/OtherPersonData/PersonIdDocument/IssuingCountry[OtherPersonStatus="Stowaway "]
IMO0103	Person identity or travel document number	Check the person type in IMO0107 to know whether it is a crew (including master) or passenger or stowaway: /CrewList/CrewMemberData/PersonIdDocument/IdNumber /PassengerList/PassengerData/PersonIdDocument/IdNumber /OtherPersonList/OtherPersonData/PersonIdDocument/IdNumber[OtherPersonStatus="Stowaway"]
IMO0104	Person identity or travel document type, coded	Check the person type in IMO0107 to know whether it is a crew (including master) or passenger or other: /CrewList/CrewMemberData/PersonIdDocument/IdDocument /PassengerList/PassengerData/PersonIdDocument/IdDocument /OtherPersonList/OtherPersonData/PersonIdDocument/IdDocument[OtherPersonStatus="Stowaway"]

IMO data number	Data element	Mapping to this document
IMO0105	Person nationality, coded	Check the person type in IMO0107 to know whether it is a crew (including master) or passenger: /CrewList/CrewMemberData/Nationality /PassengerList/PassengerData/Nationality
IMO0106	Person place of birth name	Check the person type in IMO0107 to know whether it is a crew (including master) or passenger or stowaway: /CrewList/CrewMemberData/PlaceOfBirth /PassengerList/PassengerData/PlaceOfBirth /OtherPersonList/OtherPersonData/PlaceOfBirth[OtherPersonStatus="Stowaway"]
IMO0107	Person type, coded	For persons that are in the crew list: Use the code for Crew, to map the person to the CrewMemberDataType This includes crew that has CrewDutyType.Code="Master" in addition to all other crew. For persons that are in the passenger list: Use the code for Passenger, to map the person to the PassengerDataType
IMO0108	Port of arrival, coded	/PortOfArrival/Location/CountryCode /PortOfArrival/Location/UNLoCode
IMO0109	Port of arrival, name	Use the country code to find the country name: /PortOfArrival/Location/CountryCode /PortOfArrival/Location/Name
IMO0110	Port of call sequence number	/PortCallList/PortCall/SequenceNumber
IMO0111	Port of departure, coded	/PortOfDeparture/Location/CountryCode /PortOfDeparture/Location/UNLoCode
IMO0112	Port of departure, name	Use the country code to find the country name: /PortOfDeparture/Location/CountryCode /PortOfDeparture/Location/Name
IMO0113	Port of discharge, coded	/CargoData/Consignment/PortOfDischarge/CountryCode /CargoData/Consignment/PortOfDischarge/UNLoCode
IMO0114	Port of discharge, name	Use the country code to find the country name: /CargoData/Consignment/PortOfDischarge/CountryCode /CargoData/Consignment/PortOfDischarge/Name
IMO0115	Port of last waste delivery, name	Use the country code to find the country name: /WasteInformation/LastPortDelivered/CountryCode /WasteInformation/LastPortDelivered/Name
IMO0116	Port of last waste delivery, coded	/WasteInformation/LastPortDelivered/CountryCode /WasteInformation/LastPortDelivered/UNLoCode
IMO0117	Port of loading, coded	/CargoData/Consignment/PortOfLoading/CountryCode /CargoData/Consignment/PortOfLoading/UNLoCode
IMO0118	Port of loading, name	Use the country code to find the country name: /CargoData/Consignment/PortOfLoading/CountryCode /CargoData/Consignment/PortOfLoading/Name
IMO0119	Port of next waste delivery, name	Use the country code to find the country name: /WasteInformation/NextPortToDeliver/CountryCode /WasteInformation/NextPortToDeliver/Name
IMO0120	Port of next waste delivery, coded	/WasteInformation/NextPortToDeliver/CountryCode /WasteInformation/NextPortToDeliver/UNLoCode
IMO0121	Port of remaining waste delivery, coded	/WasteInformation/WasteDisposalInformation/DisposedOfInPort/CountryCode /WasteInformation/WasteDisposalInformation/DisposedOfInPort/UNLoCode
IMO0122	Port of remaining waste delivery, name	Use the country code to find the country name: /WasteInformation/WasteDisposalInformation/DisposedOfInPort/CountryCode /WasteInformation/WasteDisposalInformation/DisposedOfInPort/Name
IMO0123	Port period of stay	If both ETD and ETA is given, the value for Period of stay should be calculated from these. Otherwise the following is used: /PeriodOfStay
IMO0124	Previous port facility call start date	/PortCallList/PortCall/FromDateTime
IMO0125	Previous port facility call end date	/PortCallList/PortCall/ToDateTime

IMO data number	Data element	Mapping to this document
IMO0126	Previous port of call, name	Use the country code to find the country name: /PortCallList/PortCall/Port/CountryCode /PortCallList/PortCall/Port/Name
IMO0127	Previous port of call, coded	Concatenation of the following: /PortCallList/PortCall/Port/CountryCode /PortCallList/PortCall/Port/UNLoCode
IMO0128	Authenticator role, coded	/Authenticator/ContactType
IMO0129	Certificate issuer name	For ship certificates: /ShipCertificateList/Certificate/Issuer/Name For ship company certificate: /Company/Certificate/Issuer/Name
IMO0130	Security plan approval indicator	/HasSecurityPlan
IMO0131	Security, other matters to report	/SecurityOtherMattersToReport
IMO0133	Ship additional security measures, coded	/PortCallList/PortCall/AdditionalSecurityMeasure/Code
IMO0135	Ship additional security measures, description	/PortCallList/PortCall/AdditionalSecurityMeasure/Description
IMO0136	Ship call sign	/EPCMessageHeader/ShipID/CallSign
IMO0137	Ship current security level, coded	/CurrentShipSecurityLevel
IMO0138	Ship flag state, coded	/EPCMessageHeader/ShipID/RegistrationPort/CountryCode
IMO0139	Ship gross tonnage	/ShipParticulars/GrossTonnage
IMO0140	Ship IMO number	/ShipID/IMONumber
IMO0141	Ship satellite service, number	/ ShipParticulars/SatelliteService/Number
IMO0142	Ship name	/EPCMessageHeader/ShipID/ShipName
IMO0143	Ship net tonnage	/ShipParticulars/NetTonnage
IMO0144	Location in port	From the data types defined in this document to the IMO Compendium**Error! Reference source not found.**: Select the required values from the following data elements: /PortOfArrival/Location/Name /PortOfArrival/Location/FacilityCode /PortOfArrival/Location/GLN From the IMO Compendium**Error! Reference source not found.** to the data types defined in this document: Put the whole string in this element if no business rule is given: /PortOfArrival/Location/Name
IMO0145	Certificate issue date	For ship certificates: /ShipCertificateList/Certificate/IssueDate For ship company certificate: /Company/Certificate/IssueDate
IMO0146	Ship registry number	/CertificateList/Certificate/CertificateNumber for Code="COR"
IMO0147	Ship registry port, coded	/EPCMessageHeader/ShipID/RegistrationPort/CountryCode /EPCMessageHeader/ShipID/RegistrationPort/UNLoCode
IMO0148	Ship registry port, name	The country code is used to find the country name: /EPCMessageHeader/ShipID/RegistrationPort/CountryCode Port name: /EPCMessageHeader/ShipID/RegistrationPort/Name
IMO0149	Ship security level in a previous port, coded	PortCallList/PortCall/PortSecurityLevel
IMO0150	Ship security measures, coded	/ShipToShipActivityList/ShipToShipActivity/ShipSecurityMeasure/Code
IMO0151	Ship security measures, text	/ShipToShipActivityList/ShipToShipActivity/ShipSecurityMeasure/Description
IMO0153	Ship stay reference number	/EPCMessageHeader/ShipStayReference

IMO data number	Data element	Mapping to this document
IMO0154	Ship stores article name, text	/ShipStore/StoreItem/Description
IMO0155	Ship stores article name, coded	/ShipStore/StoreItem/Code
IMO0156	Ship stores location onboard, text	/ShipStore/StoreItem/LocationOfStorage
IMO0158	Ship stores quantity onboard	/ShipStore/StoreItem/Measurement/Content From/to IMO0077: /ShipStore/StoreItem/Measurement/UnitCode
IMO0159	Ship stores sequence number	/ShipStore/StoreItem/SequenceNumber
IMO0160	Ship type, coded	/ShipParticulars/ShipType
IMO0161	Ship-to-ship activity, coded	/ShipToShipActivityList/ShipToShipActivity/Code
IMO0162	Ship-to-ship activity, text	/ShipToShipActivityList/ShipToShipActivity/Activity
IMO0163	Ship-to-ship activity end date	/ShipToShipActivityList/ShipToShipActivity/ToDateTime
IMO0164	Ship-to-ship activity location, name	When the location is a port (UNLOCODE or name): This is used to find the name of the country based on the code: /ShipToShipActivityList/ShipToShipActivity/Location/CountryCode This is the name of the port, if the UNLOCODE does not exist in UNECE R16: /ShipToShipActivityList/ShipToShipActivity/Location/Name This is the UNLOCODE of the Port: /ShipToShipActivityList/ShipToShipActivity/Location/UNLoCode When the location is a position (lat/lon): /ShipToShipActivityList/ShipToShipActivity/Location/Position/Latitude /ShipToShipActivityList/ShipToShipActivity/Location/Position/Longitude
IMO0165	Ship-to-ship activity sequence number	/ShipToShipActivityList/ShipToShipActivity/SequenceNumber
IMO0166	Ship-to-ship activity start date	/ShipToShipActivityList/ShipToShipActivity/FromDateTime
IMO0167	Ship-to-ship activity location, coded	/ShipToShipActivityList/ShipToShipActivity/Location/CountryCode /ShipToShipActivityList/ShipToShipActivity/Location/UNLoCode
IMO0168	Subsequent port of call, name	/VoyageDescription/PortCall/Port/CountryCode (this is used to find the name of the country based on the code) /VoyageDescription/PortCall/Port/name
IMO0169	Subsequent port of call, coded	/VoyageDescription/PortCall/Port/CountryCode /VoyageDescription/PortCall/Port/UNLoCode
IMO0170	Transport contract number	/CargoData/Consignment/TransportDocumentId
IMO0172	Primary purpose of call, coded	/CallPurpose/CallPurposeCode
IMO0173	Waste estimated amount to be generated	/WasteInformation/WasteDisposalInformation/EstimatedGenerated/Content From/to IMO0077: /WasteInformation/WasteDisposalInformation/EstimatedGenerated/UnitCode
IMO0174	Waste amount to be delivered	/WasteInformation/WasteDisposalInformation/ToBeDelivered/Content From/to IMO0077: /WasteInformation/WasteDisposalInformation/ToBeDelivered/UnitCode
IMO0175	Waste amount retained	/WasteInformation/WasteDisposalInformation/RetainedOnboard/Content From/to IMO0077: /WasteInformation/WasteDisposalInformation/RetainedOnboard/UnitCode

IMO0178	All waste delivery indicator	IF /WasteInformation/[WasteDeliveryStatus="All"] THEN
		Set value to "yes"
		ELSE
		Set value to "no".
		IF IMO0178="yes", THEN
		Set /WasteInformation/[WasteDeliveryStatus="All"]

IMO data number	Data element	Mapping to this document
		ELSE "None".
IMO0179	Waste last delivery date	/WasteInformation/LastPortDeliveredDate
IMO0180	Waste maximum dedicated storage capacity	/WasteInformation/WasteDisposalInformation/MaxStorage/Content From/to IMO0077: /WasteInformation/WasteDisposalInformation/MaxStorage/UnitCode
IMO0181	Waste reception facility point of contact	Concatenation of: /WasteInformation/PointOfContact/Person/FamiliyName /WasteInformation/PointOfContact/Person/MiddleName /WasteInformation/PointOfContact/Person/GivenName
IMO0183	Waste type, coded	/WasteInformation/WasteDisposalInformation/WasteType/Code
IMO0184	Port facility, coded	/PortOfArrival/Location/CountryCode /PortOfArrival/Location/UNLoCode /PortOfArrival/Location/FacilityCode
IMO0185	Port facility, name	Facility name: /PortOfArrival/Location/FacilityName Port name: /PortOfArrival/Location/Name Use the code for country to find the name of the country: /PortOfArriva/Location/CountryCode
IMO0186	Dangerous goods additional information	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/AdditionalInformation
IMO0187	Dangerous goods package type, coded	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DangerousGoodsPackageType
IMO0188	Previous port facility, name	Facility name: /PortCallList/PortCall/Port/FacilityName Port name: /PortCallList/PortCall/Port/Name Use the code for country to find the name of the country: /PortCallList/PortCall/Port/CountryCode
IMO0189	Previous port facility, coded	/PortCallList/PortCall/Port/CountryCode /PortCallList/PortCall/Port/UNLoCode /PortCallList/PortCall/Port/FacilityCode
IMO0190	Waste description	/WasteInformation/WasteDisposalInformation/WasteType/Description
IMO0191	Voyage number	/VoyageNumber
IMO0192	Message type, coded	/EPCMessageHeader/ MessageFunctionCode
IMO0194	Ship-to-ship activity location, latitude	/ShipToShipActivityList/ShipToShipActivity/Location/Position/Latitude
IMO0195	Ship-to-ship activity location, longitude	/ShipToShipActivityList/ShipToShipActivity/Location/Position/Longitude
IMO0196	Remarks	/GeneralRemark
IMO0197	Vehicle identification number (VIN)	/CargoData/Consignment/CargoItem/VehicleIdentificationNumber
IMO0198	Dangerous Goods Regulation, coded	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/DGClassification
IMO0200	Certificate issue location, coded	For ship certificates: /ShipCertificateList/Certificate/CertificateIssueLocationCode /ShipCertificateList/Certificate/CertificateIssueCountryCode For ship company certificate: /Company/Certificate/Issuer/ CertificateIssueLocationCode /Company/Certificate/Issuer/ CertificateIssueCountryCode
IMO0202	Re-inspection required indicator	/HealthData/ReInspectionRequired
IMO0203	Visited affected area indicator	/HealthData/VisitedInfectedArea
IMO0204	Port of call in affected area, coded	/HealthData/CallInInfectedArea

IMO data number	Data element	Mapping to this document
IMO0205	Date of call in affected area	/HealthData/CallInfectedArea/FromDateTime
IMO0206	Person died Indicator	/HealthData/PersonDied
IMO0207	Disease on board Indicator	/HealthData/DiseaseOnBoard
IMO0208	Ill persons greater than expected indicator	/HealthData/IllPersonsGreaterThanExpected
IMO0209	Ill persons now indicator	/HealthData/IllPersonsNow
IMO0210	Medical practioner consulted indicator	/HealthData/MedicalConsulted
IMO0211	Infection condition on board indicator	/HealthData/InfectionConditionOnBoard
IMO0212	Sanitary measure applied indicator	/HealthData/SanitaryMeasureApplied
IMO0213	Sanitary measure	/HealthData/SanitaryMeasure/Comment
IMO0214	Sanitary measure, place	/HealthData/SanitaryMeasure/LocationOnBoard
IMO0215	Sanitary measure, date	/HealthData/SanitaryMeasure/Date
IMO0216	Stowaway found indicator	/HealthData/StowawaysFound
IMO0217	Port stowaways joined ship, coded	/HealthData/LocationStowawaysJoinedShip/UNLoCode /HealthData/LocationStowawaysJoinedShip/CountryCode
IMO0218	Sick animal indicator	/HealthData/SickAnimal
IMO0219	Person embarkation date and time - planned	For crew: /CrewList/CrewMemberData/Embarkation/At/DateTime[TimeType=Actual] For passengers: /PassengerList/PassengerData/Embarkation/At/DateTime[TimeType=Actual] For stowaways: /OtherPersonList/OtherPersonData/Embarkation/At/DateTime[TimeType=Actual] [OtherPersonStatus="Stowaway"] For Advanced Passenger Information: /PassengerList/PassengerData/Embarkation/At/DateTime[TimeType=Planned]
IMO0220	Illness	/PassengerData/PersonHealthParticulars/IllnessCode
IMO0221	Symptoms onset date	/PassengerData/PersonHealthParticulars/SymptomsDate
IMO0222	Health status reported indicator	/PassengerData/PersonHealthParticulars/ReportedToPortMedical
IMO0223	Health status, coded	/PassengerData/PersonHealthParticulars/CaseDisposal/HealthStateCode
IMO0224	Case disposition, coded	/PassengerData/PersonHealthParticulars/CaseDisposal/CaseDisposalCode
IMO0225	Location of evacuation name	/PassengerData/ Debarkation/Location/Name
IMO0226	Location of evacuation, coded	/PassengerData/ Debarkation/Location/CountryCode /PassengerData/ Debarkation/Location/UNLoCode
IMO0227	Treatment	/PassengerData/PersonHealthParticulars/Treatment
IMO0228	Comments	/PassengerData/PersonHealthParticulars/Comments
IMO0229	Anchorage name	/AnchorageArrival/Location/Name or/AnchorageDeparture/Location/Name, dependent on the value of /ArrivalDeparture (IMO0013)
IMO0230	Terminal name	/TerminalArrival/Location/SMDGterminalCode /TerminalDeparture/Location/SMDGterminalCode (dependent of IMO0013 Arrival/departure code) (shall map to the correct type of location.)
IMO0231	Pilot Boarding Place	/PilotBoardingPlaceDeparture/Location (shall map to the correct type of location.) /PilotBoardingPlaceArrival/Location
IMO0232	Berth name	/BerthArrival/Location/Name /BerthDeparture/Location/Name (dependent of IMO0013 Arrival/departure code)
IMO0233	Berth position	/BerthPositionArrival/Location/Name /BerthPositionDeparture/Location/Name

IMO data number	Data element	Mapping to this document
		(dependent of IMO0013 Arrival/departure code) (shall map to the correct type of location.)
IMO0234	Date and time of arrival - requested	/BerthArrival/Arrival[TimeType="Requested"] /BerthPositionfArrival/Arrival[TimeType="Requested"] /PortOfArrival/Arrival[TimeType="Requested"] /TerminalArrival/Arrival[TimeType="Requested"] /AnchorageArrival/Arrival[TimeType="Requested"] /FacilityArrival/Arrival[TimeType="Requested"] /PilotBoardingPlaceArrival/Arrival[TimeType="Requested"]
IMO0235	Date and time of arrival - planned	/PortOfArrival/Arrival[TimeType="Planned"] /BerthArrival/Arrival[TimeType=" Planned"] /BerthPositionfArrival/Arrival[TimeType="Planned"] /PortOfArrival/Arrival[TimeType="Planned"] /TerminalArrival/Arrival[TimeType="Planned"] /AnchorageArrival/Arrival[TimeType="Planned"] /FacilityArrival/Arrival[TimeType="Planned"] /PilotBoardingPlaceArrival/Arrival[TimeType="Planned"]
IMO0236	Date and time of departure - requested	/PortOf Departure/ Departure[TimeType=" Requested"] /Berth Departure/ Departure[TimeType=" Requested"] /BerthPositionf Departure/ Departure[TimeType=" Requested"] /PortOf Departure/ Departure[TimeType=" Requested"] /Terminal Departure/ Departure[TimeType=" Requested"] /Anchorage Departure/ Departure[TimeType=" Requested"] /Facility Departure/ Departure[TimeType=" Requested"] /PilotBoardingPlace Departure/ Departure[TimeType=" Requested"]
IMO0237	Date and time of departure – planned	/PortOf Departure/ Departure[TimeType=" Planned"] /Berth Departure/ Departure[TimeType=" Planned"] /BerthPositionf Departure/ Departure[TimeType=" Planned"] /PortOf Departure/ Departure[TimeType=" Planned"] /Terminal Departure/ Departure[TimeType=" Planned"] /Anchorage Departure/ Departure[TimeType=" Planned"] /Facility Departure/ Departure[TimeType=" Planned"] /PilotBoardingPlace Departure/ Departure[TimeType=" Planned"]
IMO0238	Number of ill persons	/HealthData/NumberOfIllPersons
IMO0239	Ship company street and number/P.O Box	/Company/Contact/Address/StreetName /Company/Contact/Address/StreetNumber or: /Company/Contact/Address/PostOfficeBox
IMO0240	Ship company postcode	/Company/Contact/Address/PostCode
IMO0241	Ship company city	/Company/Contact/Address/CityName
IMO0242	Ship company country code	/Company/Contact/Address/CountryCode
IMO0243	Ship company country sub-division name	/Company/Contact/Address/CountrySubdivisionName
IMO0244	Stowaway date and time found onboard	/OtherPersonList/OtherPersonData/Embarkation/At/DateTime[OtherPersonStatus="Stowaway"]
IMO0245	Stowaway port facility of boarding, coded	/OtherPersonList/OtherPersonData/Embarkation/Location/CountryCode[OtherPersonStatus="Stowaway"] plus /OtherPersonList/OtherPersonData/Embarkation/Location/UNLoCode[OtherPersonStatus="Stowaway"] plus /OtherPersonList/OtherPersonData/Embarkation/Location/FacilityCode[OtherPersonStatus="Stowaway"]
IMO0246	Stowaway port facility of boarding name	/OtherPersonList/OtherPersonData/Embarkation/Location/CountryCode[OtherPersonStatus="Stowaway"] plus /OtherPersonList/OtherPersonData/Embarkation/Location/UNLoCode[OtherPersonStatus="Stowaway"] plus /OtherPersonList/OtherPersonData/Embarkation/Location/FacilityName[OtherPersonStatus="Stowaway"]

IMO data number	Data element	Mapping to this document
IMO0247	Stowaway berth of boarding name	/OtherPersonList/OtherPersonData/BerthOfBoarding/Name[OtherPersonStatus="Stowaway"]
IMO0248	Stowaway country of boarding, coded	/OtherPersonList/OtherPersonData/Embarkation/Location/CountryCode[OtherPersonStatus="Stowaway"]
IMO0250	Stowaway Intended final destination name	/OtherPersonList/OtherPersonData/StowawaysDetails/IntendedFinalDestinationName
IMO0251	Stowaway stated reasons for boarding the ship	/OtherPersonList/OtherPersonData/StowawaysDetails/StatedReasonsForBoardingShip
IMO0252	Stowaway name by which known	/OtherPersonList/OtherPersonData/StowawaysDetails/NameByWhichKnown
IMO0253	Stowaway claimed nationality	/OtherPersonList/OtherPersonData/StowawaysDetails/ClaimedNationality
IMO0254	Person's home address street and number/P.O Box	For crew: /CrewList/CrewMemberData/HomeAddress/StreetName /CrewList/CrewMemberData/HomeAddress/StreetNumber For passengers: /PassengerList/PassengerData/HomeAddress/StreetName /PassengerList/PassengerData/HomeAddress/StreetNumber For stowaways: /OtherPersonList/OtherPersonData/HomeAddress/StreetName[OtherPersonStatus="Stowaway"] /OtherPersonList/OtherPersonData/HomeAddress/StreetNumber[OtherPersonStatus="Stowaway"]
IMO0255	Person's home address postcode	For crew: /CrewList/CrewMemberData/HomeAddress/PostCode For passengers: /PassengerList/PassengerData/HomeAddress/PostCode For stowaways: /OtherPersonList/OtherPersonData/HomeAddress/PostCode[OtherPersonStatus="Stowaway"]
IMO0256	Person's home address city	For crew: /CrewList/CrewMemberData/HomeAddress/CityName For passengers: /PassengerList/PassengerData/HomeAddress/CityName For stowaways: /OtherPersonList/OtherPersonData/HomeAddress/CityName[OtherPersonStatus="Stowaway"]
IMO0257	Person's home address country sub-division name	For crew: /CrewList/CrewMemberData/HomeAddress/CountrySubdivisionName For passengers: /PassengerList/PassengerData/HomeAddress/CountrySubdivisionName For stowaways: /OtherPersonList/OtherPersonData/HomeAddress/CountrySubdivisionName[OtherPersonStatus="Stowaway"]
IMO0258	Person's home address country code	For crew: /CrewList/CrewMemberData/HomeAddress/CountryCode For passengers: /PassengerList/PassengerData/HomeAddress/CountryCode For stowaways: /OtherPersonList/OtherPersonData/HomeAddress/CountryCode[OtherPersonStatus="Stowaway"]
IMO0259	Person identity or travel document issue date	For crew: /CrewList/CrewMemberData/PersonIdDocument/IssueDate For passengers: /PassengerList/PassengerData/PersonIdDocument/IssueDate For stowaway: /OtherPersonList/OtherPersonData/PersonIdDocument/IssueDate[OtherPersonStatus="Stowaway"]
IMO0260	Stowaway photograph	/OtherPersonList/OtherPersonData/StowawaysDetails/Photograph
IMO0261	Stowaway physical description	/OtherPersonList/OtherPersonData/StowawaysDetails/PhysicalDescription
IMO0262	Stowaway first spoken language	/OtherPersonList/OtherPersonData/StowawaysDetails/FirstSpokenLanguage

IMO data number	Data element	Mapping to this document
IMO0263	Stowaway first reading language	/OtherPersonList/OtherPersonData/StowawaysDetails/FirstReadingLanguage
IMO0264	Stowaway first written language	/OtherPersonList/OtherPersonData/StowawaysDetails/FirstWrittenLanguage
IMO0265	Stowaway other spoken language	/OtherPersonList/OtherPersonData/StowawaysDetails/OtherSpokenLanguage
IMO0266	Stowaway other read language	/OtherPersonList/OtherPersonData/StowawaysDetails/OtherReadingLanguage
IMO0267	Stowaway other written language	/OtherPersonList/OtherPersonData/StowawaysDetails/OtherWrittenLanguage
IMO0268	Stowaway method of boarding	/OtherPersonList/OtherPersonData/StowawaysDetails/MethodOfBoarding
IMO0269	Stowaway possessions	/OtherPersonList/OtherPersonData/StowawaysDetails/Possessions
IMO0270	Stowaway statement	/OtherPersonList/OtherPersonData/StowawaysDetails/Statement
IMO0271	Stowaway Master statement	/OtherPersonList/OtherPersonData/StowawaysDetails/MasterStatement
IMO0272	Care provided to the stowaway	/OtherPersonList/OtherPersonData/StowawaysDetails/CareProvidedToTheStowaway
IMO0273	Stowaway interview date	/OtherPersonList/OtherPersonData/StowawaysDetails/InterviewDate
IMO0274	Ship satellite service provider, coded	/ShipParticulars/SatelliteService/SatelliteServiceProviderCode
IMO0275	Message receiver identifier	/EPCMessageHeader/ReceiverId
IMO0276	Message validity period	/EPCMessageHeader/RequestValidityEnd
IMO0277	Message identifier	/EPCMessageHeader/MessageStatus/Reference
IMO0278	Message return contact point	/EPCMessageHeader/RequestReplyMethod
IMO0279	Type of message return contact point method, coded	/EPCMessageHeaderType/RequestReplyMethod
IMO0280	Reference message identifier	/EPCMessageHeader/MessageReference
IMO0281	Message status, coded	/EPCMessageHeader/MessageStatus/StatusCode
IMO0282	Message status description	/EPCMessageHeader/MessageStatus/Error /EPCMessageHeader/MessageStatus/Missing
IMO0283	Service request status, coded	/EPCMessageHeader/RequestStatus/StatusCode
IMO0284	Service request status description	/EPCMessageHeader/RequestStatus/Error /EPCMessageHeader/RequestStatus/Missing
IMO0285	Service name	/EPCMessageHeader/ServiceName
IMO0286	Service, coded	/EPCMessageHeader/ServiceTypeCode /EPCMessageHeader/ServiceCode
IMO0287	Service provider name	/MaritimeService/ServiceProvider/Company
IMO0288	Planned service indicator	/MaritimeService/PlannedServiceIndicator
IMO0289	Position for the service	/MaritimeService/ServiceLocationCall/Location/Name
IMO0290	Other position reference	/MaritimeService/OtherPositionReference/Name
IMO0291	Service provider contact name	/MaritimeService/ServiceProvider/Person/LastName /MaritimeService/ServiceProvider/Person/GivenName
IMO0292	Service contact landline number	/MaritimeService/ServiceProvider/ContactNumbers/BusinessTelephone
IMO0293	Service contact mobile number	/MaritimeService/ServiceProvider/ContactNumbers/MobileTelephone
IMO0294	Service contact email	/MaritimeService/ServiceProvider/ContactNumbers/EMail
IMO0295	Service URL	/MaritimeService/ServiceProvider/ContactNumbers/ContactURL
IMO0296	Service booking number	/EPCMessageHeader/ServiceBookingNumber
IMO0297	Date and time of service start - estimated	/MaritimeService/ServiceLocationCall/Start/DateTime where /MaritimeService/ServiceLocationCall/Start/TimeType=[Estimated]

IMO data number	Data element	Mapping to this document
IMO0298	Date and time of service start - requested	/MaritimeService/ ServiceLocationCall/Start/DateTime where /MaritimeService/ ServiceLocationCall/Start/TimeType=[Requested]
IMO0299	Date and time of service start - planned	/MaritimeService/ ServiceLocationCall/Start/DateTime where /MaritimeService/ ServiceLocationCall/Start/TimeType=[Planned]
IMO0300	Date and time of service start - actual	/MaritimeService/ ServiceLocationCall/Start/DateTime where /MaritimeService/ ServiceLocationCall/Start/TimeType=[Actual]
IMO0301	Date and time of service completion - estimated	/MaritimeService/ServiceLocationCall/End/DateTime where /MaritimeService/ ServiceLocationCall/End/TimeType=[Estimated]
IMO0302	Date and time of service completion - requested	/MaritimeService/ServiceLocationCall/End/DateTime where /MaritimeService/ServiceLocationCall/End/TimeType=[Requested]
IMO0303	Date and time of service completion - planned	/MaritimeService/ServiceLocationCall/End/DateTime where /MaritimeService/ ServiceLocationCall/End/TimeType=[Planned]
IMO0304	Date and time of service completion - actual	/MaritimeService/ServiceLocationCall/End/DateTime where /MaritimeService/ServiceLocationCall/End/TimeType=[Actual]
IMO0305	Message function code	/EPCMessageHeader/MessageFunctionCode
IMO0306	Certificate identifier	For ship certificates: /ShipCertificateList/Certificate/CertificateNumber For ship company certificate: /Company/Certificate/CertificateNumber
IMO0307	Certificate type, coded	For ship certificates: /ShipCertificateList/Certificate/Code For ship company certificate: /Company/Certificate/Code
IMO0308	Certificate type acronym, coded	For ship certificates: /ShipCertificateList/Certificate/AcronymCode For ship company certificate: /Company/Certificate/AcronymCode
IMO0309	Certificate category, coded	For ship certificates: /ShipCertificateList/Certificate/Category For ship company certificate: /Company/Certificate/Category
IMO0310	Certificate description	For ship certificates: /ShipCertificateList/Certificate/Comment For ship company certificate: /Company/Certificate/Comment
IMO0311	Certificate status, coded	For ship certificates: /ShipCertificateList/Certificate/CertificateStatus For ship company certificate: /Company/Certificate/CertificateStatus
IMO0312	Certificate status date	For ship certificates: /ShipCertificateList/Certificate/CertificateStatusDate For ship company certificate: /Company/Certificate/ CertificateStatusDate
IMO0313	Active certificate sequence number	For ship certificates: /ShipCertificateList/Certificate/ActiveCertificateSequenceNumber For ship company certificate: /Company/Certificate/ActiveCertificateSequenceNumber
IMO0314	Certificate issuer type, coded	For ship certificates: /ShipCertificateList/Certificate/IssuerType For ship company certificate: /Company/Certificate/IssuerType
IMO0315	Certificate issuer flag State name	For ship certificates: /ShipCertificateList/Certificate/CertificateFlagStateIssuerName For ship company certificate: /Company/Certificate/CertificateFlagStateIssuerName
IMO0316	Certificate issuer identifier	For ship certificates: /ShipCertificateList/Certificate/IssuerCode

IMO data number	Data element	Mapping to this document
		For ship company certificate: /Company/Certificate/IssuerCode
IMO0317	Certificate validity type, coded	For ship certificates: /ShipCertificateList/Certificate/CertificateValidityType For ship company certificate: /Company/Certificate/CertificateValidityType
IMO0318	Certificate special condition	For ship certificates: /ShipCertificateList/Certificate/CertificateSpecialCondition For ship company certificate: /Company/Certificate/CertificateSpecialCondition
IMO0319	Certificate extended until date	For ship certificates: /ShipCertificateList/Certificate/ExtendedUntil For ship company certificate: /Company/Certificate/ ExtendedUntil
IMO0320	Certificate last endorsement date	For ship certificates: /ShipCertificateList/Certificate/LastEndorsementDate For ship company certificate: /Company/Certificate/ LastEndorsementDate
IMO0321	Company ISM (international safety management) certificate ship type, coded	For ship certificates: /ShipCertificateList/Certificate/CompanyISMcertificateShipType For ship company certificate: /Company/Certificate/CompanyISMcertificateShipType
IMO0322	Name of ship reporting system, coded	/ReportingSystem
IMO0323	Coastal station name	/CoastalStationName
IMO0324	Name of other ship reporting system for relay, coded	/RelayReportingSystem
IMO0325	Report type, coded	/EPCMessageHeader/ServiceTypeCode /EPCMessageHeader/ServiceCode
IMO0326	Ship MMSI (maritime mobile service identity) number	/ShipID/MMSINumber
IMO0327	Reporting ship position, latitude	/ReportingEvent/Location/Position/Latitude
IMO0328	Reporting ship position, longitude	/ReportingEvent/Location/Position/Longitude
IMO0329	Reporting ship position, bearing	/ReportingEvent/Location/VisualPosition/Bearing
IMO0330	Reporting ship position, distance	/ReportingEvent/Location/VisualPosition/Distance
IMO0331	Reporting ship position, landmark	/ReportingEvent/Location/VisualPosition/Landmark
IMO0332	Course over ground	/ShipStatus/Course
IMO0333	Speed over ground	/ShipStatus/Speed
IMO0334	Ship reporting system entry location, latitude	/VoyageEventList/VoyageEvent/Location/Position/Latitude[EventType="MSRArrival"]
IMO0335	Ship reporting system entry location, longitude	/VoyageEventList/VoyageEvent/Location/Position/Longitude[EventType="MSRArrival"]
IMO0336	Ship reporting system entry location, time	/VoyageEventList/VoyageEvent/CallDateTime/DateTime[EventType="MSRArrival"]
IMO0337	Ship reporting system entry location, bearing	/VoyageEventList/VoyageEvent/VisualPosition/Bearing[EventType="MSRArrival"]
IMO0338	Ship reporting system entry location, distance	/VoyageEventList/VoyageEvent/VisualPosition/Distance[EventType="MSRArrival"]
IMO0339	Ship reporting system entry location, landmark	/VoyageEventList/VoyageEvent/VisualPosition/Landmark[EventType="MSRArrival"]

IMO data number	Data element	Mapping to this document
IMO0340	Ship reporting system entry port, coded	/VoyageEventList/VoyageEvent/Location/CountryCode[EventType="MSRArrival"] plus /VoyageEventList/VoyageEvent/Location/UNLoCode[EventType="MSRArrival"]
IMO0341	Ship reporting system entry port name	/VoyageEventList/VoyageEvent/Location/Name[EventType="MSRArrival"]
IMO0342	Ship reporting system exit location, latitude	/VoyageEventList/VoyageEvent/Location/Position/Latitude[EventType="MSRDeparture"]
IMO0343	Ship reporting system exit location, longitude	/VoyageEventList/VoyageEvent/Location/Position/Longitude[EventType="MSRDeparture"]
IMO0344	Ship reporting system exit location, date and time	/VoyageEventList/VoyageEvent/CallDateTime/DateTime[EventType="MSRDeparture"]
IMO0345	Ship reporting system exit location, bearing	/VoyageEventList/VoyageEvent/VisualPosition/Bearing[EventType="MSRDeparture"]
IMO0346	Ship reporting system exit location, distance	/VoyageEventList/VoyageEvent/VisualPosition/Distance[EventType="MSRDeparture"]
IMO0347	Ship reporting system exit location, landmark	/VoyageEventList/VoyageEvent/VisualPosition/Landmark[EventType="MSRDeparture"]
IMO0348	Ship reporting system exit port, coded	/VoyageEventList/VoyageEvent/Location/CountryCode[EventType="MSRDeparture"] plus /VoyageEventList/VoyageEvent/Location/UNLoCode[EventType="MSRDeparture"]
IMO0349	Ship reporting system exit port, name	/VoyageEventList/VoyageEvent/Location/Name[EventType="MSRDeparture"]
IMO0350	Pilot onboard indicator	/ShipStatus/PilotOnboard
IMO0351	Voyage waypoint sequence number	/WaypointList/Waypoint/SequenceNumber
IMO0352	Voyage waypoint, latitude	/WaypointList/Waypoint/Location/Position/Latitude
IMO0353	Voyage waypoint, longitude	/WaypointList/Waypoint/Location/Position/Longitude
IMO0354	Voyage waypoint, date and time	/WaypointList/Waypoint/At/DateTime
IMO0355	Voyage track, type	/WaypointList/Waypoint/Track
IMO0356	Ship next report, date and time	/NextReportTime
IMO0357	Ship draught	/ShipStatus/PresentDraught
IMO0358	Weather remarks	/WeatherInformation/Remarks
IMO0359	Wind speed, coded	/WeatherInformation/WindSpeedCoded
IMO0360	Wind direction, coded	/WeatherInformation/WindDirectionCoded
IMO0361	Visibility, coded	/WeatherInformation/VisibilityCoded
IMO0362	Precipitation, coded	/WeatherInformation/PrecipitationCoded
IMO0363	State of the sea, coded	/WeatherInformation/SeaState
IMO0364	Dangerous goods contact name	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGContactDetails/Company
IMO0365	Dangerous goods contact mobile number	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGContactDetails/MobileTelephone
IMO0366	Dangerous goods contact landline number	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGContactDetails/BusinessTelephone
IMO0367	Dangerous goods contact address street and number/P.O Box	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGContactDetails/Address/StreetName /CargoData/Consignment/CargoItem/SpecialCargoDetails/DGContactDetails/Address/StreetNumber or: /CargoData/Consignment/CargoItem/SpecialCargoDetails/DGContactDetails/Address/CityName /CargoData/Consignment/CargoItem/SpecialCargoDetails/DGContactDetails/Address/PostOfficeBox
IMO0368	Dangerous goods contact email	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGContactDetails/Email
IMO0369	Dangerous goods contact type, coded	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGContactDetails/ContactType
IMO0370	Remarks type, coded	/SRSRemarks/RemarksCode
IMO0371	Remarks	/SRSRemarks/Comment

IMO data number	Data element	Mapping to this document
IMO0372	Ship defects or limitations	Mapping of IMO0372 and IMO0373 together: Text in IMO0372 is added to the correct data element in /ShipDefects dependent of the code in IMO0373. Select IMO0372 and IMO0373 dependent on the values in /ShipDefects.
IMO0373	Ship defects or limitations types, coded	See IMO0372.
IMO0374	Ship transfer ability indicator	/ShipDefects/AbilityToTransferCargoBallastFuel
IMO0375	Waypoint name	/Waypoint/Location/Name
IMO0376	Ship actual deadweight tonnage	/DeadWeight
IMO0377	Ship length overall	/ShipParticulars/LengthOverall
IMO0378	Ship extreme breadth	/ ShipParticulars/Beam
IMO0379	Ship air draught	/AirDraught
IMO0380	Professional medical personnel	/PersonsOnBoardNumber/NumberOfProfessionalMedicalPersonnelOnboard
IMO0381	Medically trained personnel	/PersonsOnBoardNumber/NumberOfMedicallyTrainedPersonnelOnboard
IMO0382	Personnel without medical training	/PersonsOnBoardNumber/NumberOfPersonnelWithoutMedicalTrainingOnboard
IMO0383	Ship building contract date	/ShipParticulars/Registry/ShipBuildingContractDate
IMO0384	Ship keel laying date	/ShipParticulars/Registry/ ShipKeelLayingDate
IMO0385	Ship delivery date	/ShipParticulars/Registry/ShipDeliveryDate
IMO0386	Ship responsibility organization type, coded	/ShipParticulars/Registry/ShipResponsibilityOrganizationType
IMO0387	Ship in class indicator	/ShipParticulars/Registry/ShipInClassIndicator
IMO0388	Ship class entry date	/ShipParticulars/Registry/ShipClassEntryDate
IMO0389	Ship classification society, coded	/ShipParticulars/ShipClass/SocietyCode
IMO0390	Ship classification society name	/ShipParticulars/ShipClass/SocietyName
IMO0391	Ship identifier assigned by classification society	/ShipParticular/Registry/ShipIdentifierAssignedByClassificationSociety
IMO0392	Ship class status, coded	/ShipParticular/ShipClass/ShipClassStatus
IMO0393	Ship class notation	/ShipParticular/Registry/ShipClassNotation
IMO0394	Ship maximum deadweight	/ShipParticular/MaxDeadWeight/
IMO0395	Ship company role, coded	/Company/ShipCompanyRoleCode/
IMO0396	Ship company identifier	/Company/ShipCompanyIdentifier/
IMO0397	Inspection type, coded	/ShipInspection/Type /ShipCompanyInspection/Type
IMO0398	Inspection category, coded	/ShipInspection/Category /ShipCompanyInspection/Category
IMO0399	Inspection performed date	/ShipInspection/PerformedDate /ShipCompanyInspection/PerformedDate /PSCInspectionHistory/PerformedDate
IMO0400	Inspection performed location, coded	/ShipInspection/PerformedLocation/CountryCode plus /ShipInspection/PerformedLocation/UNLoCode /ShipCompanyInspection/PerformedLocation/CountryCode plus /ShipCompanyInspection/PerformedLocation/UNLoCode /PSCInspectionHistory/PerformedLocation/CountryCode plus /PSCInspectionHistory/PerformedLocation/UNLoCode
IMO0401	Inspection performed location name	/ShipInspection/PerformedLocation/Name /ShipCompanyInspection/PerformedLocation/Name /PSCInspectionHistory/PerformedLocation/Name

IMO data number	Data element	Mapping to this document
IMO0402	Next inspection due date	/ShipInspection/NextDueDate /ShipCompanyInspection/NextDueDate
IMO0403	Next inspection range start date	/ShipInspection/NextRangeStartDate /ShipCompanyInspection/NextRangeStartDate
IMO0404	Next inspection range end date	/ShipInspection/NextRangeEndDate /ShipCompanyInspection/NextRangeEndDate
IMO0405	Next inspection status, coded	/ShipInspection/NextInspectionStatusCode /ShipCompanyInspection/NextInspectionStatusCode
IMO0406	Inspection comment type, coded	/ShipInspection/Comment/Type /ShipCompanyInspection/Comment/Type /PSCInspectionHistory/Comment/Type
IMO0407	Inspection comment related certificate type acronyms	/ShipInspection/Comment/RelatedCertificateTypeAcronym /ShipCompanyInspection/Comment/RelatedCertificateTypeAcronym¨ /PSCInspectionHistory/Comment/RelatedCertificateTypeAcronym
IMO0408	Inspection comment issuing date	/ShipInspection/Comment/IssuingDate /ShipCompanyInspection/Comment/IssuingDate /PSCInspectionHistory/Comment/IssuingDate
IMO0409	Inspection comment issuing location, coded	/ShipInspection/Comment/IssuingLocation/CountryCode plus /ShipInspection/Comment/IssuingLocation/UNLoCode /ShipCompanyInspection/Comment/IssuingLocation/CountryCode plus /ShipCompanyInspection/Comment/IssuingLocation/UNLoCode /PSCInspectionHistory/Comment/IssuingLocation/CountryCode plus /PSCInspectionHistory/Comment/IssuingLocation/UNLoCode
IMO0410	Inspection comment issuing location name	/ShipInspection/Comment/IssuingLocation/Name /ShipCompanyInspection/Comment/IssuingLocation/Name /PSCInspectionHistory/Comment/IssuingLocation/Name
IMO0411	Inspection comment due date	/ShipInspection/Comment/ResolutionDueDate /ShipCompanyInspection/Comment/ResolutionDueDate /PSCInspectionHistory/Comment/ResolutionDueDate
IMO0412	Inspection comment expiry inspection type, coded	/Inspection/Comment/ExpiryInspectionType
IMO0413	Inspection comment status, coded	/ShipInspection/Comment/ResolutionStatus /ShipCompanyInspection/Comment/ResolutionStatus /PSCInspectionHistory/Comment/ResolutionStatus
IMO0414	Inspection comment postponed due date	/ShipInspection/Comment/ResolutionPostponedDueDate /ShipCompanyInspection/Comment/ResolutionPostponedDueDate /PSCInspectionHistory/Comment/ResolutionPostponedDueDate
IMO0415	Inspection comment postponed expiry inspection, coded	/ShipInspection/Comment/ResolutionPostponedExpiryInspectionType /ShipCompanyInspection/Comment/ResolutionPostponedExpiryInspectionType
IMO0416	Inspection comment reference	/ShipInspection/Comment/Reference /ShipCompanyInspection/Comment/Reference /PSCInspectionHistory/Comment/Reference
IMO0417	Inspection comment content	/ShipInspection/Comment/Content /ShipCompanyInspection/Comment/Content /PSCInspectionHistory/Comment/Content
IMO0418	Inspection comment issuer, coded	/ShipInspection/Comment/IssuerType /ShipCompanyInspection/Comment/IssuerType /PSCInspectionHistory/Comment/IssuerType
IMO0419	Inspection comment sequence	/PSCInspectionHistory/Comment/SequenceNumber
IMO0420	Inspection comment quantity	/PSCInspectionHistory/NumberOfComments
IMO0421	PSC (port state control) MoU (memorandum of understanding) or regime, coded	/PSCInspectionHistory/PSCMoURegimeCode

IMO data number	Data element	Mapping to this document
IMO0422	Deficiency, coded	/PSCInspectionHistory/Comment/DeficiencyList/DeficiencyCode
IMO0423	Actions required, coded	/PSCInspectionHistory/Comment/DeficiencyList/ActionToResolveDeficiencyCode
IMO0424	Inspection comment resolved date	/PSCInspectionHistory/Comment/ResolvedDate
IMO0425	Detention indicator	/PSCInspectionHistory/Detention/WasDetained
IMO0426	Detention release date	/PSCInspectionHistory/Detention/ReleasedDate
IMO0427	Agreed actions	/PSCInspectionHistory/Detention/AgreedAction
IMO0428	Ship banned indicator	/ShipBanned/IsBanned
IMO0429	Ship ban issuer name	/ShipBanned/IssuerPSC/Name
IMO0430	Ship ban start date	/ShipBanned/ShipBanStartDate
IMO0431	Ship ban end date	/ShipBanned/ShipBanEndDate
IMO0432	Ship ban area	/ShipBanned/ShipBanArea
IMO0433	Dangerous goods marine pollutant volume	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/ MarinePollutantVolume
IMO0434	Cargo loss volume - estimated	/CargoData/Consignment/CargoItem/LostDGDetails/EstimatedGoodsLostVolume
IMO0435	Cargo loss weight - estimated	/CargoData/Consignment/CargoItem/LostDGDetails/EstimatedGoodsLostWeight
IMO0436	Cargo loss quantity - estimated	/CargoData/Consignment/CargoItem/LostDGDetails/EstimatedGoodsLostQuantity
IMO0437	Cargo loss condition - estimated	/CargoData/Consignment/CargoItem/LostDGDetails/GoodsCondition
IMO0438	Cargo floating indicator	/CargoData/Consignment/CargoItem/LostDGDetails/LostGoodsStatus
IMO0439	Cargo loss continuing indicator	/CargoData/Consignment/CargoItem/LostDGDetails/LossContinuing
IMO0440	Cargo loss cause	/CargoData/Consignment/CargoItem/LostDGDetails/CauseOfLoss
IMO0441	Cargo loss position, latitude	/CargoData/Consignment/CargoItem/LostDGDetails/LossPosition/Latitude
IMO0442	Cargo loss position, longitude	/CargoData/Consignment/CargoItem/LostDGDetails/LossPosition/Longitude
IMO0443	Cargo loss date time	/CargoData/Consignment/CargoItem/LostDGDetails/LossDateTime
IMO0444	Cargo loss marine pollutant type, coded	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/MARPOLPollutionCode
IMO0445	Cargo loss technical name	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/TechnicalSpecification
IMO0446	Cargo loss UNDG number	/CargoData/Consignment/CargoItem/SpecialCargoDetails/DGSafetyDataSheet/UNNumber
IMO0447	Cargo loss movement - estimated	/CargoData/Consignment/CargoItem/LostDGDetails/EstimatedMovement
IMO0448	Cargo loss surface area - estimated	/CargoData/Consignment/CargoItem/LostDGDetails/EstimatedArea
IMO0449	Cargo loss remarks	/CargoData/Consignment/CargoItem/LostDGDetails/LossRemark
IMO0450	Inspection comment expiry inspection category, coded	/ShipInspection/Comment/ExpiryInspectionCategoryCode /ShipCompanyInspection/Comment/ExpiryInspectionCategoryCode
IMO0451	Inspection comment postponed expiry inspection category, coded	/ShipInspection/Comment/PostponedExpiryInspectionCategoryCode /ShipCompanyInspection/Comment/PostponedExpiryInspectionCategoryCode
IMO0452	Total ballast water on board	/BallastWaterArrivalReporting/TotalBallastWaterOnboard
IMO0453	Total ballast water capacity	/ShipParticular/TotalBallastWaterCapacity
IMO0454	Total number of ballast tanks on board	/ShipParticular/TotalNumberOfBallastTanksOnboard
IMO0455	Number of tanks in ballast	/BallastWaterArrivalReporting/

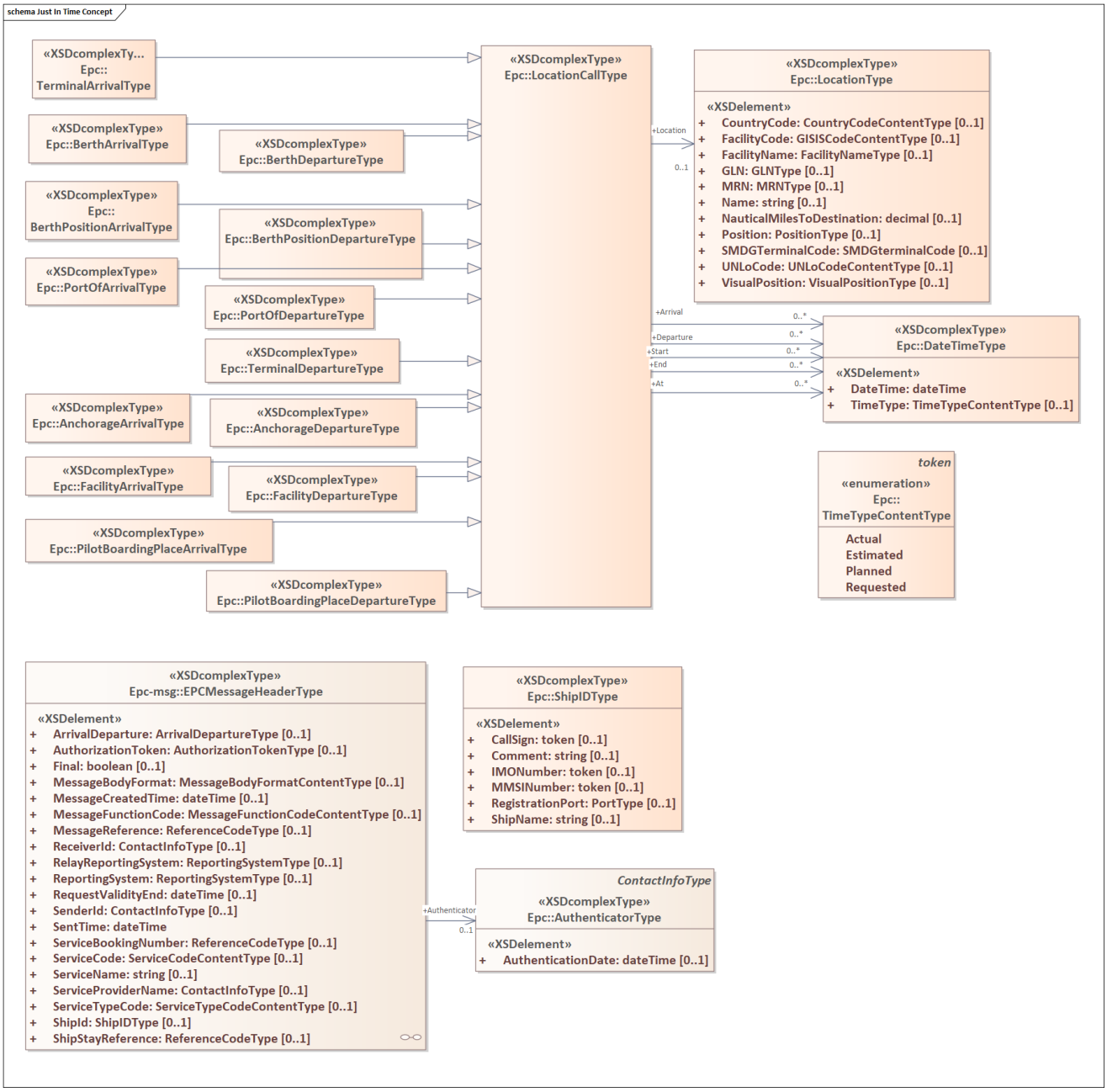
IMO data number	Data element	Mapping to this document
IMO0456	Ballast water management plan on board indicator	/BallastWaterArrivalReporting/BallastWaterManagementPlanOnboardIndicator
IMO0457	Implementation of ballast water management plan indicator	/BallastWaterArrivalReporting/ImplmentationOfBallastWaterManagementPlanIndicator
IMO0458	Ballast water record book on board indicator	/BallastWaterArrivalReporting/BallastWaterRecordBookOnboardIndicator
IMO0459	Ballast water management system used	/BallastWaterArrivalReporting/BallastWaterManagementSystemUsed
IMO0460	Reason why no ballast water management was conducted, coded	/BallastWaterArrivalReporting/ReasonWhyNoBallastWaterManagementWasConducted
IMO0461	The starting date required to meet regulation D-2	/BallastWaterArrivalReporting/StartingDateRequiredToMeetRegulationD2
IMO0462	Number of ballast tanks to be discharged	/BallastWaterArrivalReporting/NumberOfBallastTanksToBeDischarged
IMO0463	Number of ballast tanks exchanged	/BallastWaterArrivalReporting/NumberOfBallastTanksExchanged
IMO0464	Number of ballast tanks treated using a ballast water management system	/BallastWaterArrivalReporting/NumberOfBallastTanksTreatedUsingABallastWaterManagementSystem
IMO0465	Number of ballast tanks not managed	/BallastWaterArrivalReporting/NumberOfBallastTanksNotManaged
IMO0466	Ballast tank type, coded	/BallastWaterArrivalReporting/BallastTank/BallastTankType
IMO0467	Ballast tank capacity	/BallastWaterArrivalReporting/BallastTank/BallastTankCapacity
IMO0468	Date of ballast water uptake	/BallastWaterArrivalReporting/BallastTank/DateOfBallastWaterUptake
IMO0469	Location of ballast water uptake, latitude	/BallastWaterArrivalReporting/BallastTank/LocationOfBallastWaterUptake/Latitude
IMO0470	Location ballast water uptake, longitude	/BallastWaterArrivalReporting/BallastTank/LocationOfBallastWaterUptake/Longitude
IMO0471	Ballast water uptake port, coded	/BallastWaterArrivalReporting/BallastTank/BallastWaterUptakePort/CountryCode /BallastWaterArrivalReporting/BallastTank/BallastWaterUptakePort/UNLoCode
IMO0472	Ballast water uptake port name	/BallastWaterArrivalReporting/BallastTank/BallastWaterUptakePort/Name
IMO0473	Current volume in ballast tank	/BallastWaterArrivalReporting/BallastTank/CurrentVolumeInBallastTank
IMO0474	Method of ballast water management, coded	/BallastWaterArrivalReporting/BallastTank/MethodOfBallastWaterManagement
IMO0475	Other management method	/BallastWaterArrivalReporting/BallastTank/OtherManagementMethod
IMO0476	Date implementing ballast water management	/BallastWaterArrivalReporting/BallastTank/DateImplementingBallastWaterManagement
IMO0477	Start point - Location ballast water exchange implemented, latitude	/BallastWaterArrivalReporting/BallastTank/StartPointLocationBallastWaterExchangeImplemented/Latitude
IMO0478	Start point - Location ballast water exchange implemented, longitude	/BallastWaterArrivalReporting/BallastTank/StartPointLocationBallastWaterExchangeImplemented/Longitude
IMO0479	End point - Location ballast water exchange implemented, latitude	/BallastWaterArrivalReporting/BallastTank/EndPointLocationBallastWaterExchangeImplemented/Latitude
IMO0480	End point - Location ballast water exchange implemented, longitude	/BallastWaterArrivalReporting/BallastTank/EndPointLocationBallastWaterExchangeImplemented/Longitude

IMO data number	Data element	Mapping to this document
IMO0481	Volume ballast water exchanged	/BallastWaterArrivalReporting/BallastTank/VolumeBallastWaterExchanged
IMO0482	Exchange percentage of ballast water exchanged	/BallastWaterArrivalReporting/BallastTank/ExchangePercentageOfBallastWaterExchanged
IMO0483	Depth of water where ballast water exchange took place	/BallastWaterArrivalReporting/BallastTank/DepthOfWaterWhereBallastWaterExchangeTookPlace
IMO0484	Ballast water managed salinity	/BallastWaterArrivalReporting/BallastTank/BallastWaterManagedSalinity
IMO0485	Date of ballast water discharge	/BallastWaterArrivalReporting/BallastTank/DateOfBallastWaterDischarge
IMO0487	Location ballast water discharge, latitude	/BallastWaterArrivalReporting/BallastTank/LocationBallastWaterDischarge/Latitude
IMO0488	Location ballast water discharge, longitude	/BallastWaterArrivalReporting/BallastTank/LocationBallastWaterDischarge/Longitude
IMO0489	Port of discharge of ballast water, coded	/BallastWaterArrivalReporting/BallastTank/PortOfDischargeOfBallastWater/CountryCode /BallastWaterArrivalReporting/BallastTank/PortOfDischargeOfBallastWater/UNLoCode
IMO0490	Port of discharge of ballast water name	/BallastWaterArrivalReporting/BallastTank/PortOfDischargeOfBallastWater/Name
IMO0491	Ballast water discharge volume	/BallastWaterArrivalReporting/BallastTank/BallastWaterDischargeVolume
IMO0492	Ballast water discharged salinity	/BallastWaterArrivalReporting/BallastTank/BallastWaterDischargedSalinity
IMO0493	Port reception facility provider	/WasteInformation/WasteDisposalInformation/PortReceptionFacilityProvider
IMO0494	Treatment facility provider	/WasteInformation/WasteDisposalInformation/TreatmentFacilityProvider
IMO0495	Waste delivery date and time, from	/WasteInformation/WasteDeliveryDateTimeFrom
IMO0496	Waste delivery date and time, to	/WasteInformation/WasteDeliveryDateTimeTo
IMO0497	Amount of waste received	/WasteInformation/WasteDisposalInformation/AmountOfWasteReceived
IMO0498	Equipment type and size, coded	/CargoData/TransportEquipment/EquipmentTypeAndSize
IMO0499	Gross mass verification number	/CargoData/TransportEquipment/VerifiedGrossMass/GrossMassVerificationNumber
IMO0500	Gross mass verified date	/CargoData/TransportEquipment/VerifiedGrossMass/GrossMassVerifiedDate
IMO0501	Gross mass verifying country, coded	/CargoData/TransportEquipment/VerifiedGrossMass/GrossMassVerifyingCountry
IMO0502	Gross mass verifying party identification number	/CargoData/TransportEquipment/VerifiedGrossMass/VerifyingParty/CompanyId
IMO0503	Gross mass verifying party name	/CargoData/TransportEquipment/VerifiedGrossMass/VerifyingParty/Company
IMO0504	Gross mass verifying person name	/CargoData/TransportEquipment/VerifiedGrossMass/VerifyingParty/Person/GivenName /CargoData/TransportEquipment/VerifiedGrossMass/VerifyingParty/Person/MiddleName /CargoData/TransportEquipment/VerifiedGrossMass/VerifyingParty/Person/FamilyName
IMO0505	VGM (verified gross mass) measuring method, coded	/CargoData/TransportEquipment/VerifiedGrossMass/VGMMeasuringMethod
IMO0506	Verified Gross Mass	/CargoData/TransportEquipment/VerifiedGrossMass/VerifiedGrossMass
IMO0507	VGM document issue date and time	/CargoData/TransportEquipment/VerifiedGrossMass/VGMDocumentIssueDateTime
IMO0508	Booking reference number	/CargoData/TransportEquipment/BookingReferenceNumber
IMO0509	Seal identification number	/CargoData/TransportEquipment/Seal/SealIdentificationNumber
IMO0510	Authenticator, country coded	/Authenticator/Address/CountryCode

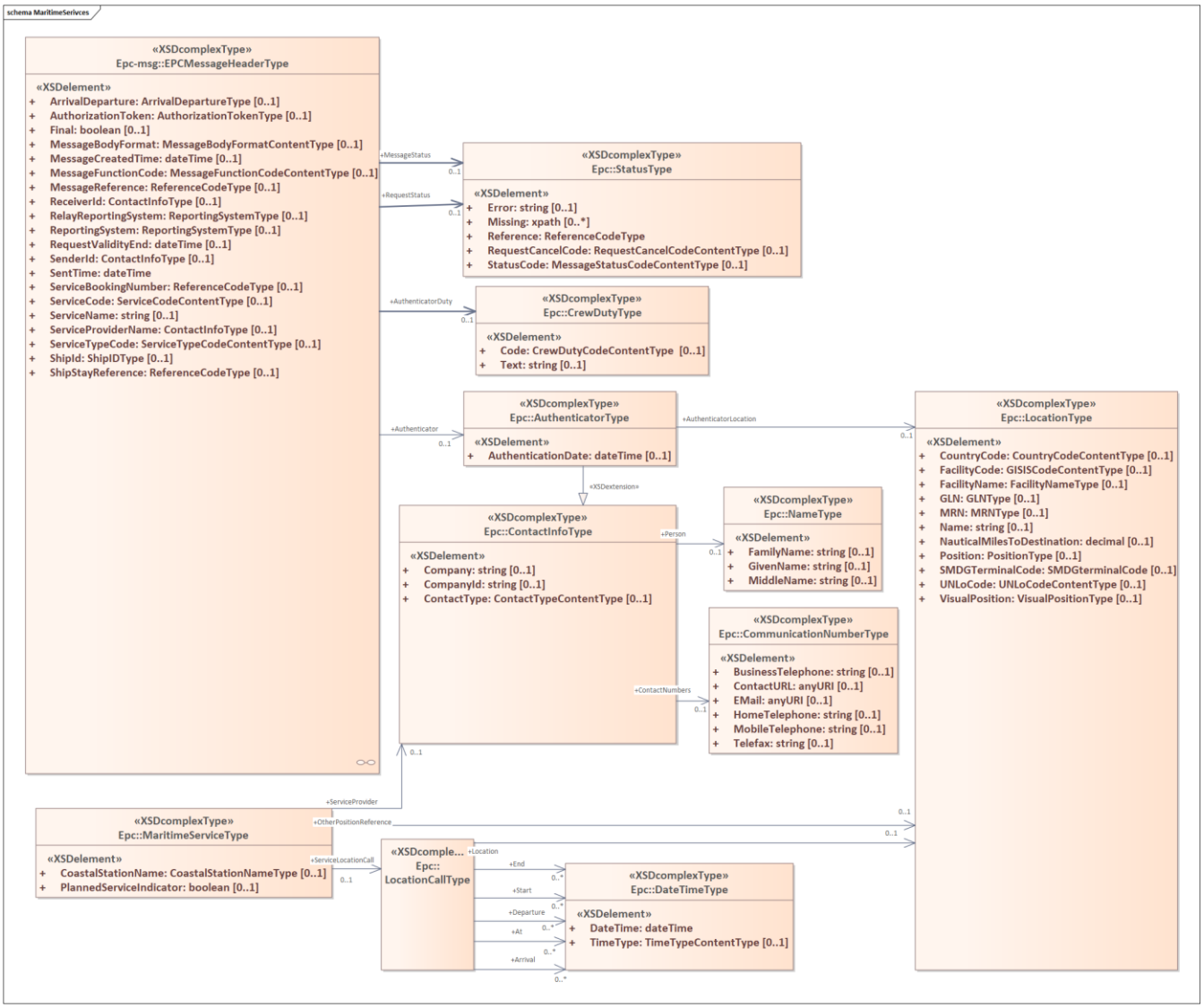
IMO data number	Data element	Mapping to this document
IMO0511	Authenticator Street and number/P.O Box	/Authenticator/Address/StreetName /Authenticator/Address/StreetNumber /Authenticator/Address/PostOfficeBox
IMO0512	Authenticator city	/Authenticator/Address/CityName
IMO0513	Authenticator postcode	/Authenticator/Address/PostCode
IMO0514	Authenticator party name	/Authenticator/Company
IMO0515	Authenticator email	/Authenticator/ContactNumbers/Email
IMO0516	Authenticator landline number	/Authenticator/ContactNumbers/BusinessTelephone
IMO0517	Authenticator mobile number	/Authenticator/ContactNumbers/MobileTelephone
IMO0518	Date and time of arrival at next port of call - estimated	/VoyageDescription/PortCall/ETA/DateTime
IMO0519	Person onboard indicator	/PassengerList/PassengerData/PersonOnboardIndicator
IMO0520	Person visa issue date	/PassengerList/PassengerData/VisaNumber/IssueDate, where IdDocumentCode indicates Visa.
IMO0521	Person visa issue location, name	/PassengerList/PassengerData/VisaNumber/PersonVisaIssueLocation/Name
IMO0522	Person port of disembarkation date and time - planned	/PassengerList/PassengerData/Debarkation/DateTime, where TimeType=Planned
IMO0523	Person landline number	/PassengerList/PassengerData/CommunicationNumber/HomeTelephone
IMO0524	Person mobile number	/PassengerList/PassengerData/CommunicationNumber/MobileTelephone
IMO0525	Person email	/PassengerList/PassengerData/CommunicationNumber/Email
IMO0526	Cabin number	/PassengerList/PassengerData/CabinNumber
IMO0527	Unique travelling booking number	/PassengerList/PassengerData/UniqueTravellingBookingNumber
IMO0528	Unique passenger reference number	/PassengerList/PassengerData/UniquePassengerReferenceNumber
IMO0529	Gross mass verifying party email	/CargoData/TransportEquipment/VerifiedGrossMass/VerifyingParty/ContactNumbers/EMail
IMO0530	Gross mass verifying party landline number	/CargoData/TransportEquipment/VerifiedGrossMass/VerifyingParty/ContactNumbers/BusinessTelephone
IMO0531	Gross mass verifying party mobile number	/CargoData/TransportEquipment/VerifiedGrossMass/VerifyingParty/ContactNumbers/MobileTelephone
IMO0532	Gross mass verifying party country code	/CargoData/TransportEquipment/VerifiedGrossMass/VerifyingParty/Address/CountryCode
IMO0533	Gross mass verifying party street and number/P.O. Box	/CargoData/TransportEquipment/VerifiedGrossMass/VerifyingParty/Address/StreetName /CargoData/TransportEquipment/VerifiedGrossMass/VerifyingParty/Address/StreetNumber or /CargoData/TransportEquipment/VerifiedGrossMass/VerifyingParty/Address/PostOfficeBox
IMO0534	Gross mass verifying party City	/CargoData/TransportEquipment/VerifiedGrossMass/VerifyingParty/Address/CityName
IMO0535	Gross mass verifying party postcode	/CargoData/TransportEquipment/VerifiedGrossMass/VerifyingParty/Address/PostCode
IMO0536	Trade Service identifier	/TradeService/Identifier
IMO0537	Distance to destination	/PortOfArrival Location/NauticalMilesToDestination[TimeType=" Estimated", "Requested", "Planned"] /BerthArrival/Location/NauticalMilesToDestination[TimeType=" Estimated", "Requested", "Planned"] /BerthPositionfArrival/Location/NauticalMilesToDestination[TimeType=" Estimated", "Requested", "Planned"] /PortOfArrival/Location/NauticalMilesToDestination[TimeType=" Estimated", "Requested", "Planned"] /TerminalArrival/Location/NauticalMilesToDestination[TimeType=" Estimated", "Requested", "Planned"] /AnchorageArrival/Location/NauticalMilesToDestination[TimeType=" Estimated", "Requested", "Planned"] /FacilityArrival/Location/NauticalMilesToDestination[TimeType=" Estimated", "Requested", "Planned"] /PilotBoardingPlaceArrival/Location/NauticalMilesToDestination[TimeType=" Estimated", "Requested", "Planned"]

IMO data number	Data element	Mapping to this document
IMO0538	Average speed	/ShipStatus/AverageSpeed
IMO0540	Date and time to location in port - actual	/PortOfArrival/Arrival/dateTime[TimeType="Actual"] Also mappings to BerthArrival, BerthPositionArrival, TerminalArrival, AnchorageArrival, FacilityArrival and PilotBoardingPlaceArrival.
IMO0541	Date and time to location in port - estimated	/PortOfArrival/Arrival/dateTime[TimeType="Estimated"] Also mappings to BerthArrival, BerthPositionArrival, TerminalArrival, AnchorageArrival, FacilityArrival and PilotBoardingPlaceArrival.
IMO0542	Date and time to location in port - requested	/PortOfArrival/Arrival/dateTime[TimeType="Requested"] Also mappings to BerthArrival, BerthPositionArrival, TerminalArrival, AnchorageArrival, FacilityArrival and PilotBoardingPlaceArrival.
IMO0543	Date and time to location in port - planned	/PortOfArrival/Arrival/dateTime[TimeType="Planned"] Also mappings to BerthArrival, BerthPositionArrival, TerminalArrival, AnchorageArrival, FacilityArrival and PilotBoardingPlaceArrival.
IMO0544	Location in port, latitude	/PortOfArrival/Location/Position/Latitude
IMO0545	Location in port, longitude	/PortOfArrival/Location/Position/Longitude
IMO0546	Anchorage, coded	Select the required values from the following data elements: /PortOfArrival/Location/Name /PortOfArrival/Location/GLN /PortOfArrival/Location/Position/Longitude /PortOfArrival/Location/Position/Longitude
IMO0547	Terminal, coded	Select the required values from the following data elements: /PortOfArrival/Location/Name /PortOfArrival/Location/FacilityCode /PortOfArrival/Location/GLN
IMO0548	Berth, coded	Select the required values from the following data elements: /PortOfArrival/Location/Name /PortOfArrival/Location/FacilityCode /PortOfArrival/Location/GLN
IMO0549	Other control action taken	/BallastWaterArrivalReporting/OtherControlActionsTaken

Annex B: ISO 28005 Just in Time Data Set



Annex C: ISO 28005 Maritime Services Data Set



Annex D: ISO 2005 Acknowledgement Data Set