



DCSA Information Model 3.2

July 2021

Table of contents



Version history	8
1 Introduction	10
1.1 Preface	10
1.2 Purpose	10
1.3 Overview	11
1.4 Conformance	11
1.5 Supporting publications	11
2 DCSA Information Model 3.2	14
2.1 Introduction	14
2.2 Selected data modelling terms defined	15
2.3 The DCSA Information Model data types and formats	16
2.3.1 Attribute naming conventions	17
3 Logical Data Model	19
4 Logical Data Model usage	21
4.1 Track and trace (T&T)	21
4.2 Operational vessel schedules (OVS)	23
4.3 eDocumentation	24
5 Subject areas in the Logical Data Model	26
5.1 Shipment	27
5.1.1 Shipment reference data	32
5.2 Transport Document	33
5.2.1 Transport Document reference data	39
5.3 Party	42
5.3.1 Party reference data	45
5.4 Charges	48

5.5 Equipment	50
5.5.1 Equipment reference data	52
5.6 Stuffing	53
5.6.1 Stuffing reference data	59
5.7 Location	60
5.7.1 Location reference data	66
5.8 Transport	70
5.8.1 Transport reference data	74
5.9 Events	75
5.9.1 Events reference data	84
5.10 Vessel Sharing Agreement (VSA)	89
5.10.1 VSA reference data	92
5.11 Service	92
5.12 Transport Journey	95
6 Appendix	98

Tables

Table 1: Supporting publications	13
Table 2: Selected data modelling terms	16
Table 3: Data type overview	17
Table 4: Data attribute naming conventions	18
Table 5: Shipment entity	28
Table 6: Booking entity	29
Table 7: Requested Equipment entity	30
Table 8: Service Type entity	30
Table 9: Shipment Term entity	30
Table 10: References entity	31
Table 11: Reference Type entity	31
Table 12: Receipt / Delivery Type	32
Table 13: Shipment Term	33
Table 14: Reference Type	33
Table 15: Transport Document entity	35
Table 16: Document version entity	36

Table 17: Shipping Instruction entity _____	37
Table 18: EBL Endorsement Chain entity _____	38
Table 19: Transport Document Carrier Clauses entity _____	38
Table 20: Carrier Clauses entity _____	38
Table 21: Transport Document Type entity _____	39
Table 22: Transport Document Type _____	40
Table 23: Transport Document version reference data entity _____	42
Table 24: Party entity _____	43
Table 25: Document Party entity _____	44
Table 26: Party contact details entity _____	44
Table 27: Carrier entity _____	45
Table 28: Party Function entity _____	45
Table 29: Carrier, examples _____	46
Table 30: Party Function, examples _____	47
Table 31: Charges entity _____	49
Table 32: Charge type entity _____	49
Table 33: Equipment entity _____	51
Table 34: ISO Equipment Code entity _____	52
Table 35: ISO Equipment Code, examples _____	53
Table 36: Shipment Equipment entity _____	54
Table 37: Active Reefer Settings entity _____	55
Table 38: Cargo Item entity _____	56
Table 39: Cargo line Item entity _____	56
Table 40: HS Code entity _____	57
Table 41: Seal entity _____	57
Table 42: Seal Source entity _____	58
Table 43: Seal Type entity _____	58
Table 44: Package Code entity _____	58
Table 45: Seal Source _____	59
Table 46: Seal Type _____	59
Table 47: HS Code, example _____	60
Table 48: Location entity _____	62
Table 49: Shipment Location entity _____	62

Table 50: Shipment Location Type entity	62
Table 51: Country entity	63
Table 52: UN Location entity	63
Table 53: Facility entity	64
Table 54: Facility Type entity	64
Table 55: Address entity	65
Table 55: Country, example	66
Table 56: UN Location, example	67
Table 57: Facility	68
Table 58: Facility Type	69
Table 59: Shipment Location Type	70
Table 60: Mode of Transport entity	72
Table 61: Transport entity	72
Table 62: Vessel entity	73
Table 63: Shipment Transport entity	74
Table 64: Mode of Transport	75
Table 65: Event Classifier entity	77
Table 66: Empty Indicator entity	77
Table 67: Shipment Information Type entity	77
Table 68: Shipment Event entity	78
Table 69: Equipment Event Type entity	78
Table 70: Transport Event Type entity	79
Table 71: Operations Event Type entity	79
Table 72: Shipment Event entity	80
Table 73: Equipment Event entity	81
Table 74: Transport Event entity	82
Table 75: Operations Event entity	83
Table 76: SMDG Delay Reason entity	83
Table 77: Event Classifier	84
Table 78: Delay Reason Codes	86
Table 79: Empty Indicator	86
Table 80: Equipment Event Type codes	87
Table 81: Transport Event Type	87

Table 82: Operations Event Type	87
Table 83: Publisher Code	88
Table 84: Shipment Information Type	88
Table 85: Port Call Service Type codes	89
Table 86: Vessel Sharing Agreement entity	91
Table 87: Vessel Sharing Agreement Type entity	91
Table 88: Vessel Sharing Agreement Partner entity	91
Table 89: Tradelane entity	92
Table 90: Vessel Sharing Agreement Type	92
Table 91: Service entity	93
Table 92: Service Proforma entity	94
Table 93: Transport Call entity	96
Table 94: Voyage entity	96
Table 95: Transport Call Voyage entity	96
Table 96: Commercial Voyage entity	97
Table 97: Commercial Voyage Transport Call entity	97

Figures

Figure 1: The DCSA Information Model as a translator	11
Figure 2: Overview of the contents of the DCSA Information Model	14
Figure 3: Logical Data Model - overview of data entities	19
Figure 4: Logical Data Model for track and trace	21
Figure 5: Logical Data Model for operational vessel schedules	23
Figure 6: Logical Data Model for eDocumentation	24
Figure 7: Subject areas in the Logical Data Model	26
Figure 8: Shipment subject area	27
Figure 9: Shipment reference data entities	32
Figure 10: Transport Document subject area	34
Figure 11: Transport Document reference data entity	39
Figure 12: Party subject area	42
Figure 13: Party reference data entities	46
Figure 14: Charges subject area	48
Figure 15: Equipment subject area	50

Figure 16: Equipment reference data entity	52
Figure 17: Stuffing subject area	53
Figure 18: Stuffing reference data entities	59
Figure 19: Location subject area	61
Figure 20: Location reference data entities	66
Figure 21: Transport subject area	71
Figure 22: Transport reference data entities	74
Figure 23: Events subject area	76
Figure 24: Events reference data entities	84
Figure 25: VSA subject area	90
Figure 26: VSA reference data entities	92
Figure 27: Service subject area	93
Figure 28: Transport Journey subject area	95

Version history

Version	Issue	Contributors	Description
1.0	13 February 2020	DCSA	First publication based on the track and trace business requirements
2.0	03 July 2020	DCSA	Second publication to include the operational vessel schedule domain
3.0	08 December 2020	DCSA	Third publication to include the electronic bill of lading domain
3.0.1	11 June 2021	DCSA	Addition to the third publication to reflect changes made due to stream alignment.
3.1	06 July 2021	DCSA	Updated to contain JIT port call domain
3.2	12 July 2021	DCSA	Additional attribute values for T&T2.1

Legal disclaimer

Copyright 2020 Digital Container Shipping Association (DCSA).

Licensed under the Apache License, Version 2.0 (the "License"); you may not use this file except in compliance with the License. You may obtain a copy of the License here: [License](#).

Unless required by applicable law or agreed to in writing, software distributed under the License is distributed on an "AS IS" BASIS, WITHOUT WARRANTIES OR CONDITIONS OF ANY KIND, either express or implied. See the License for the specific language governing permissions and limitations under the License.

1 Introduction

1.1 Preface

DCSA envisions a digitally interconnected container shipping industry. Our mission is to be the de facto standards body for the industry, setting the technological foundation for interoperable IT solutions. Together with our member carriers, DCSA creates vendor-neutral, technology-agnostic standards for IT and non-competitive business practices. By working towards the widespread adoption of these standards, our aim is to move the industry forward in terms of customer experience, efficiency, collaboration, innovation, and respect for the environment.

Please refer to the DCSA website, <https://dcsa.org/about/> for more information.

The objective of the DCSA Data and Interface Standard program is to strengthen the container shipping industry's ability to send and receive data across all parties in the industry. Furthermore, it aims to enhance inter-carrier cooperation based on shared requirements and to ensure interoperability by using a shared data language. Ideally, this language will be inspired by existing standards and aligned with the process definitions put forth in the DCSA Industry Blueprint.

The standards published by DCSA are technology agnostic. DCSA does not point to the use of specific vendors' technologies or systems but relies on open-source, shared requirements for the industry that can be used by all parties, regardless of their choice of technology.

This chapter describes the purpose, structure and supporting publications of this document.

1.2 Purpose

The DCSA Information Model has been created to organise and catalogue the information being generated or consumed in connection with the processes described in the DCSA Industry Blueprint. The information model is also used as a collective term to describe all products that model data needed to meet the interface requirements. The information model includes a diagrammatic representation of selected data entities and their relationships with one another.

By standardising the terms used and documenting the related data, the DCSA Information Model is designed to provide a foundation that can be used in the current interface standardisation work and for future initiatives. DCSA recognises that there is a variety of standards that exist today and endeavours to reuse these resources where appropriate within the context of the container shipping industry. Some of these existing standards are more widely adopted than others, such as the UN/CEFACT Multimodal Transport Reference Data Model (MMT RDM). It is the intention of DCSA to constantly evaluate the DCSA Information Model against this and other standards.

1.3 Overview

The DCSA Information Model has been designed to act as a translator between the information requirements identified by the business processes mapped in the DCSA Industry Blueprint and the existing standards for describing reference data relevant to the industry. This helps identify what is already available and where any potential gaps exist that need further investigation. This is depicted in Figure 1 along with how the DCSA Information Model interacts with the different elements.

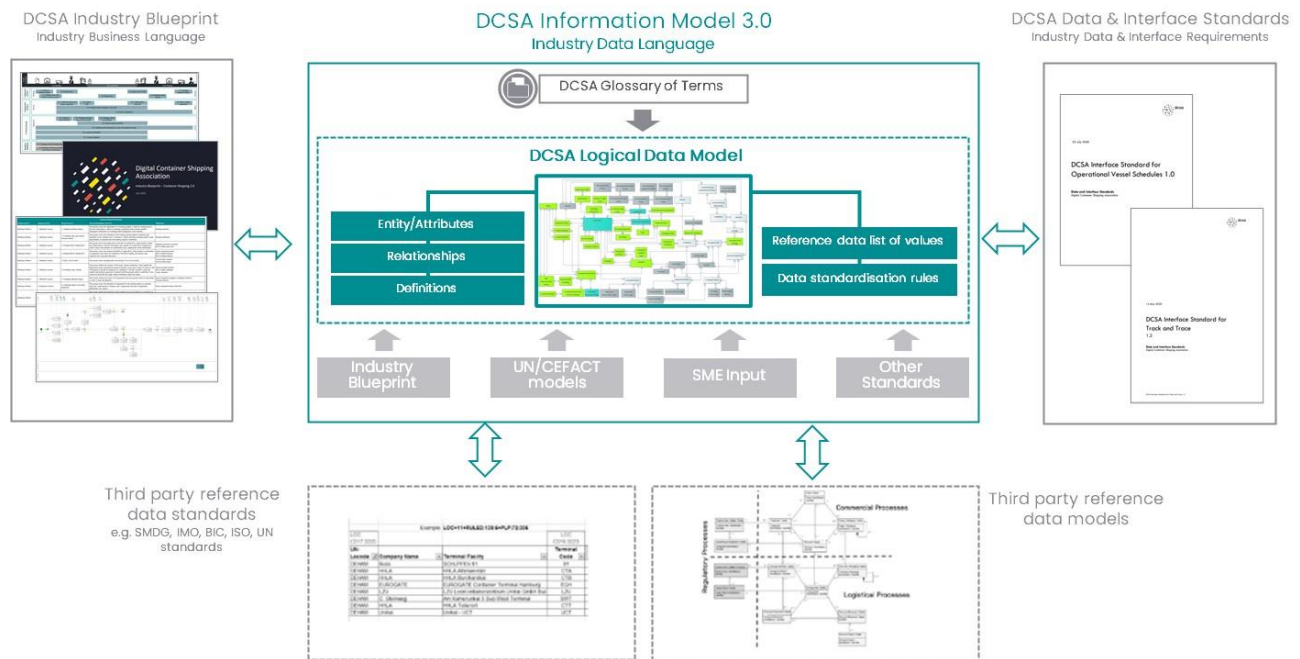


Figure 1: The DCSA Information Model as a translator

1.4 Conformance

All parties in the container shipping industry are encouraged to implement and follow the data and interface requirements outlined and specified in this document. The requirements are linked to the UML version 2.0 diagrams for design requirements as well as the Logical Data Model and data definitions for information requirements, which must be implemented to conform to the agreed standards within the DCSA framework.

1.5 Supporting publications

This document is supported by a range of supplementary publications by DCSA, which will be referenced in the relevant sections. The supporting publications are listed in the table below and they can be found on the DCSA website (<https://dcsa.org/>).

Index	Publication	Descriptions
1	DCSA Glossary of Terms 3.0	This document promotes alignment of terms across all DCSA stakeholders in the container shipping industry. The glossary is published on the DCSA website in the context of the DCSA Industry Blueprint 3.0.
2	DCSA Industry Blueprint 3.0	This document provides insights into as-is carrier processes. The DCSA Industry Blueprint comprises processes related to the movement of a container/equipment from one location to another, processes that are linked to a shipment/booking, processes that are considered critical for industry digitisation and standardisation efforts, and finally processes that are not considered commercially sensitive or of competitive advantage.
3	DCSA Event Naming Convention 1.0, and Event Structure Definitions 1.0	Throughout the years, track and trace solutions have become a commonly seen service in the container shipping industry. However, due to misalignment of terminology and ways of working, each carrier has designed its own events that have been published on their websites. To align this across the industry, this document provides a naming convention that sets the standard for naming as well as understanding customer-facing track and trace events.
4	DCSA Schedule Definitions 1.0	This document provides standardised terminology and definitions with respect to communication of operational deep-sea (inter-regional) vessel schedules between Vessel Sharing Agreement (VSA) partners. The purpose is to facilitate standardisation and accuracy in partner communication and hence reduce the pain-points that carriers raised in this area. It is understood that not all VSA's (or carriers) apply ALL processes, but for the sake of completeness, the full process definitions are shared with all members. The purpose is to standardise what and when partners communicate (and to whom) with respect to operational vessel schedules and related exception-management. The definitions and time specifications add context to the vessel schedule process maps that have been circulated separately to members.
5	DCSA Information Model 3.2 Reading Guide	This document helps to set the context for DCSA initiatives. The reading guide provides insight into the different concepts and methods utilised in the production of the Information Model and suggests ways in which the document can be used.

Index	Publication	Descriptions
6	DCSA Interface Standard for Operational Vessel Schedule 1.0 and respective Reading Guide	The DCSA Interface Standard for Operational Vessel Schedule has been created to simplify the exchange of vessel schedule-related information between vessel operators, and to support the standardisation of the fundamental information provided across the vessel operator liner domain. The reading guide provides insight into the different concepts and methods utilised in the production of the OVS Interface Standard and suggests ways in which the document can be used as a foundation for future implementations.
7	DCSA Interface Standard for Track and Trace 1.2 and respective Reading Guide	The DCSA Interface Standard for Track and Trace 1.2 has been created to standardise the fundamental information provided across the carrier liner domain through track and trace interfaces. The reading guide provides insight into the different concepts and methods utilised in the production of the Track and Trace Interface Standard and suggests ways in which the document can be used as a foundation for future implementations.
8	DCSA Interface Standard for eBL 1.0 and respective Reading Guide	The DCSA Interface Standard for Shipping Instruction and Transport Document has been created to simplify the exchange of shipment-related information between shipper and carrier (upon booking confirmation) and to support the standardisation of the documentation process. The standard addresses submission of shipping instruction from the shipper to the carrier and issuance of a transport document by the carrier to a shipper. The reading guide provides insight into the container shipping documentation process and specifically addresses the “prepare bill of lading” and “issue bill of lading” processes for specific transport document types (Bill of Lading or Sea Waybill).

Table 1: Supporting publications

2 DCSA Information Model 3.2

This chapter describes the terms and data types used in this document.

2.1 Introduction

The DCSA Information Model 3.2 refers to the collection of artefacts and products that document and define the reviewed and agreed data standards that must be followed within the DCSA framework. The adoption of the industry standards in the DCSA Information Model 3.2 will help ensure the ongoing standardisation and optimisation of interoperability and data exchange between the parties in the container shipping industry as well as other stakeholders working within the industry.

As depicted in the diagram below, the DCSA Information Model 3.2 consists of the following artefacts and products:

- Logical data model: A diagrammatic representation of:
 - o Data entities and the data attributes that store details about the entities;
 - o The relationships that exist between data entities;
 - o Standardised names of data entities and data attributes, for example, equipment versus container; definitions of the entities and attributes are stored as part of the metadata for the model.
- Standardised lists of data: This is particularly relevant for reference data entities, through which a controlled list of values is recommended to help ensure that the same data are being used within and between organisations.
- Data standardisation rules: When a predetermined data value cannot be offered, the data standardisation rules can help with the generation of consistent data values that can be used.

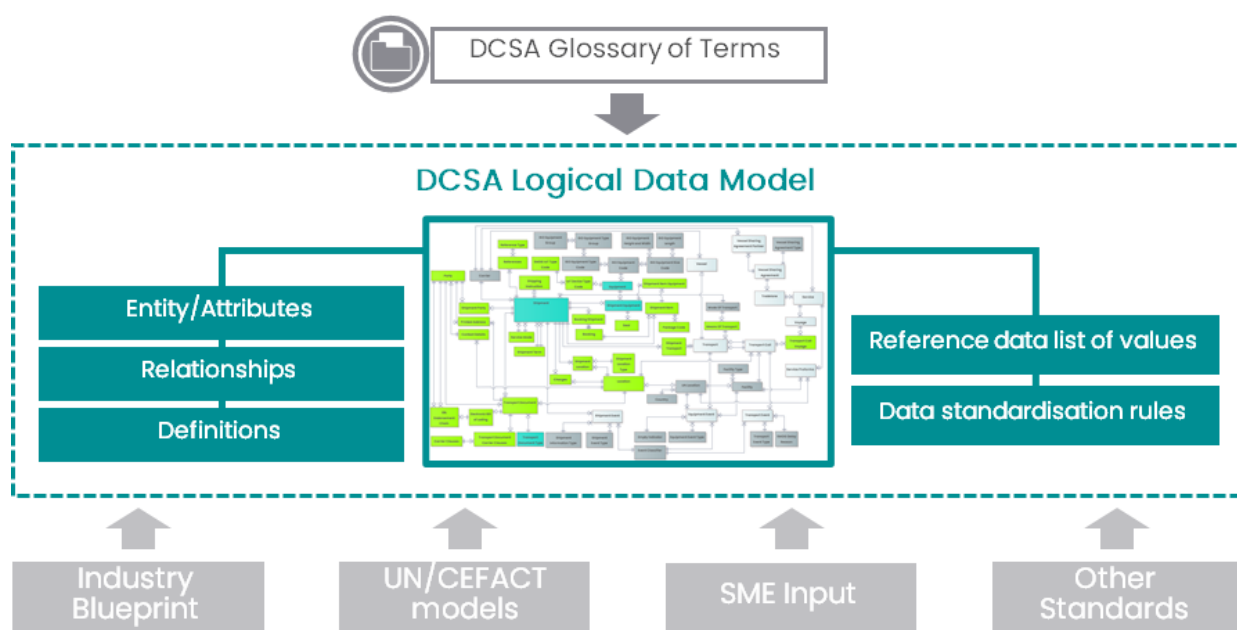


Figure 2: Overview of the contents of the DCSA Information Model

The DCSA Information Model 3.2 has been designed to support a shared understanding of concepts, terms, and rules within the shipping industry. The principles behind the creation of the model have been to look to the current standards used within the industry and to reuse these standards where appropriate or propose new ones where a usable standard could not be found. The key input for the DCSA Information Model 3.2 includes:

- DCSA Industry Blueprint: Comprises recommended current-state standards for the processes used in container shipping. The terminology used in the Information Model has primarily been aligned with the DCSA Industry Blueprint terminology.
- DCSA Glossary of Terms 3.0: Definitions of terms used across DCSA in an industry-specific language.
- UN/CEFACT models: The Multimodal Transport (MMT) Reference Data Model (RDM) has been used as a key resource to help define and standardise entities within the Logical Data Model.
- SME input: Input from the appointed subject matter experts (SMEs) among the DCSA members.
- Other Standards: DCSA regularly checks which other relevant standards are being used and where possible, will re-use proven standards.

The model deals with industry data at logical and conceptual levels rather than applying physical naming conventions, configured in, for example physical databased. Therefore, the DCSA Information Model must be considered as the container shipping industry's reference data model helping users of the model to understand how data is generated/consumed as a result of the execution of industry processes and how these data can be mapped in a logical way.

2.2 Selected data modelling terms defined

The table below provides a definition of selected terms used throughout this document and provides the reader with insight into the meaning of the term and the origin of the definition. Specific terms and definitions that are indispensable for this document may include alternative or reproduced definitions from existing standards, or they may be referenced as a shared understanding within DCSA.

Term	Definition
Data Entity	An object in a data model (e.g. in The Logical Data Model, <i>Equipment</i> is a data entity).
Information Model	The information model refers to a collection of artefacts and products that help define the information that is relevant to the container shipping industry.
Logical Data Model	A graphical way of representing a data architecture without regard to the physical implementation or the database management system involved in storing the data, providing information about the various entities or the relationships between the entities.

Term	Definition
Reference Data	Reference data is data that defines the set of permissible values to be used by the data entities. Reference data is typically a class of data commonly referred to as code tables or look-up tables generally consisting of three attributes: a code, a name, and a description. Reference data may be described as any kind of data that is used to categorise other data.

Table 2: Selected data modelling terms

2.3 The DCSA Information Model data types and formats

For each data attribute, which the Logical Data Model points to, a data type has been selected to provide additional details that have already been identified. An overview of the different data types utilised is presented in the table below. When the data type is selected, the reasoning below is applicable throughout this document.

Data type	Usage rule
Text	The Text data type stores strings in a variable-length field. Data can consist of letters, numbers, and symbols. In cases where there is a maximum number of characters allowed, this will be stated by capturing the maximum numbers of characters allowed, in brackets, e.g. Text(100) is used when the length of the data field can vary, up to a maximum of 100 characters.
Number	The Number data type represents a number, potentially decimal, i.e. with digits after the decimal point.

Data type	Usage rule
DateTime	A DateTime is only meaningful in relation to a specific location. The DateTime attribute should always be specified as UTC or with a UTC Offset to provide context as to which time zone (location) the DateTime relates to. If no UTC-related offset is given, the time is assumed to be in local time. However, this might result in ambiguity and confusion when used across time zones or even within the same time zone if the region observes daylight saving time (DST). If the time is provided in UTC, append a Z directly after the time. Z (also "Zulu" time zone) is the zone designator for UTC±00:00: 'YYYY-MM-DDThh:mm:ssZ'. Negative UTC offsets describe a time zone west of UTC±00:00, where the time is behind UTC. For example, Quito is five hours behind UTC, so the time zone designator is "-05:00". The DateTime '2019-12-31T12:00:00-05:00' and '2019-12-31T17:00:00Z' describe the same point in time in Quito. Positive UTC offsets describe a time zone east of UTC±00:00, where the time is ahead of UTC. For example, Luanda is one hour ahead of UTC, so the time zone designator is "+01:00". The DateTime '2019-12-31T12:00:00+01:00' and '2019-12-31T11:00:00Z' describe the same point in time in Luanda. The plus sign must be used for a positive or zero UTC offset, and a minus sign for a negative UTC offset. Hence the UTC offset -00:00 is not permitted. For London, the time zone designator would be +00:00 (not -00:00), and +01:00 during daylight saving time. DateTime format without UTC-related offset (local time): 'YYYY-MM-DDThh:mm:ss'. DateTime format with UTC Offset: 'YYYY-MM-DDThh:mm:ss±hh:mm'. DateTime format in UTC: 'YYYY-MM-DDThh:mm:ssZ'.
Boolean	The Boolean data type is used to specify a true or false value.

Table 3: Data type overview

2.3.1 Attribute naming conventions

To maintain consistency in the Logical Data Model, certain labels are used repeatedly to make the meaning of these attributes a bit clearer.

Generally, for entities that hold reference data, the following suffixes will be used:

- Code
- Name
- Description

The table below shows a selection of the labels that certain types of attributes use consistently.

Format	Format usage rule
Code	(For reference data entities) A business code used to uniquely identify each row. These codes may be recognisable by the business community and therefore have a business meaning.
Name	(For reference data entities) A short description of what the reference data value is; this is the value that will usually be used in reporting.
Description	(For reference data entities) In cases where an addition explanation may be beneficial, a description may be included.
ID	An identifier used to make the model easier to understand and preserve relationships. These are not real-world business keys but are in some cases intended to be referenced by the interface standards.
DateTime	In the current version of the model, the DateTime suffix and data type is used to denote instances where only a date needs to be captured and where both the date and the time needs to be captured. This is to allow for flexibility, given the variances in how data may be stored by different organisations. If only the date is captured, the time part will consist of zeros for HH:MM:SS (00:00:00). Note: A UTC-related offset should not be specified because these are only meaningful in combination with a time. The date is assumed to be local in relation to the location the date is referring to.

Table 4: Data attribute naming conventions

3 Logical Data Model

The Logical Data Model of the DCSA Information Model 3.2 is presented at an entity level in the figure below.

The entities in the Logical Data Model can be split into the following two categories:

1. Entities (light grey)
2. Reference data entities (dark grey)

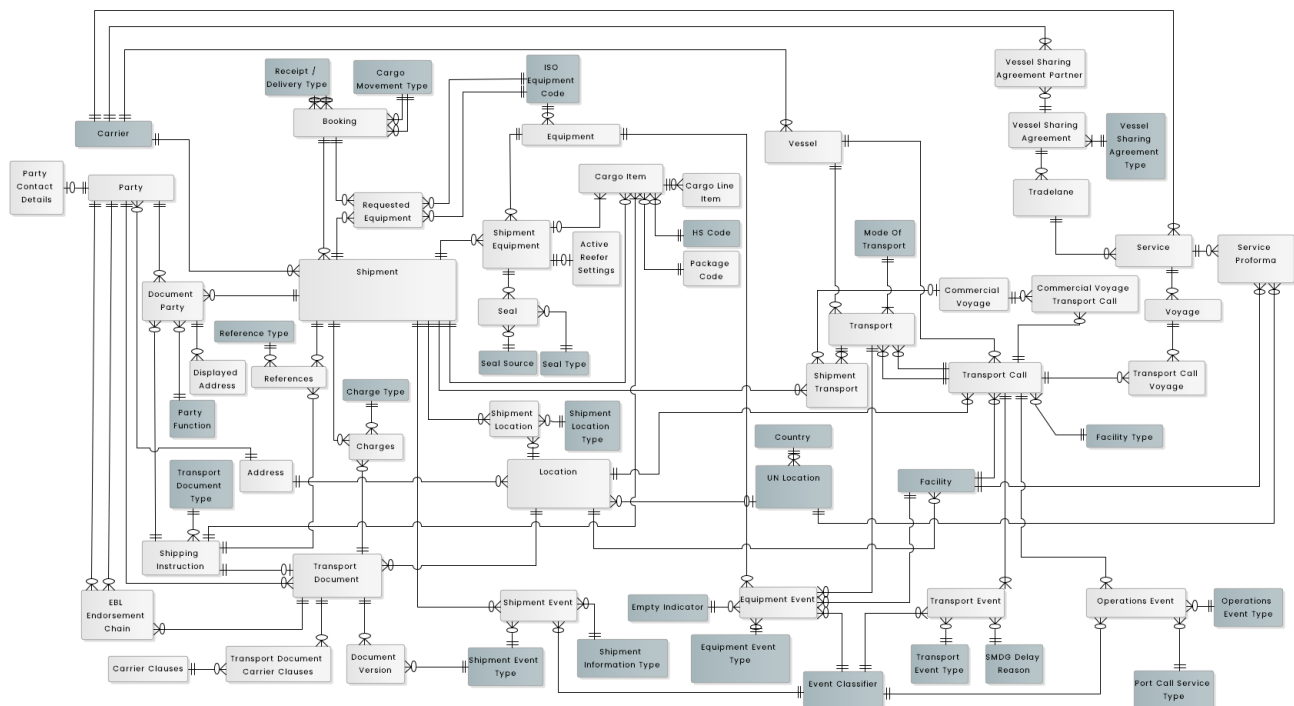


Figure 3: Logical Data Model - overview of data entities

The Logical Data Model details the entities and their relationships with one another. An entity is an object that can have information stored about it, for example, Shipment, Equipment, and Transport. A relation describes the industry data-related rules between two entities.

In many cases, entity data is generated as unique transactional records, for example, a booking whose data cannot be predetermined in the same way that reference data can. However, it is important for DCSA to point to specific formats or conventions that can be followed to avoid duplicated information (for example, two unique instances of equipment with the same reference number) or incompatible data formats (for example, conflicting date formats such as 2 March 2010 written as 02/03/2010 versus 2010-03-02). Regarding reference data, a holistic dataset (list of values) will be described to ensure that the data is accurate and will yield the same results no matter who uses them. Within each subject area in the subsequent sections, the reference data, which DCSA recommends, will be cited. In cases where a standard already exists, and it has been agreed within DCSA to utilise the standard, it will be referenced; otherwise it will be specified where a new dataset is created.

In general, the Logical Data Model is a work-in-progress model, limited in size by the scope of each release. Therefore, the model will transform and grow over time and, for example, cover more breadth per relevant subject area in subsequent releases.

4 Logical Data Model usage

The DCSA Information Model 3.2 has been designed to act as a translator between the information requirements identified by the business processes mapped in the DCSA Industry Blueprint, and the existing standards for describing reference data relevant to the industry. The model has been built iteratively, with focus being given to certain parts of the model that are relevant to fulfil track and trace, operational vessel schedule and electronic bill of lading interface requirements. Therefore, certain sections of the model will be more advanced than others, although the model has evolved and will continue to evolve over time. The aim of this section is to highlight the relevant parts of the model that have been developed for specific requirements.

The DCSA Information Model was originally constructed around the requirements for the ability to track and trace a shipment. Afterwards, it was extended to support an interface to share Operational Vessel Schedules (OVS) between vessel sharing agreement (VSA) partners. The model has recently undergone another iteration to support an interface to share bill of lading information electronically between carriers, shippers, and other potential stakeholders in the supply chain. These areas will be described further in their own sections.

4.1 Track and trace (T&T)

The entities that are needed to fulfil the requirements to be able to track and trace a shipment are shown in the figure below.

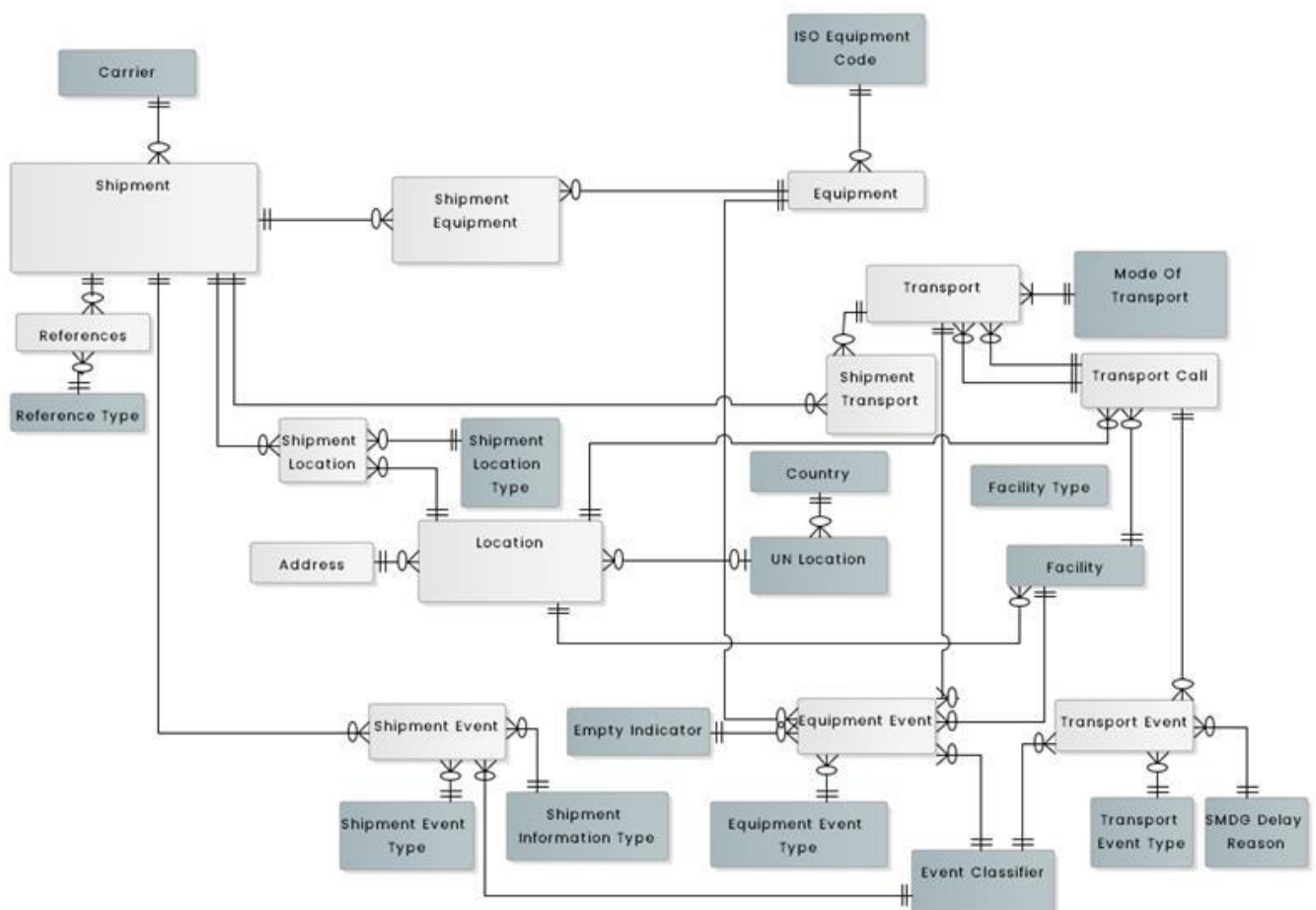


Figure 4: Logical Data Model for track and trace

The objective behind the use case of tracking and tracing a shipment is to identify the equipment and the transportation modes used for moving goods, rather than tracking and tracing the goods themselves or the contents of the equipment used in fulfilling the shipment.

The key entities are:

- Shipment: Uniquely identifies the shipment that needs to be tracked and traced.
- Equipment: Identifies the equipment(s) used to transport the goods belonging to the shipment.
- Transport: Identifies which modes of transport (truck, rail, vessel, or barge) are involved in the shipment.
- The three Event (Transport/Shipment/Equipment) entities: 'Shipment events' describe actions that occurred or have been planned to occur in relation to a booking or transport document, such as the booking confirmation. 'Transport events' describe the movements of the transport instances that are associated with the particular shipment or equipment item. 'Equipment events' describe the movements of an equipment item as part of the freight transportation. The previous sections in this document have outlined these elements.

For tracking and tracing, the primary parties are:

- The sender/receiver (shipper/consignee) of goods wanting to maintain information about the goods being transported. The details of these parties are stored in the Shipment entity.
- The main party contracting the movement of the goods, which, from DCSA's point of view, is the ocean carrier. The Carrier entity stores the details of this party.

4.2 Operational vessel schedules (OVS)

The entities that are needed to fulfil the requirements of sharing operational vessel schedules are shown in the figure below:

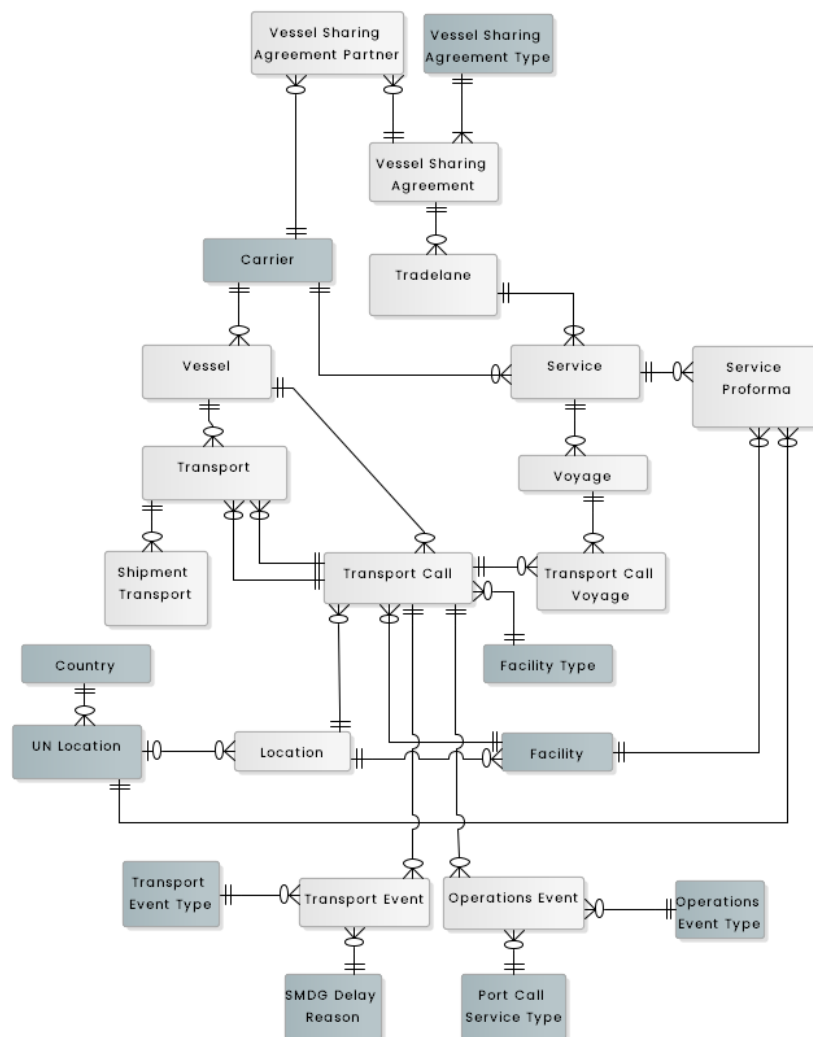


Figure 5: Logical Data Model for operational vessel schedules

In addition to track and trace, the Logical Data Model (LDM) includes a standard of information relevant for operational vessel schedules. The focus is on container liner long-term and coastal schedules, i.e. schedules that have a named vessel assigned to them. Although proforma schedules are not covered by the current release, the LDM has modelled the Service and Service Proforma entities for completeness and additional context, with the expectation that these will be further developed in the future. Hence, the Service Proforma entity simply represents the latest version of the proforma, not accounting for historical amendments. Likewise, VSAs have been modelled with minimal details to simply provide the context for how the operational vessel schedules are ultimately related to existing vessel sharing agreements.

The following are currently not in scope:

- Commercial schedules;
- Feeder schedules;
- Liner schedules that are not part of VSAs.

The model for OVS revolves around vessel-related events. It mainly concerns the vessel operator (how the shipment in practice is transported from the origin to the destination). This customer-provider relationship is naturally expressed through products. The transport plans of the products are modelled by the shipment transport entity which describes how the shipment is routed through the liner network.

The OVS requirements heavily focus on the transport and transport journey subject areas. Although for the track and trace requirements, the generic transport entities were sufficient, OVS needs additional details which have been modelled as sub-type entities of Vessel and Voyage.

4.3 eDocumentation

The entities that are needed to fulfil the requirements to encompass the documentation process are shown in the figure below.

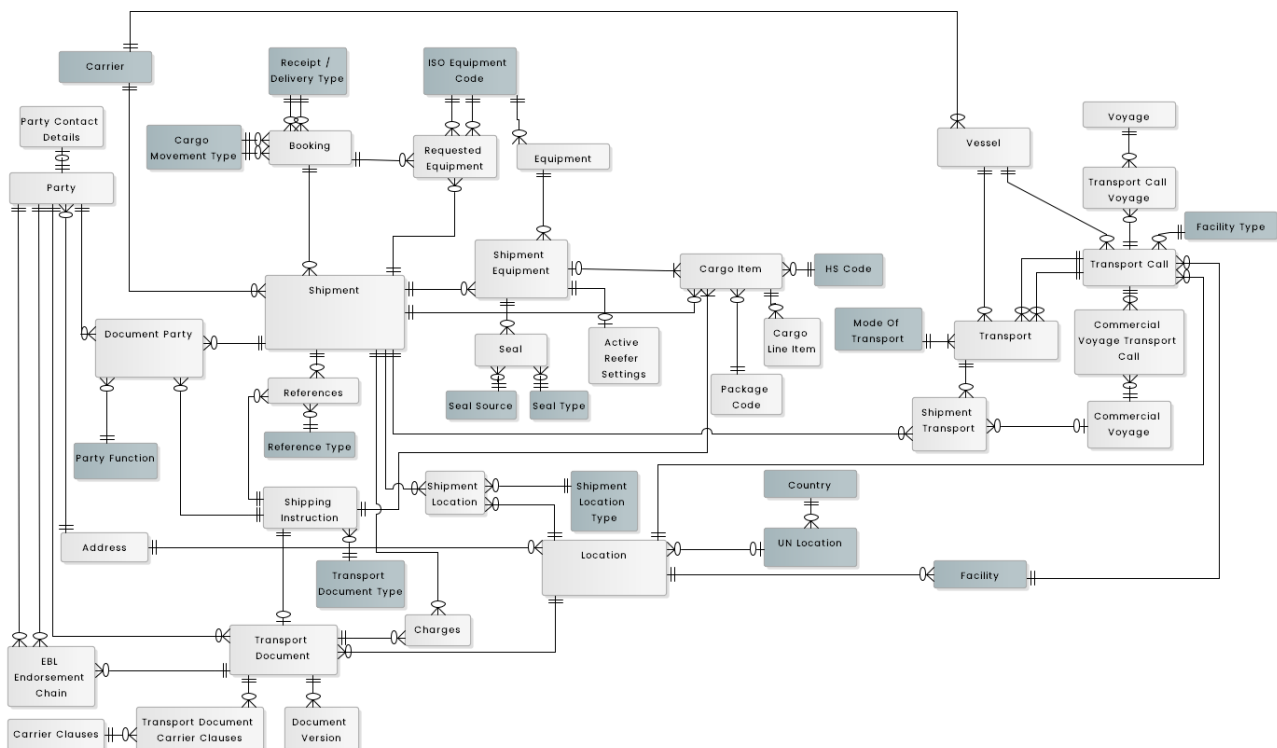


Figure 6: Logical Data Model for eDocumentation

As part of the B/L standardisation initiative several new entities have been added to the IM to encompass the documentation process. The purpose is to enable the process coverage from booking confirmation to issuance of transport document while capturing all the relevant information details, excluding dangerous goods and out-of-gauge, from both an operational and a documentation perspective. The process coverage from booking request to booking confirmation will be addressed in a later release.

The IM has been updated to reflect the relationship between booking, shipment, cargo items, shipping instruction and transport document, as well as the physical relation between the container, vessel, and transport plan. Parties have been added to capture shipper, consignee and notify parties on a booking, shipment, and transport document. The model further addresses how individual cargo items are stuffed into containers in relation to the shipping instruction and respective transport documents. A many-to-many relation between shipment and transport document is created through cargo items and shipping instruction. The model encompasses the fact that transport documents, i.e. Seaway Bill and Bill of Lading, can be issued both physical and digitally (eBL) as well as negotiable or non-negotiable.

Lastly, the model now aligns with the UN/CEFACT MMT reference data model in terms of defining shipment in relation to a booking as well as shipment in relation to a transport document (consignment in UN/CEFACT terms).

5 Subject areas in the Logical Data Model

The Logical Data Model is split into subject areas to provide a more focused overview of each part of the model, as illustrated in the figure below. Each subject area consists of one or more data entities and the related reference data.

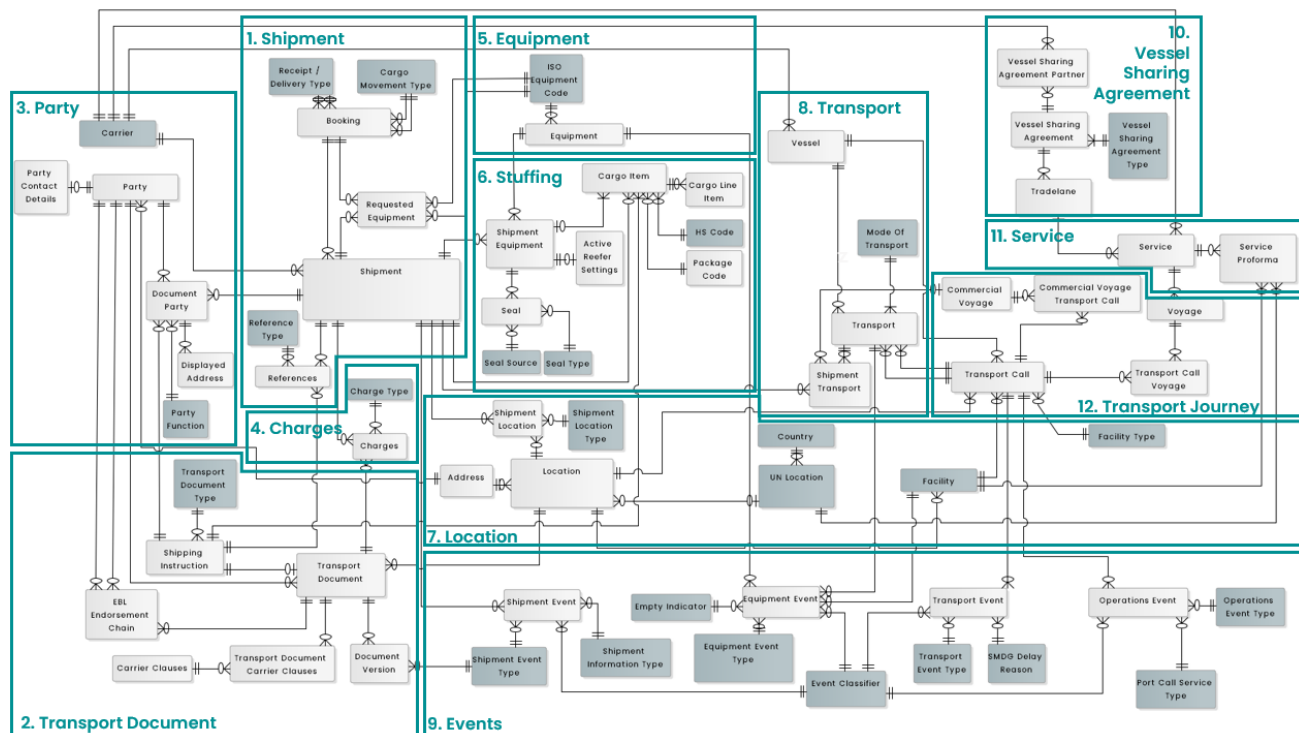


Figure 7: Subject areas in the Logical Data Model

In the following sections, each of the subject areas and their relating data entities and data attributes will be described in the following order:

1. Shipment
2. Transport Document
3. Party
4. Charges
5. Equipment
6. Stuffing
7. Location
8. Transport
9. Events
10. Vessel Sharing Agreement (VSA)
11. Service
12. Transport Journey

Within each subject area, an overview of and insight into the reference data values are provided. Where an existing reference data standard is reused, the source will be stated. Otherwise, an alternative will be specified. All reference data entities will be described in relation to the subject areas that they are part of.

5.1 Shipment

The subject area of Shipment contains seven entities: Shipment, Booking, Requested Equipment, Reference Type, References, Service Type and Shipment Term. The Shipment related entities are shown in Figure 8.

The term shipment has been defined in accordance with the DCSA Industry Blueprint and relates directly to the booking confirmation sent by a carrier to a customer. A shipment is an identifiable collection of one or more Cargo Items (available to be) transported together from the Seller(s) (Original Consignor/ Shipper) to the Buyer(s) (Final/ Ultimate Consignees). A shipment may form a part or all of a transport document (UN/CEFACT' Consignment) or may be transported in different transport documents. As such, the definition of a shipment aligns with the UN/CEFACT MMT reference data model.

The Shipment subject area and its entities will allow for the identification of the shipment that a user may want to track. A shipment must be assigned to one and only one carrier (as defined by the Carrier ID).

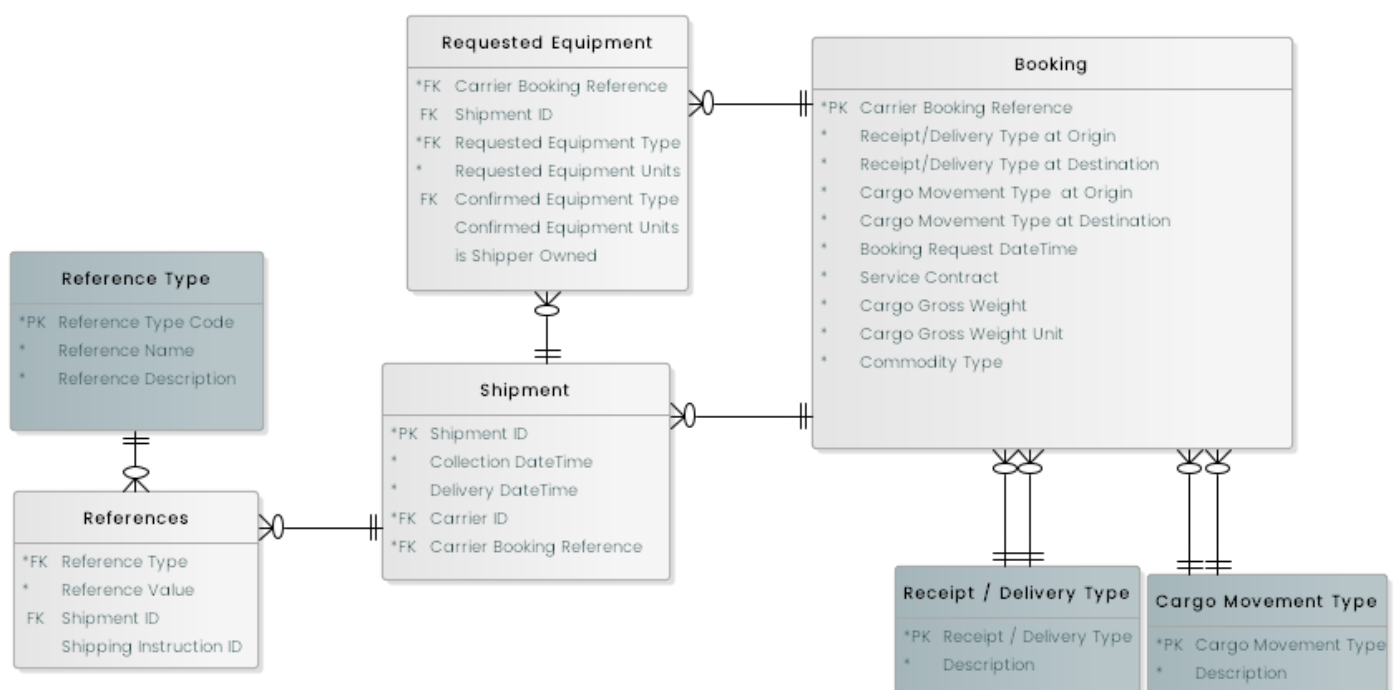


Figure 8: Shipment subject area

The entities within the Shipment subject area are defined and detailed in the following tables.

Shipment entity: an identifiable collection of one or more Cargo Items (available to be) transported together from the Seller(s) (Original Consignor/Shipper), to the Buyer(s) (Final/Ultimate Consignee).

Attribute	Definition	Data type
Shipment ID	The unique identifier for a shipment.	UUID
Carrier Booking Reference	A set of unique characters provided by carrier to identify a booking.	Text(35)
Collection DateTime	The date and time that the cargo items need to be collected from the origin.	DateTime
Delivery DateTime	The date and, when possible, time that the cargo items need to be delivered to the destination.	DateTime
Carrier ID	Links to the carrier entity containing the SCAC and/or the SMGD code to specify the responsible carrier.	UUID

Table 5: Shipment entity

Booking entity: A reservation of space and/or equipment for a vessel/voyage and possibly inland transport with a specific origin/destination/equipment type and commodity.

Attribute	Definition	Data type
Carrier Booking Reference	A set of unique characters provided by carrier to identify a booking.	Text(35)
Receipt / Delivery Type at Origin	Indicates the type of service offered at Origin. Options are defined in the Receipt / Delivery Type entity.	Text(3)
Receipt / Delivery Type at Destination	Indicates the type of service offered at Destination. Options are defined in the Receipt / Delivery Type entity.	Text(3)
Cargo Movement Type at Origin	Refers to the Cargo Movement Type at the loading of the cargo into the container. Options are defined in the Cargo Movement Type entity.	Text(3)
Cargo Movement Type at Destination	Refers to the Cargo Movement Type at the unloading of the cargo out of the container. Options are defined in the Cargo Movement Type entity.	Text(3)

Attribute	Definition	Data type
Booking Request DateTime	The date and time of the booking request when received.	DateTime
Service Contract Reference	Reference number for agreement between shipper and carrier through which the shipper commits to provide a certain minimum quantity of cargo over a fixed period, and the carrier commits to a certain rate or rate schedule.	Text(30)
Commodity Type	Description of commodity classification.	Text(20)
Cargo Gross Weight	The grand total weight of the cargo and weight per container(s) including packaging items being carried, which can be expressed in imperial or metric terms, as provided by the shipper. Excludes the tare weight of the container(s).	Number
Cargo Gross Weight Unit	The unit of measure of the cargo gross weight; it can be in either Kilograms or Pounds as provided by the shipper.	Text(3)

Table 6: Booking entity

Requested Equipment entity: contains the information of requested versus confirmed number and types of equipment for the shipment.

Attribute	Definition	Data type
Carrier Booking Reference	A set of unique characters provided by carrier to identify a booking.	Text(35)
Shipment ID	Identifies the associated shipment.	UUID
Requested equipment type	Size and type of the requested Equipment for this shipment.	Text(4)
Requested equipment units	Number of requested equipment units.	Number

Attribute	Definition	Data type
Confirmed equipment type	Size and type of the allocated Equipment for this shipment.	Text(4)
Confirmed equipment units	Number of confirmed equipment units.	Number
Is Shipper Owned	Indicator if the container is Shipper Owned (SOC)	Boolean

Table 7: Requested Equipment entity

Receipt / Delivery Type entity: an entity containing the reference data for the different Receipt / Delivery types.

Attribute	Definition	Data type
Receipt / Delivery Type	Indicates the type of service offered at the origin or destination. Three options are defined by DCSA: CY, SD and CFS.	Text(3)
Description	The description of the service type.	Text(200)

Table 8: Service Type entity

Cargo Movement Type entity: an entity containing the reference data for the different Cargo Movement Types.

Attribute	Definition	Data type
Cargo Movement Type	Indicates the Cargo Movement Type for the loading of the cargo into the Container or for the unloading of the cargo out of the Container. Three options are defined by DCSA: FCL, LCL and BB.	Text(3)
Description	The description of the Cargo Movement Type.	Text(200)

Table 9: Shipment Term entity

References entity: references provided by the shipper or freight forwarder at the time of booking or at the time of providing shipping instruction. Carriers share it back when providing track and trace event updates, some are also printed on the B/L. Customers can use these references to track shipments in their internal systems.

Attribute	Definition	Data type
Reference Type	The reference type codes defined by DCSA.	Text(3)
Reference Value	The actual value of the reference.	Text(100)
Shipment ID	The associated Shipment ID for the reference.	UUID
Shipping Instruction ID	The associated Shipping Instruction ID for the reference.	Text(100)

Table 10: References entity

Reference Type entity: an entity containing the reference data for the different reference types.

Attribute	Definition	Data type
Reference Type Code	The reference type codes defined by DCSA.	Text(3)
Reference Name	The readable name for the reference type codes defined by DCSA.	Text(100)
Reference Description	A description of the reference type.	Text(200)

Table 11: Reference Type entity

5.1.1 Shipment reference data

The figure below shows the reference data entities in the Shipment subject area.

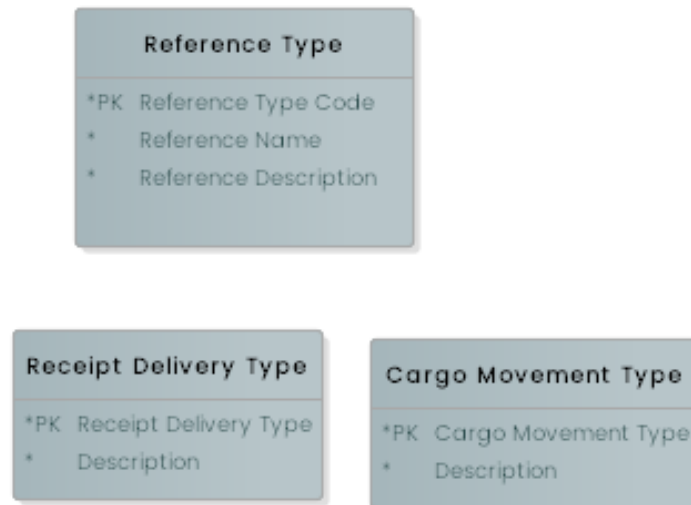


Figure 9: Shipment reference data entities

Table 12 contains the service types defined by DCSA.

Receipt / Delivery Type	Description
CY	Container yard (incl. rail ramp), where the carrier takes possession of a fully stuffed container delivered by the customer at the carrier or carrier's appointed supplier's facility or where a container is released to the customer by the carrier.
SD	Store door, indicating that the carrier is taking possession of or delivers a fully stuffed container at the customer's appointed premises.
CFS	Container freight station, indicating that the carrier has received the cargo and is responsible for stuffing of the cargo within the container or the customer receives the cargo directly from the container freight station.

Table 12: Receipt / Delivery Type

Table 13 contains the shipment terms defined by DCSA.

Cargo Movement Type	Description
FCL	Full Container Load: the shipper/ consignee or its agent or subcontractor is responsible for stuffing or stripping the cargo into or out of the container and bears every responsibility and liability in such respect.
LCL	Less than Container Load: the carrier or its agent or subcontractor is responsible for stuffing or stripping the cargo into or out of the container and bears every responsibility and liability in such respect.
BB	Break bulk: indicates that the carrier has received the cargo which is not containerised.

Table 13: Shipment Term

Table 14 contains the reference types defined by DCSA. These references are assigned by the parties and are not used to identify the parties themselves.

Reference Type Code	Reference Name	Reference Description
FF	Freight Forwarder's Reference	Reference assigned to the shipment by the freight forwarder.
SI	Shipper's Reference	Reference assigned to the shipment by the shipper.
PO	Purchase Order Reference	The PO reference that the shipper or freight forwarder received from the consignee and then shared with the carrier.
CR	Customer's Reference	Reference assigned to the shipment by the customer.
AAO	Consignee's Reference	Reference assigned to the shipment by the consignee.

Table 14: Reference Type

5.2 Transport Document

The subject area of Transport Document contains seven entities: Shipping Instruction, Transport Document, Transport Document Type, EBL Endorsement Chain, Transport Document Carrier Clauses, Document Version and Carrier Clauses. These entities are shown in Figure 10. A shipping

instruction is an enrichment to the original booking shared by the shipper to the carrier. The shipping instruction includes cargo items, specified by volume or weight, packages, etc. The information given by the shipper through the shipping instruction is the information required to create and update a transport document. A transport document is a contractual document issued to the shipper which confirms the carrier's receipt of the cargo, acknowledging goods being shipped or received for shipment and specifying the terms of delivery (as one of the evidences of the contract of carriage). The Transport Document is prepared based on shipping instructions, including cargo description, given by the shipper on forms issued by the carrier and is the title to the goods and can be a negotiable document. It relates directly to the concept of a consignment as published in the UN/CEFACT MMT reference data model.

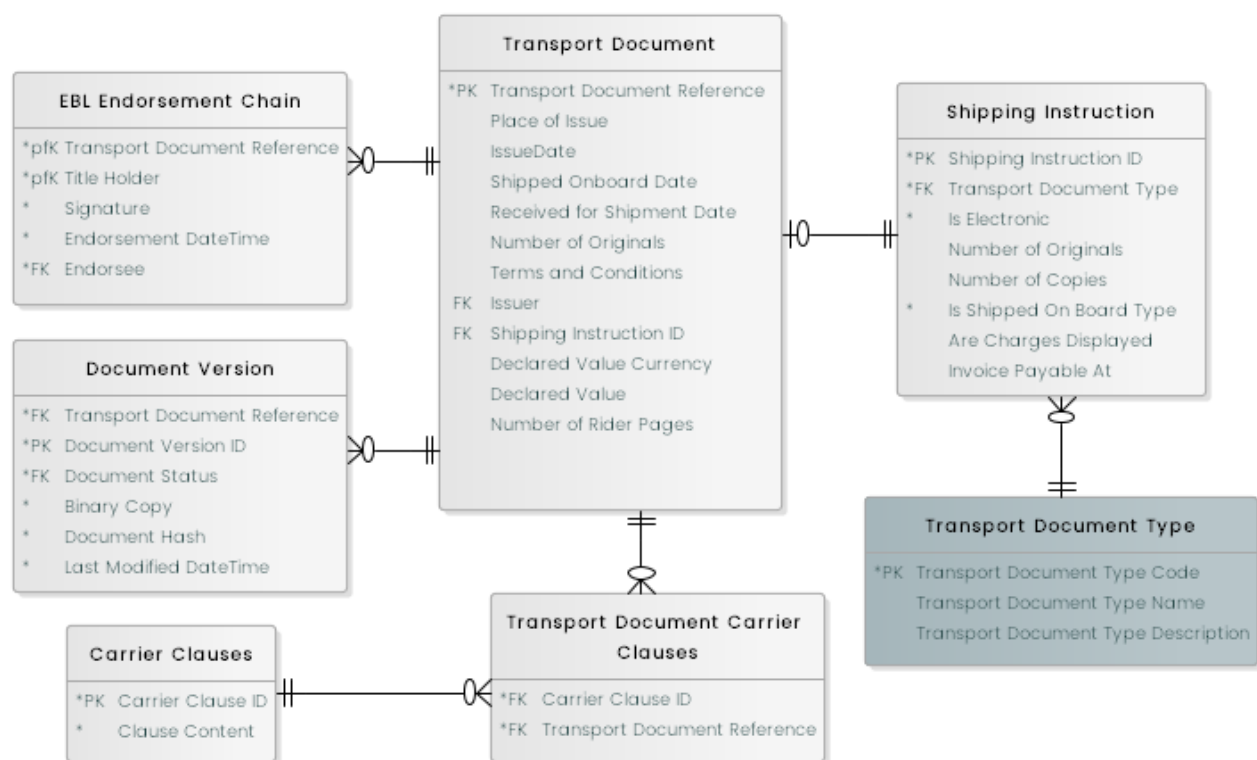


Figure 10: Transport Document subject area

The entities within the Transport Document subject area are defined and detailed in the following tables.

Transport document entity: relates to the type and key attributes of the contract of carriage.

Attribute	Definition	Data type
Place of Issue	Links to the Location ID to specify where the original transport document (bill of lading) has been issued.	Text(100)
IssueDate	Date when the transport document has been issued	Date
Shipped Onboard Date	Date when the last container that is linked to the transport document is physically loaded onboard the vessel indicated on the transport document.	Date
Received for Shipment Date	Date when the last container linked to the transport document is physically in the terminal (customers cleared against the intended vessel).	Date
Transport Document Reference	A unique reference allocated by the shipping line to the transport document and the main number used for the tracking of the status of the shipment.	Text(20)
Terms and Conditions	Carrier general terms and conditions for this transport document.	Text
Issuer	Links to the carrier entity containing the SCAC and/or the SMGD code to specify the issuing carrier. Details about the issuer can be given in the Document Parties entity using the party function code MS.	UUID
Shipping Instruction ID	Identifies the associated shipping instruction.	Text(100)
Declared Value Currency	The currency used for the declared value, using the 3-character code defined by ISO 4217.	Text(3)
Declared Value	The value of the cargo that the shipper declares to avoid the carrier's limitation of liability and "Ad Valorem" freight, i.e. freight which is calculated based on the value of the goods declared by the shipper.	Number
Number of Rider Pages	The number of additional pages required to contain the goods description on a transport document. Only applicable for physical transport documents.	Number

Table 15: Transport Document entity

Document Version entity: used to secure the document versions implementing the assurance of no change.

Attribute	Definition	Data type
Transport Document Reference	The unique reference of a transport document.	Text(20)
Document status	The status of the document in the process. For possible values see reference table 'Transport Document version reference data entity'.	Text(4)
Binary copy	Representation of the document.	Blob
Document hash	Cryptographic hash of the binary copy using the SHA-256 algorithm.	Text
Last modified date time	Timestamp when the latest version of a document is available.	DateTime

Table 16: Document version entity

Shipping Instruction entity: an enrichment to the original booking sent by the shipper to the carrier. The shipping instruction includes volume or weight, cargo items, shipping dates, origin, destination, and other special instructions. The information given by the shipper through the shipping instruction is the information required to create a Transport Document.

Attribute	Definition	Data type
Shipping Instruction ID	The identifier for a shipping instruction provided by the carrier for system purposes.	Text(100)
Transport Document Type	Specifies the type of the associated Transport Document (Bill of Lading or Sea Waybill).	Text(3)
Is Shipped Onboard Type	Specifies whether the Transport document type is a received for shipment or shipped onboard.	Boolean

Attribute	Definition	Data type
Number of Copies	The requested number of copies of the Transport document to be issued by the carrier. Only applicable for physical documents	Number
Number of Originals	Requested number of originalsof the negotiable bill of lading that has been issued to the customer. Only applicable for paper documents.	Number
Invoice Payable At	Location where payment will take place by the customer. Usually refers to Basic Ocean Freight alone. This attribute links to the Location ID.	Text(100)
isElectronic	An indicator whether the transport document is electronically transferred.	Boolean
Is Charges Displayed	An indicator whether charges are to be displayed	Boolean

Table 17: Shipping Instruction entity

EBL Endorsement Chain entity: addresses information related to the title transfer activities.

Attribute	Definition	Data type
Transport Document Reference	Links to the associated transport document.	Text(20)
Title Holder	Links to the Party ID to specify the title holder.	Text(100)
Signature	Digital signature of the previous title holder of that document.	Text(500)
Endorsement DateTime	The date and time of endorsement.	DateTime

Attribute	Definition	Data type
Endorsee	Links to the Party ID to specify the next title holder to whom the title is endorsed by the current title holder.	Text(100)

Table 18: EBL Endorsement Chain entity

Transport Document Carrier Clauses entity: address the carrier clauses for a transport document.

Attribute	Definition	Data type
Carrier Clause ID	Links to the Carrier Clause ID to specify the clause for a transport document.	UUID
Transport Document Reference	Identifies the associated transport document.	Text(20)

Table 19: Transport Document Carrier Clauses entity

Carrier Clauses entity: comprises clauses, added by the carrier to the Transport Document, which are subject to local rules/guidelines or certain mandatory information required to be shared with the customer. Usually printed below the cargo description.

Attribute	Definition	Data type
Carrier Clause ID	The identifier of a carrier clause.	UUID
Clause Content	The content of the clause.	Text

Table 20: Carrier Clauses entity

Transport Document Type entity: contains the reference data for the different transport document types defined by DCSA.

Attribute	Definition	Data type
Transport Document Type Code	The code for the transport document type, e.g. BOL for Bill of Lading.	Text(3)
Transport Document Type Name	The full names of the document types, e.g. Bill of Lading or Sea Waybill.	Text(20)

Attribute	Definition	Data type
Transport Document Type Description	A description of the different document types.	Text(500)

Table 21: Transport Document Type entity

5.2.1 Transport Document reference data

The figure below shows the reference data entities in the Transport Document subject area.

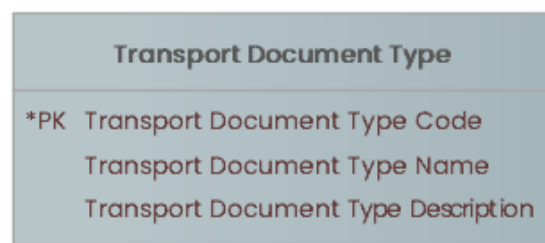


Figure 11: Transport Document reference data entity

Table 22 contains transport document type codes, names and descriptions.

Transport Document Type Code	Transport Document Type Name	Transport Document Type Description
BOL	Bill of Lading	Contractual document issued to the shipper which confirms the carrier's receipt of the cargo, acknowledging goods being shipped or received for shipment and specifying the terms of delivery (as one of the evidences of the contract of carriage). The Bill of Lading is usually prepared based on shipping instructions, including cargo description, given by the shipper on forms issued by the carrier and is the title to the goods and can be a negotiable document.
SWB	Sea Waybill	A separate specific transport document type which is non-negotiable, does not transfer title, but which evidences the contract of carriage and receipt of the goods. It must be issued to a named consignee and can be both in a physical or digital format. Goods can be released at

Transport Document Type Code	Transport Document Type Name	Transport Document Type Description
------------------------------	------------------------------	-------------------------------------

destination without presenting the original sea waybill as proof of ownership.

Table 22: Transport Document Type

The transport document type is requested by the shipper at time of SI submission and must be one of the above types.

Transport Document version reference data: addresses the status and version of a specific transport document or shipping instruction and links to the shipment events in Table 73.

Attribute	Definition	Shipment event type code	Data type
Received	Indicates that a document is received by the carrier or shipper.	RECE	Text
Drafted	Indicates that a document is in draft mode being updated by either the shipper or the carrier.	DRFT	Text
Pending Approval	Indicates that a document has been submitted by the shipper or carrier and is now awaiting approval by the counterpart.	PENA	Text
Pending Update	Indicates that the carrier requested an update from the shipper which is not received yet.	PENU	Text
Confirmed	Identifies that the booking request is confirmed to the shipper i.e. booking confirmation completed	CONF	Text
Rejected	Indicates that a document has been rejected by the carrier.	REJE	Text
Approved	Indicates that a document has been approved by the counterpart.	APPR	Text
Issued	Indicates that a document has been issued by the carrier.	ISSU	Text
Surrendered	Indicates that a document has been surrendered by the customer to the carrier.	SURR	Text

Submitted	Indicates that a document has been submitted by the customer to the carrier.	SUBM	Text
Void	Cancellation of an original transport document.	VOID	Text

Table 23: Transport Document version reference data entity

5.3 Party

A party refers to a company or legal entity represented on the Transport Document as a party to a shipment. The Party subject area contains six entities: Party, Party Contact Details, Document Party, Displayed Address, Party Function and Carrier. These entities are shown in Figure 12.

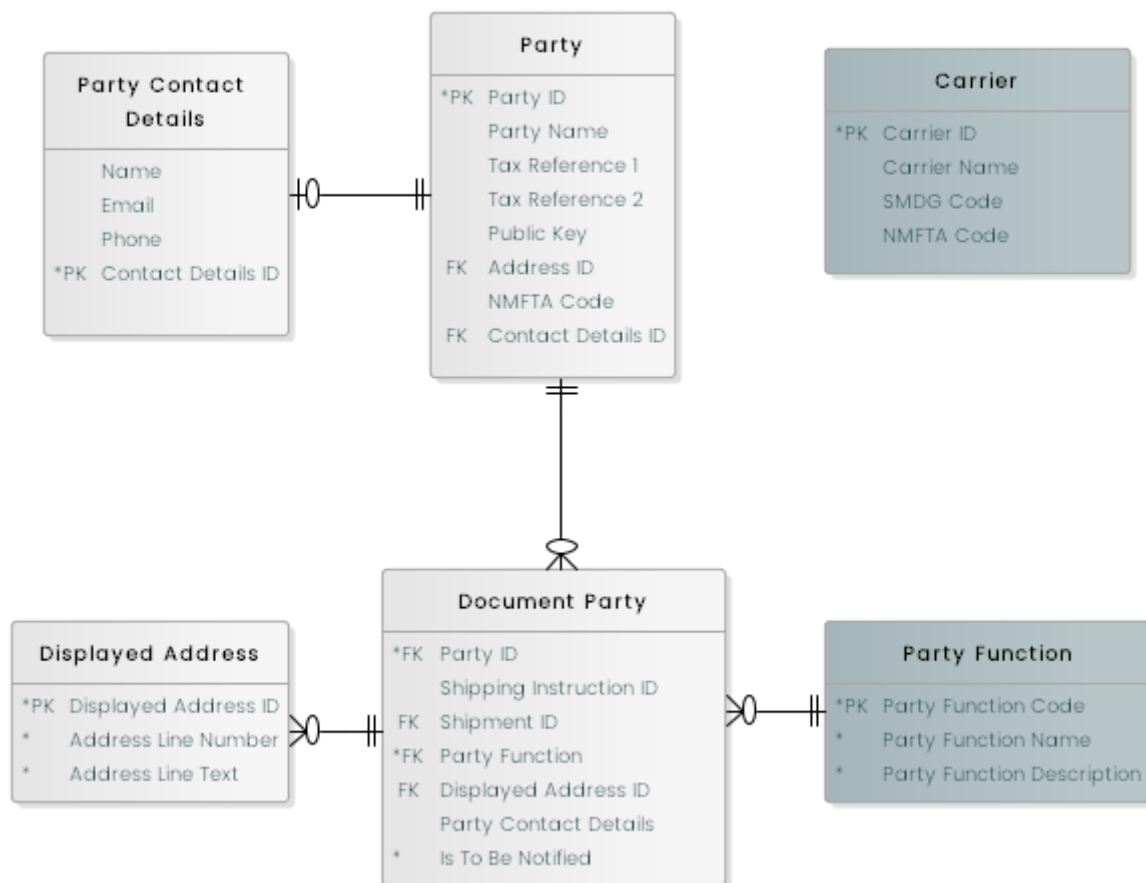


Figure 12: Party subject area

The entities within the Party subject area are defined and detailed in the following tables.

Party entity: refers to a company or a legal entity.

Attribute	Definition	Data type
Party ID	Identifier of a party.	Text(100)
Party Name	Name of the party.	Text(100)
Tax Reference 1	The identifying number of the consignee or shipper (Individual or entity) used for tax purposes.	Text(20)
Tax Reference 2	Optional second identifying number of the consignee or shipper (Individual or entity) used for tax purposes.	Text(20)
Public Key	The public key used for a digital signature.	Text(500)
Address ID	The identifier for the address of the Party	UUID
NMFTA Code	The Standard Carrier Alpha Code (SCAC) provided by NMFTA.	Text(4)
Party contact details ID	Identifier of the party contact details	UUID

Table 24: Party entity

Document Party entity: stores the parties involved in the transport document.

Attribute	Definition	Data type
Shipping Instruction ID	The identifier for a shipping instruction provided by the carrier for system purposes. The attribute Shipping Instruction ID cannot be used in parallel with Shipment line ID.	Text(100)
Party ID	Links to a party related to the Document Party.	Text(100)

Attribute	Definition	Data type
Shipment ID	Links to a shipment. The attribute Shipment ID cannot be used in parallel with Shipping Instruction ID.	UUID
Party function	Specifies the role of the party in the context of the given Shipping Instruction.	Text(3)
Displayed Address	The address of the party to be displayed on the transport document.	Text(250)
Party Contact Details	The contact details of the person to contact in relation to the Transport Document (changes, notifications etc.).	Text(250)
Is To Be Notified	Used to decide whether the party will be notified of the arrival of the cargo.	Boolean

Table 25: Document Party entity

Party contact details entity: The contact details of the person to contact in relation to changes, notifications etc.

Attribute	Definition	Data type
Party contact details ID	Identifier of the party contact details	UUID
Name	Name of the contact	Text(100)
Email	Email of the contact	Text(100)
Phone	Phone number of the contact	Text(30)

Table 26: Party contact details entity

Carrier entity: an organisation or government undertaking the transport of goods. The term includes both carriers for hire or reward (also known as common or contract carriers in some countries) and carriers on own account (known as private carriers in some countries).

Attribute	Definition	Data type
Carrier ID	Unique internal identifier for the carrier.	UUID
Carrier Name	The name of the carrier.	Text(100)
SMDG Code	The Liner code provided by SMDG for the Carrier.	Text(3)
NMFTA Code	The Standard Carrier Alpha Code (SCAC) provided by NMFTA for the carrier.	Text(4)

Table 27: Carrier entity

Party Function entity: defines the role of the party in the context of the transport document or the shipment

Attribute	Definition	Data type
Party Function Code	The party function code is the code to give specific meaning to a party.	Text(3)
Party Function Name	The name of the specific role, e.g. Consignee, Freight Forwarder, etc.	Text(100)
Party Function Description	A description of the party function.	Text(250)

Table 28: Party Function entity

5.3.1 Party reference data

The figure below shows the reference data entities in the Party subject area.

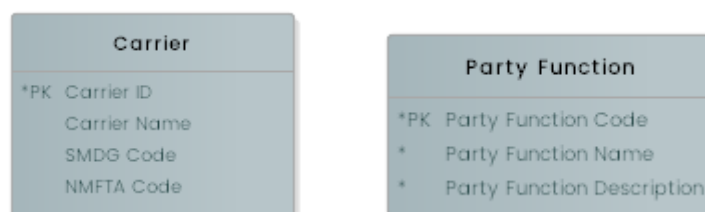


Figure 13: Party reference data entities

Table 29 contains examples of the unique Carrier Codes, Carrier Names and the carrier codes provided by the Code List Provider and the Code List Provider.

The Carrier entity has been designed to accommodate reference data from two separately maintained data sets: the SMDG Liner Code List (where the Code List Provider value will be set to “SMDG”) and the NMFTA SCAC code list (where the Code List Provider value will be set to “NMFTA”).

Carrier Id	Carrier Name	SMDG Code	NMFTA Code
383419d0-5559-4b6e-8953-432426fc4f08	CMA CGM	CMA	CMDU
ea0c6956-011a-4f54-928b-fd53a50d103e	Evergreen Marine Corporation	EMC	EGLV
89a7847f-32c9-419a-a536-dc6c90c382fa	Hapag-Lloyd	HLC	HLCU
174cf4f7-fdf0-433a-9dc3-0a71d4e5001d	Hyundai	HMM	HDMU
1fe24b33-1c8a-4a0e-b298-e375510282c9	Maersk	MSK	MAEU
5fa0d3bb-375b-46f0-9817-c93a04747840	Mediterranean Shipping Company	MSC	MSCU
a844c614-cfd7-4106-835b-3fd6abe6ab85	Ocean Network Express Pte. Ltd.	ONE	ONEY
cd5cbd62-f446-45be-9904-52b8f4ab2e3d	Yang Ming Line	YML	YMLU
d12dccb3-4461-4293-8880-cd031bd040fd	ZIM Israel Navigation Company	ZIM	ZIMU

Table 29: Carrier, examples

Table 30 contains the DCSA party functions relevant to container shipping, a subset of the UN/EDIFACT Party Functions (see <https://www.unece.org/trade/untdid/d00a/tred/tred3035.htm>).

Party Function Code	Party Function Name	Party Function Description
OS	Original shipper.	The original supplier of the goods.
CN	Consignee.	Party to which goods are consigned.
COW	Invoice payer on behalf of the consignor (shipper).	Invoice payer is a third party acting on behalf of the consignor (shipper).
COX	Invoice payer on behalf of the consignee.	Invoice payer is a third party acting on behalf of the consignee.
MS	Document/ message issuer/sender	Issuer of a document and/or sender of a message.
N1	First Notify Party.	The first party which is to be notified.
N2	Second Notify Party.	The second party which is to be notified.
NI	Other Notify Party	Other party which is to be notified
DDR	Consignor's freight forwarder	Identification of freight forwarder giving services to the consignor (shipper).
DDS	Consignee's freight forwarder	Identification of freight forwarder giving services to the consignee.

Table 30: Party Function, examples

5.4 Charges

The subject area of Charges relates to the monetary value of freight and other service charges for a shipment and contains two entities, Charges and Charge Type, as shown in the figure below.

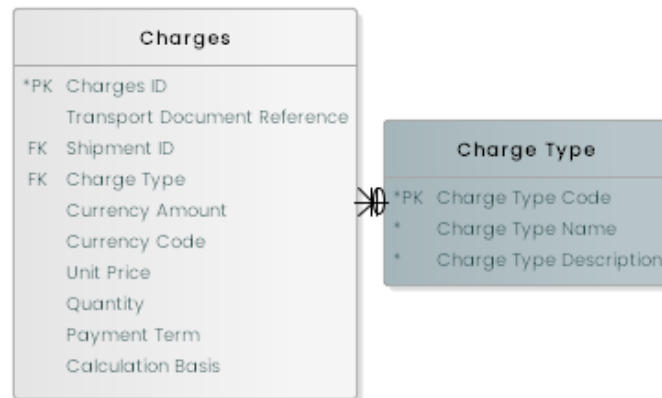


Figure 14: Charges subject area

Charges entity: addresses the monetary value of freight and other service charges for a transport document.

Attribute	Definition	Data type
Charges ID	The identifier of a charge.	Text(100)
Transport Document Reference	The unique identifier of the transport document that the charge concerns.	Text(20)
Shipment ID	The unique identifier of the shipment that the charge concerns.	UUID
Charge Type	Description of the charge type applied.	Text(20)
Currency Amount	The monetary value of all freight and other service charges for a transport document, with a maximum of 2-digit decimals.	Number
Currency code	The currency for the charge, using a 3-character code (ISO 4217).	Text(3)

Attribute	Definition	Data type
Payment Term	An indicator of whether a charge is prepaid or collect, using a 3-character code to identify INCO terms.	Text(3)
Calculation Basis	The code specifying the measure unit used for the corresponding unit price for this cost, such as per day, per ton, per square metre.	Text(50)
UnitPrice	The unit price of this charge item in the currency of the charge.	Number
Quantity	The amount of unit for this charge item.	Number

Table 31: Charges entity

Charge type entity: defines the type of charge in the context of the booking

Attribute	Definition	Data type
Charge type code	The identifier of a charge type.	UUID
Charge type name	The name of the charge type	Text(3)
Charge type description	The description of the charge type	Text(100)

Table 32: Charge type entity

5.5 Equipment

The subject area of Equipment contains 2 entities: Equipment, ISO Equipment Code. These entities are shown in Figure 15.

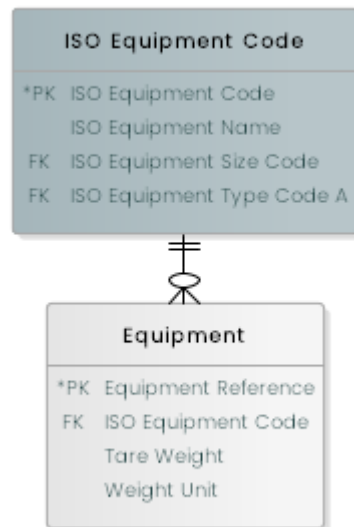


Figure 15: Equipment subject area

The equipment subject area is modelled to ensure that a specific equipment can be identified and detailed appropriately in terms of type and size in accordance with ISO 6346:1995 Freight containers – Coding, identification and marking and amendment 3 (2012) to ISO 6346:1995. Whenever ISO 6346:1995 is mentioned as a reference in this document, it all instances of equipment that can be used to fulfil a shipment. Each piece of equipment can be categorised according to its type and size, and this information is contained in a hierarchy of reference tables based on ISO 6346. The ISO Equipment Code entity brings together reference data regarding equipment size and type. The entities within the Equipment subject area are defined and detailed in the following tables.

Equipment entity: used for storing cargo in/on during transport. The equipment size/type is defined by the ISO 6346 code. The most common equipment size/type is 20'/40'/45' Dry Freight Container, but several different versions exist.

Attribute	Definition	Data type
Equipment Reference	The unique identifier for the equipment, which should follow the BIC ISO Container Identification Number where possible. According to ISO 6346, a container identification code consists of a 4-letter prefix and a 7-digit number (composed of a 3-letter owner code, a category identifier, a serial number, and a check-digit). If a container does not comply with ISO 6346, it is suggested to follow Recommendation #2 "Container with non-ISO identification" from SMDG.	Text(15)
ISO Equipment Code	Unique code for the different equipment size/type used for transporting commodities. The code is a concatenation of ISO Equipment Size Code and ISO Equipment Type Code A and follows the ISO 6346 standard.	Text(4)
Tare Weight	The weight of an empty container (gross container weight).	Number
Weight Unit	The unit of measure; it can be in either Kilograms or Pounds as provided by the shipper.	Text(3)

Table 33: Equipment entity

ISO Equipment Code entity: contains the ISO Equipment Code which identifies equipment based on different sizes, types, and purposes, for example, 20-foot reefer container, and follows the ISO 6346 standard.

Attributes	Definitions	Data type
ISO Equipment Code	Unique code for the different equipment size/type used for transporting commodities. The code is a concatenation of ISO Equipment Size Code and ISO Equipment Type Code A and follows the ISO 6346 standard.	Text(4)

Attributes	Definitions	Data type
ISO Equipment Name	Textual description for the equipment, follows the ISO 6346 standard.	Text(35)
ISO Equipment Size Code	ISO size code designation; two alphanumeric characters used to designate the size code of a piece of equipment. - The first character represents the length. - The second character represents the width and the height. The size code follows the ISO 6346 standard.	Text(2)
ISO Equipment Type Code A	Code for the different container types used for transporting commodities. For containers designed and tested with full stacking (minimum superimposed mass of 192,000 kilos) and racking (minimum transverse force of 150 kN) capabilities. Superimposed mass is as defined in ISO 1496 -1:1990. The code follows the ISO 6346 standard.	Text(2)

Table 34: ISO Equipment Code entity

5.5.1 Equipment reference data

The figure below shows the reference data entity in the Equipment area.

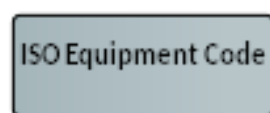


Figure 16: Equipment reference data entity

Table 35 contains examples of ISO 6346 equipment codes.¹ This list is a small part of the full list of ISO 6346 equipment codes and names. There are more than 15,000 unique equipment code combinations (not including ISO equipment type code B).

¹ NEN Standards Products & Services has granted DCSA the permission to use the ISO 6346 equipment code examples in this publication.

ISO Equipment Code	ISO Equipment Name
10G0	10ft General purpose container Without ventilation Opening(s) at one end or both ends.
25R2	20ft Thermal container Self-powered refrigerated/heated Mechanically refrigerated.
45P7	40ft Platform (container) Platform-based container for named cargo Car carrier.

Table 35: ISO Equipment Code, examples

5.6 Stuffing

The subject area of Stuffing describes the activity of putting cargo items into a container and recording the number of packages/parcels in the shipping instruction to be published on the transport document. It contains nine entities: Cargo Item, Cargo line item, Shipment Equipment², Active Reefer Settings, Seal, Seal Source and Seal Type, HS Code and Package Code. These entities are shown in Figure 17.

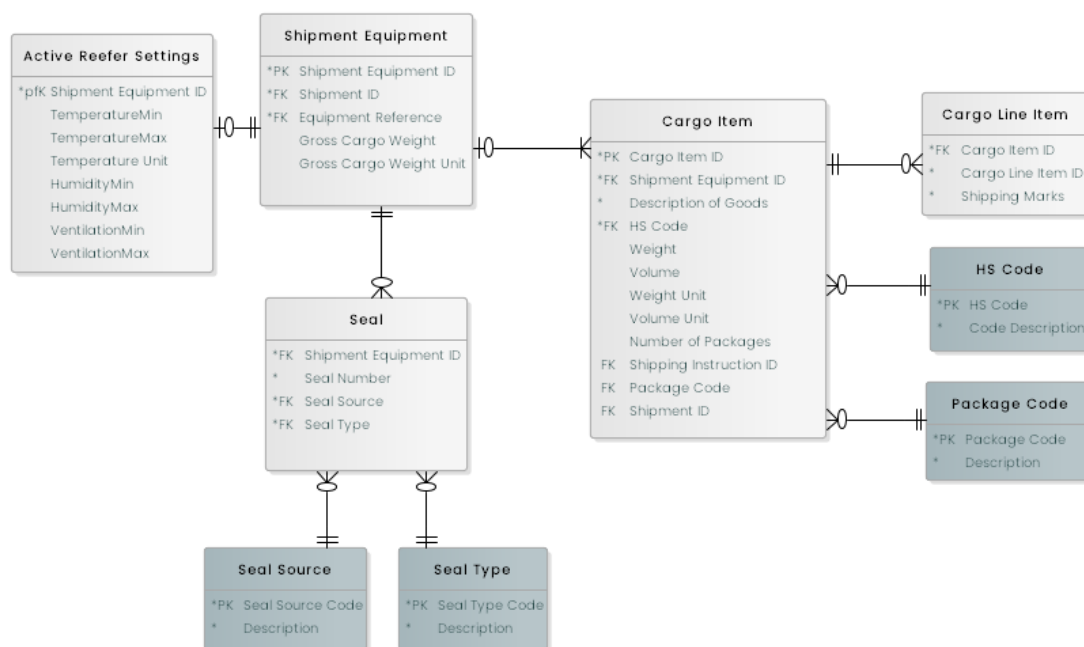


Figure 17: Stuffing subject area

The entities within the Stuffing subject area are defined and detailed in the following tables.

² Shipment Equipment is called UtilizedTransportEquipment in UN/CEFACT.

Shipment Equipment entity: specifies the container assigned to a shipment.

Attribute	Definition	Data type
Shipment Equipment ID	The identifier of the assignment of a container to a shipment.	UUID
Shipment ID	Identifies the associated shipment.	UUID
Equipment Reference	Identifies the assigned equipment (container) to the shipment.	Text(15)
Cargo Gross Weight	The grand total weight of the cargo and weight per container(s) including packaging items being carried, which can be expressed in imperial or metric terms, as provided by the shipper. Excludes the tare weight of the container(s).	Number
Cargo Gross Weight Unit	The unit of measure of the cargo gross weight; it can be in either Kilograms or Pounds as provided by the shipper.	Text(3)

Table 36: Shipment Equipment entity

Active Reefer Settings entity: specifies the settings for an active reefer container used to a shipment.

Attribute	Definition	Data type
Shipment Equipment ID	The identifier of the assignment of a container to a shipment.	UUID
TemperatureMin	Indicates the minimum temperature setting on the container.	Number
TemperatureMax	Indicates the maximum temperature setting on the container.	Number
Temperature Unit	Celsius (CEL) or Fahrenheit (FAH).	Text(3)

Attribute	Definition	Data type
HumidityMin	Indicates the minimum humidity setting on the container in percent.	Number
HumidityMax	Indicates the maximum humidity setting on the container in percent.	Number
VentilationMin	Indicates the minimum ventilation setting on the container in CBM/Hr.	Number
VentilationMax	Indicates the maximum ventilation setting on the container in CBM/Hr.	Number

Table 37: Active Reefer Settings entity

Cargo Item entity: addresses the cargo items to be stuffed into a container for a shipment. A cargo item cannot be split across containers.

Attribute	Definition	Data type
Cargo Item ID	Identifies the cargo item to be stuffed.	UUID
Shipment ID	Identifies the associated shipment.	UUID
Description of Goods	The cargo description are details which accurately and properly describe the cargo being shipped in the container(s) as provided by the shipper.	Text
HS Code	Used by customs to classify the product being shipped. Can be either 4, 6, 8 or 10 characters long	Text(10)
Weight	The total weight of the cargo including packaging items being carried in the container(s). Excludes the tare weight of the container(s).	Number
Volume	Calculated by multiplying the width, height, and length of the packed cargo.	Number

Attribute	Definition	Data type
Weight Unit	The unit of measure which can be expressed in imperial or metric terms as provided by the shipper.	Text(3)
Volume Unit	The unit of measure which can be expressed in either imperial or metric terms as provided by the shipper.	Text(3)
Number of Packages	Specifies the number of packages associated with this cargo item.	Number
Shipping Instruction ID	The identifier for a shipping instruction provided by the carrier for system purposes.	Text(100)
Package Code	The unique identifier for the package type	Text(3)
Shipment Equipment ID	The identifier of the assignment of a container to a shipment.	UUID

Table 38: Cargo Item entity

Cargo Line Item entity: identifies the specific details of packages within a cargo item.

Attribute	Definition	Data type
Cargo line item ID	Identifies the cargo line item (package) within the cargo. The cargo line item ID is provided by the shipper and is used to define the stuffing. Cargo line items belonging to the same cargo items are stuffed in the same container.	Text
Cargo item ID	Identifies the cargo item to be stuffed.	UUID
Shipping marks	The identifying details of a package or the actual markings that appear on the package(s). This information is provided by the shipper.	Text

Table 39: Cargo line Item entity

HS Code entity: HS stands for Harmonized Commodity Description and Coding Systems. The Harmonized System is an international nomenclature for the classification of products. It is used to classify traded goods on a common basis for customs purposes.

The HS codes can be found on the UN statistics website (see <https://unstats.un.org/unsd/tradekb/Knowledgebase/50018/Harmonized-Commodity-Description-and-Coding-Systems-HS>).

Attribute	Definition	Data type
HS Code	The Harmonized System is an international nomenclature for the classification of products. It allows participating countries to classify traded goods on a common basis for customs purposes. At the international level, the Harmonized System (HS) for classifying goods is a six-digit code system.	Text(10)
Code Description	Description of the product classification.	Text(250)

Table 40: HS Code entity

Seal entity: addresses the seal-related information associated with the shipment equipment. A seal is put on a shipment equipment once it is loaded. This seal is meant to stay on until the shipment equipment reaches its final destination.

Attribute	Definition	Data type
Shipment Equipment ID	Identifies the shipment equipment associated with the seal.	UUID
Seal Number	Identifies a seal affixed to the container.	Text(15)
Seal Source	The source of the seal, namely who has affixed the seal. This attribute links to the Seal Source ID defined in the Seal Source reference data entity.	Text(5)
Seal Type	The type of seal. This attribute links to the Seal Type ID defined in the Seal Type reference data entity.	Text(5)

Table 41: Seal entity

Seal Source entity: identifies the party who has affixed the seal.

Attribute	Definition	Data type
Seal Source Code	The code for the seal source.	Text(5)
Description	The description of the seal source code, e.g. carrier, shipper, phytosanitary or veterinary.	Text(50)

Table 42: Seal Source entity

Seal Type entity: addresses the type of seals.

Attribute	Definition	Data type
Seal Type Code	The code for a seal type.	Text(5)
Description	The description of the seal type code, e.g. keyless padlock, bolt, wire.	Text(50)

Table 43: Seal Type entity

Package Code entity: specifies the package-related information.

Attribute	Definition	Data type
Package Code	A code identifying the outer package.	Text(3)
Description	Description of the package code.	Text(50)

Table 44: Package Code entity

Package code list reference data is based on UN/CEFACT and can be found here:

https://www.unece.org/fileadmin/DAM/cefact/recommendations/rec21/rec21rev4_ecetrd309.pdf

5.6.1 Stuffing reference data

The figure below shows the reference data entities in the Stuffing subject area.

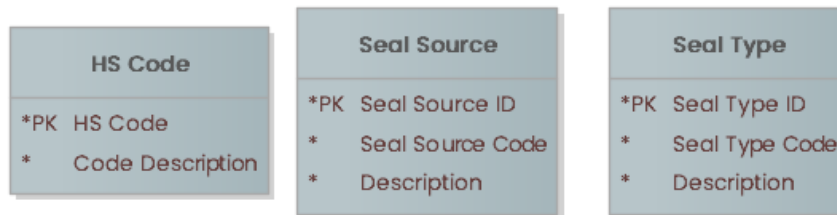


Figure 18: Stuffing reference data entities

Table 45: Seal Source contains seal sources defined by DCSA.

Seal Source ID	Seal Source Code	Description
1	CAR	Carrier
2	SHI	Shipper
3	PHY	Phytosanitary
4	VET	Veterinary
5	CUS	Customs

Table 45: Seal Source

Table 46: Seal Type contains seal types defined by DCSA.

Seal Type ID	Seal Type Code	Description
1	KLP	Keyless padlock
2	BLT	Bolt
3	WIR	Wire

Table 46: Seal Type

These differ from the UN/EDIFACT Seal Type Codes (4525) which only contain the types “Mechanical” and “Electronic”.

Table 47 contains examples of HS Codes³.

HS Code	Code Description
392620	Plastics: articles of apparel and clothing accessories (including gloves).
420310	Apparel: articles of apparel, of leather or of composition leather.
761410	Aluminium: stranded wire, cables, plaited bands, and the like, (not electrically insulated), with steel core.

Table 47: HS Code, example

5.7 Location

The subject area of Location relates to a physical location and/or "UN/LOCODE" ("United Nations Code for Trade and Transport Locations") from where the shipment is received and to where it is finally delivered. It contains the following entities: Location, Shipment Location, Shipment Location Type, UN Location, Country, Facility and Facility Type. These entities are shown in

Figure 19. Location, as identified within the UN Location Code entity, is at a more granular level than the one identified within the Country entity (the Country Code). The location identifier within the Facility entity (the Facility Code), is at an even more granular level than the location provided by the UN Location Code. To make it possible to track the location of an event, the Facility entity is

³ HS codes and descriptions can be downloaded from [UN Comtrade Commodity Classifications](https://comtrade.un.org/).

also linked to each of the Event entities for Equipment and Transport. These entities are described in the Event subject area.

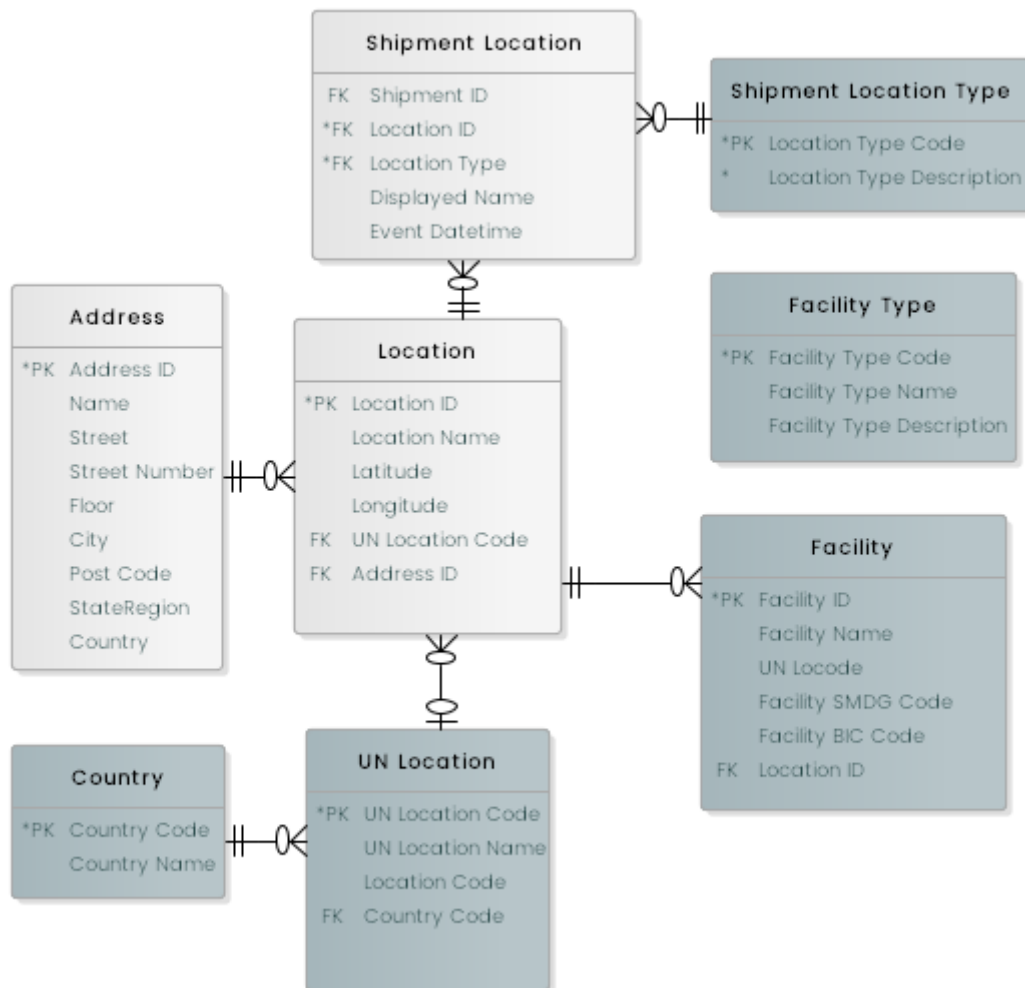


Figure 19: Location subject area

The entities within the Location subject area are defined and detailed in the following tables.

Location entity: generally used to capture location-related data, also for locations without UN Location Codes.

Attribute	Definition	Data type
Location ID	The identifier for a location.	Text(100)
Location name	The name of the location.	Text(100)
Address ID	The identifier for the physical address of the location.	UUID

Attribute	Definition	Data type
Latitude	Geographic coordinate that specifies the north–south position of a point on the Earth's surface.	Text(10)
Longitude	Geographic coordinate that specifies the east–west position of a point on the Earth's surface.	Text(11)
UN Location Code	The UN Location code specifying where the place is located.	Text(5)

Table 48: Location entity

Shipment Location entity: maps the relationship between Shipment and Location, e.g., the place of receipt and the places of delivery for a specific shipment.

Attribute	Definition	Data type
Shipment ID	The identifier for a shipment.	UUID
Location ID	The identifier for a location.	Text(100)
Location Type	Links to the Location Type Code defined by DCSA.	Text(3)
Displayed name	The address of the party to be displayed on the transport document.	Text(250)
Event Date Time	Optional datetime indicating when the event at the location takes place	DateTime

Table 49: Shipment Location entity

Shipment Location Type entity: contains the Shipment Location Type defined by DCSA, e.g. the Place of Receipt and Place of Delivery.

Attribute	Definition	Data type
Location Type Code	DCSA defined code for shipment locations.	Text(3)
Location Type Description	Description of the shipment location type code.	Text(50)

Table 50: Shipment Location Type entity

Country entity: Country names are as defined by the ISO 3166 standard published by ISO. This standard defines codes for the names of countries, dependent territories, and special areas of geographical interest.

Attribute	Definition	Data type
Country Code	The two-letter ISO 3166 country code. E.g. BE for Belgium.	Text(2)
Country Name	The full name for the country as defined by ISO 3166-1.	Text(75)

Table 51: Country entity

UN Location entity: UN Location is a location as defined by UNECE and commonly known as "UN/LOCODE" ("United Nations Code for Trade and Transport Locations"). The UN Location identifies a location in the sense of a city/town/village, being the smaller administrative area existing as defined by the competent national authority in each country.

A list of all UN location codes can be found in the [UN/LOCODE Code List 2020-1](#).

Attribute	Definition	Data type
UN Location Code	The UN Location Code identifies a location in the sense of a city/town/village, being the smaller administrative area existing as defined by the competent national authority in each country. A complete UN Location Code is a combination of a two-character country code and a three-character city/town/area Location Code, e.g. BEANR is known as the city of Antwerp (ANR), which is located in Belgium (BE).	Text(5)
UN Location Name	The name of the location as defined by the UNECE.	Text(100)
Location Code	Location Code identifies a location in the sense of a city/town/village, being the smaller administrative area existing as defined by the competent national authority in each country. Location Code is a three-character code e.g. ANR for Antwerp.	Text(3)
Country Code	The country that the UN Location belongs to.	Text(2)

Table 52: UN Location entity

Facility entity: contains the Facility which is a location entity at a sub-level to UN Location Code and provides the locational context for the event, which is being reported on, as defined by DCSA.

Attribute	Definition	Data type
Facility ID	Identifier for facility	UUID
Facility Name	The name of the facility.	Text(100)
Facility BIC code	The code used for identifying the specific facility according to the BIC code list	Text(4)
Facility SMDG code	The code used for identifying the specific facility according to the SMDG code list	Text(6)
UN Location Code	The UN Location code specifying where the Facility is located.	Text(5)
Location ID	The Identifier for the location for this facility entity	Text(100)

Table 53: Facility entity

Facility Type entity: contains the Facility Type which provides the locational context for the event being reported on. The facility types are defined as unique areas where equipment and/or a transport type can be located for a specified period as defined by DCSA.

Attribute	Definition	Data type
Facility Type Code	Four-character code to identify the specific type of facility.	Text(4)
Facility Type Name	The name of the facility type.	Text(100)
Facility Type Description	The description of the facility type.	Text(250)

Table 54: Facility Type entity

Address entity: Stores address information.

Attribute	Definition	Data type
Address ID	Unique identifier of the address entity.	UUID
Name	Name used for the address	Text(100)
Street	The name of the street of the party's address.	Text(100)
Street number	The number of the street of the party's address.	Text(50)
Floor	The floor of the party's street number.	Text(50)
Post code	The postal code of the party's address.	Text(10)
City	The city name of the party's address.	Text(65)
StateRegion	The state/region of the party's address.	Text(65)
Country	The country of the address	Text(75)

Table 55: Address entity

5.7.1 Location reference data

The figure below shows the reference data entities in the Location subject area.

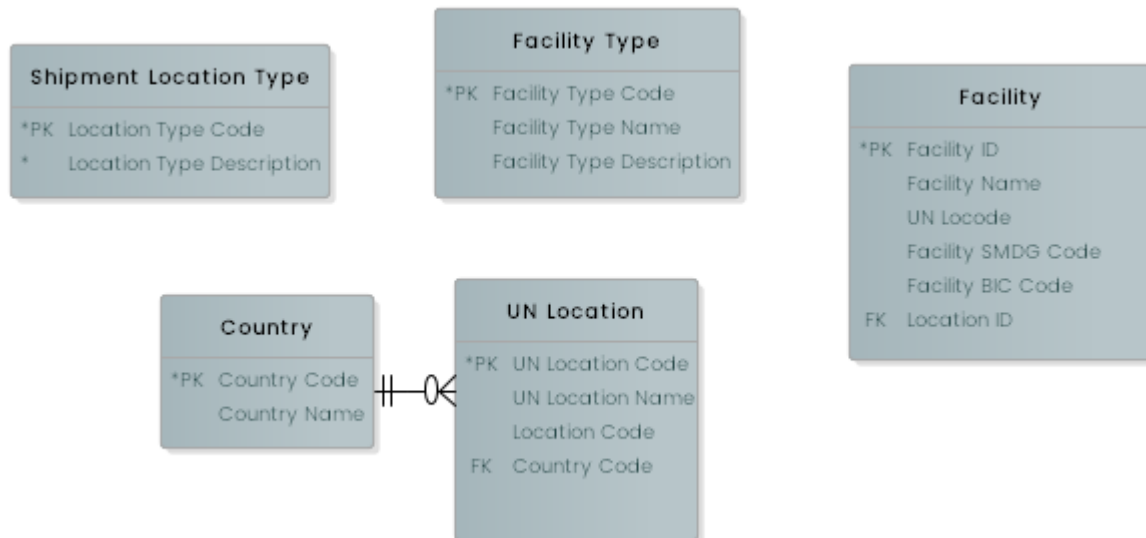


Figure 20: Location reference data entities

Table 56 contains examples of country names and codes as published by ISO. The full country list (ISO 3166-1) can be obtained via the ISO Online Browsing Platform (OBP).⁴

Country Code	Country Name
AL	Albania
BR	Brazil
HR	Croatia
DK	Denmark
SV	El Salvador

Table 56: Country, example

The first two characters of the UN Location Code are the ISO 3166-1 alpha-2 Country Code, which are followed by a three-character code representing a city/town area location within the country. An area containing several functions (port, train station, airport, etc.) should still only have one UN Location Code assigned.

⁴ <https://www.iso.org/obp/ui/#search>.

Table 57 contains examples of location names and codes as provided by the UN/ECE linked to the Country Code. Combining the Country Code and the Location Code constitutes the UN Location Code.

UN Location Code	Country Code	Location Code	UN Location Name
ALMIL	AL	MIL	Milot
BRAGS	BR	AGS	Alagoinhas
HRVUK	HR	VUK	Vukovar
DKAAR	DK	AAR	Aarhus
SVSMG	SV	SMG	San Miguel

Table 57: UN Location, example

Table 58 contains examples of facility codes and their appertaining attributes.

Facility ID	Facility Name	Facility BIC code	Facility SMDG code	Location ID
f278d62c-7b42-4f57-8a3d-3d932f989887	KHALIFA PORT CONTAINER TERMINAL		ADT	
208190d5-36d3-4e5e-9f94-f781a323bdf4	DP WORLD BRISBANE FISHERMAN ISLANDS		DPBNE	
04959e1f-4b2e-4e03-9950-8d86473c3c75	GATEWAY TERMINALS INDIA (GTI)		GTICI	
1abf6a05-e62b-4a03-8633-e2beb05d1858	Re main GMBH	RMAA		

Facility ID	Facility Name	Facility BIC code	Facility SMDG code	Location ID
09adae4e-7289-42e3-bd03-07ebebeb4f6b	Pentalver Transport Ltd	PTVA		

Table 58: Facility

Table 59 contains the Facility Type which provides the locational context for the event being reported on. The facility types are defined as unique areas where equipment and/or a transport type can be located for a specified period as defined by DCSA.

Facility Type Code	Facility Type Name	Facility Type Description
BOCR	Border crossing	Border crossing is the point at a border between two countries where people, transports or goods can cross. This may or may not include a customs checkpoint.
CLOC	Customer location	Customer location is the premise of the customer, who can be either the shipper or the consignee.
COFS	Container freight station	Container freight station is a facility where LCL (Less Than Container Load) shipments are consolidated or dispersed, cargo is stuffed into containers prior to shipment, or cargo is stripped from containers prior to release to the consignee.
COYA	Container yard	A place where containers are stored on the terminal or dry port (rail ramp) before they are loaded or offloaded from a ship. Containers are either stored for loading to be transported elsewhere or offloaded as they arrive into the port, terminal or rail ramp.
OFFD	Off dock storage	An interim storage facility where empty or full containers are stored in transit.
DEPO	Depot	Depot is a designated area where empty equipment is stored between use.

Facility Type Code	Facility Type Name	Facility Type Description
INTE	Inland terminal	Inland terminal is a facility where containers are loaded, moved, or discharged. The inland terminal can be serviced by trucks, rail, and barges (at river terminals).
POTE	Port terminal	Port terminal is a facility located adjacent to a waterway where containers are loaded, moved, or discharged onto/from sea-going vessels and barges.
PBPL	Pilot boarding place	The place where a pilot boards the vessel upon arrival at the port boundaries.
BRTN	Berth	The place where a vessel is moored in a port terminal
RAMP	Ramp	An inland container terminal (storing both full and empty containers) connected directly to a rail ramp where containers are loaded/discharged to/from a train

Table 59: Facility Type

Table 60 contains the Shipment Location Type defined by DCSA.

Shipment Location Type Code	Location Type Description
PRE	Place of Receipt
PDE	Place of Delivery
PCF	Pre-carriage From
PSR	Precarriage under shipper's responsibility

Shipment Location Type Code	Location Type Description
OIR	Onward In-land Routing
POL	Port of Loading
POD	Port of Discharge
ORI	Origin of goods
DRL	Depot release location

Table 60: Shipment Location Type

5.8 Transport

The subject area of Transport describes a movement of a shipment from origin to destination and contains four entities: Transport, Vessel, Mode of Transport and Shipment Transport. These entities are shown in Figure 21. The Transport subject area is modelled around the key entity of Transport for storing specific instances of transport and a subtype (Vessel), which captures vessel-specific details. The Transport entity is linked to The Mode of Transport. The Mode of Transport entity describes the possible modes of transport. The DCSA Transport Type attribute has been added to the Mode of Transport reference data entity to provide shipping industry-specific terminology rather than more generic terms defined by the UN/CEFACT.

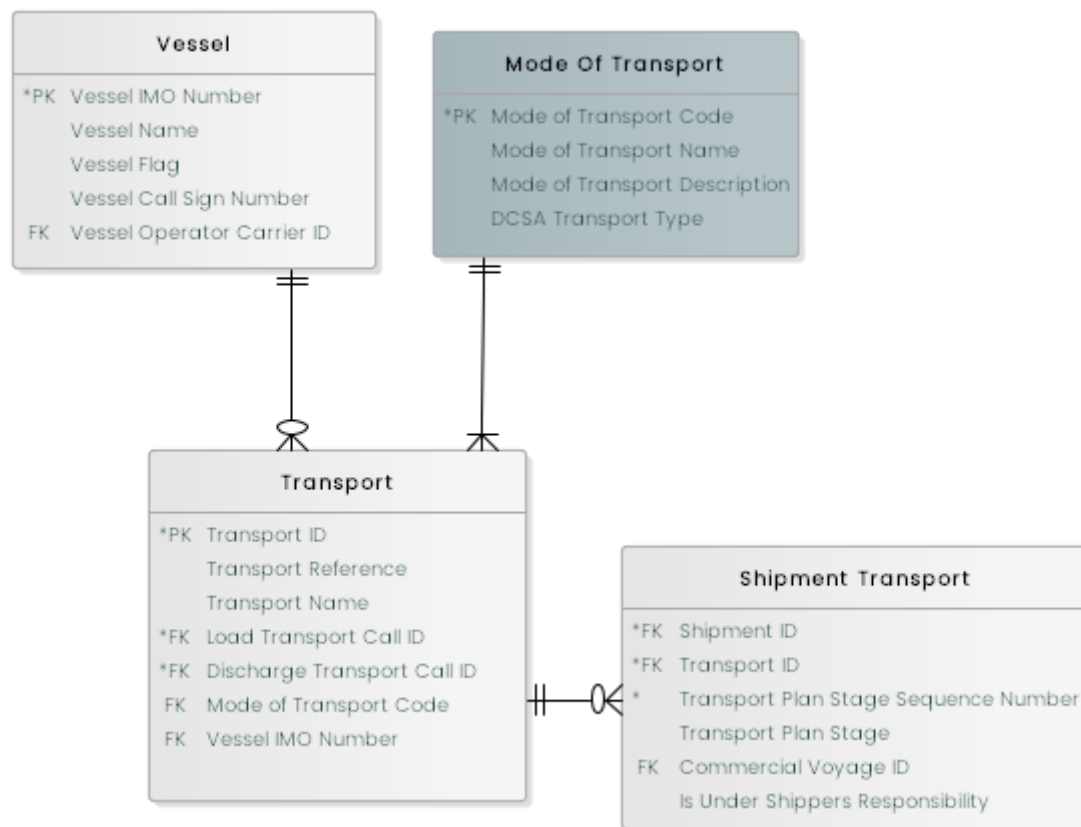


Figure 21: Transport subject area

The entities within the Transport subject area are defined and detailed in the following tables.

Mode of Transport entity: addresses the code specifying the transport mode for the logistic transport movement, following the UN/CEFACT Recommendation 19 - Codes for Modes of Transport mapped to the transport types as defined in the DCSA Glossary of Terms.

Attribute	Definition	Data type
Mode of Transport Code	The code specifying the mode (e.g. transport by rail) for the transport. The code follows UN/CEFACT Recommendation 19 - Codes for Modes of Transport.	Text(3)
Mode of Transport Name	The name of the mode of transport.	Text(100)
Mode of Transport Description	The description of the mode of transport as detailed by UN/CEFACT Recommendation 19 - Codes for Modes of Transport.	Text(250)

Attribute	Definition	Data type
DCSA Transport Type	The DCSA-defined types of transport as used in events mapped to the Mode of Transport Code.	Text(50)

Table 61: Mode of Transport entity

Transport entity: used to convey goods or other objects from place to place, during logistics cargo movements.

Attribute	Definition	Data type
Transport ID	The unique identifier for the transport.	UUID
Transport Reference	The reference for the transport, e.g. when the mode of transport is a vessel, the Transport Reference will be the vessel IMO number.	Text(50)
Transport Name	The name of the transport instance, e.g. for a vessel, this is the vessel name.	Text(100)
Mode of Transport code	The code specifying the mode of transport.	Text(3)
Load Transport Call ID	Identifies the departure transport call of the shipment.	Text(100)
Discharge Transport Call ID	Identifies the arrival transport call of the shipment.	Text(100)
Vessel IMO Number	The vessel carrying out the transport identified by its IMO number.	Text(7)

Table 62: Transport entity

Vessel entity: describes a floating, sea going structure (mother vessels and feeder vessels) with either an internal or external mode of propulsion designed for the transport of cargo and/or passengers. Ocean vessels are uniquely identified by an IMO number consisting of 7 digits, or alternatively by their AIS signal with an MMSI number.

Attribute	Definition	Data type
Vessel IMO Number	The unique reference for a registered Vessel. The reference is the International Maritime Organisation (IMO) number, also sometimes known as the Lloyd's register code, which does not change during the lifetime of the vessel.	Text(7)
Vessel Name	The name of the Vessel given by the Vessel Operator and registered with IMO.	Text(35)
Vessel Flag	The flag of the nation whose laws the vessel is registered under. This is the ISO 3166 two-letter country code.	Text(2)
Vessel Call Sign Number	A unique alphanumeric identity that belongs to the vessel and is assigned by the International Telecommunication Union (ITU). It consists of a three-letter alphanumeric prefix that indicates nationality, followed by one to four characters to identify the individual vessel. For instance, vessels registered under Denmark are assigned the prefix ranges 5PA-5QZ, OUA-OZZ, and XPA-XPZ. The Call Sign changes whenever a vessel changes its flag.	Text(10)
Vessel Operator Carrier ID	Links to the carrier entity containing the SCAC and/or the SMGD code to specify the operating carrier.	UUID

Table 63: Vessel entity

Shipment Transport entity: connects Shipment and Transport, allowing the Vessel ID and Voyage ID to be published on a Transport Document. The sequence number is used to identify the next transport, which will uniquely identify the export voyage.

Attribute	Definition	Data type
Shipment ID	Identifies the shipment.	UUID
Transport ID	Links the associated transport to the shipment.	UUID
Sequence Number	Specifies the sequence for the transport.	Number
Commercial voyage ID	The identifier of the Commercial Voyage.	UUID
Is Under Shippers Responsibility	Indicator whether mode of transportation for pre-carriage (e.g. truck, barge, rail) is under shipper's responsibility	Boolean

Table 64: Shipment Transport entity

5.8.1 Transport reference data

The figure below shows the reference data entities in the Transport subject area.

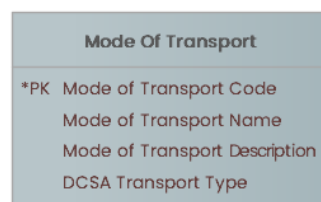


Figure 22: Transport reference data entities

Table 65 contains the overview of mode of transport codes and names as published by the UN/CEFACT.⁵ In the below overview, these are linked to the DCSA-defined transport types.

⁵ https://www.unece.org/fileadmin/DAM/cefact/recommendations/rec19/rec19_ecetr138.pdf

Mode of Transport Code	Mode of Transport Name	Mode of Transport Description	DCSA Transport Type
0	Transport mode not specified	Transport mode has not been specified.	
1	Maritime transport	Transport of goods and/or persons is by sea.	Vessel
2	Rail transport	Transport of goods and/or persons is by rail.	Rail
3	Road transport	Transport of goods and/or persons is by road.	Truck
4	Air transport	Transport of goods and/or persons is by air.	
5	Mail	Method to convey goods is by mail.	
6	Multimodal transport	Method to convey goods and/or persons is by multimodal transport.	
7	Fixed Transport installation	Transport of item is via a fixed transport installation.	
8	Inland water Transport	Transport of goods and/or persons is by inland water.	Barge
9	Transport mode not applicable	The mode of transport is not applicable.	

Table 65: Mode of Transport

5.9 Events

The subject area of Events contains eleven entities. Shipment Event, Equipment Event, Transport Event and Operations Events are the four main entities. The other seven entities are related to the associated reference data: Event Classifier, Shipment Event Type, Shipment Information Type, Empty Indicator, Equipment Event Type, Transport Event Type and SMDG Delay Reason. These entities are shown in Figure 23.

The model design relating to the Equipment, Transport and Shipment Events is based on the Event Structure work that has been published by DCSA. Please refer to the DCSA Event Naming Convention and Event Structure Definitions to obtain more information about the definitions, syntax, parameters, and values for the events.

An event occurs in relation to the central entities of Shipment (for example, Shipment Release Message Issued), Transport (for example, Actual Vessel Departure from Port Terminal), and Equipment (for example, Actual Gate in of Laden Equipment at Port Terminal). These events have been documented by the DCSA Event Naming Convention and Event Structure Definitions supported with DCSA reference data. The Shipment, Transport, Equipment and Operations events have been modelled separately to keep the logical association of what the specific event relates to. For example:

- All types of events relating to shipment are captured in the Shipment Event Type;
- All types of events relating to transport are captured in the Transport Event Type;
- All types of events relating to equipment are captured in the Equipment Event Type.
- All types of events relating to vessel operations are captured in the Operations Event Type.

Each of the above event types can be further related to the estimated, planned, actual or requested state captured in the Event Classifier entity, and each Event also has specific entities that only relate to those types of events. For example, Equipment Event is related to the Empty Indicator.

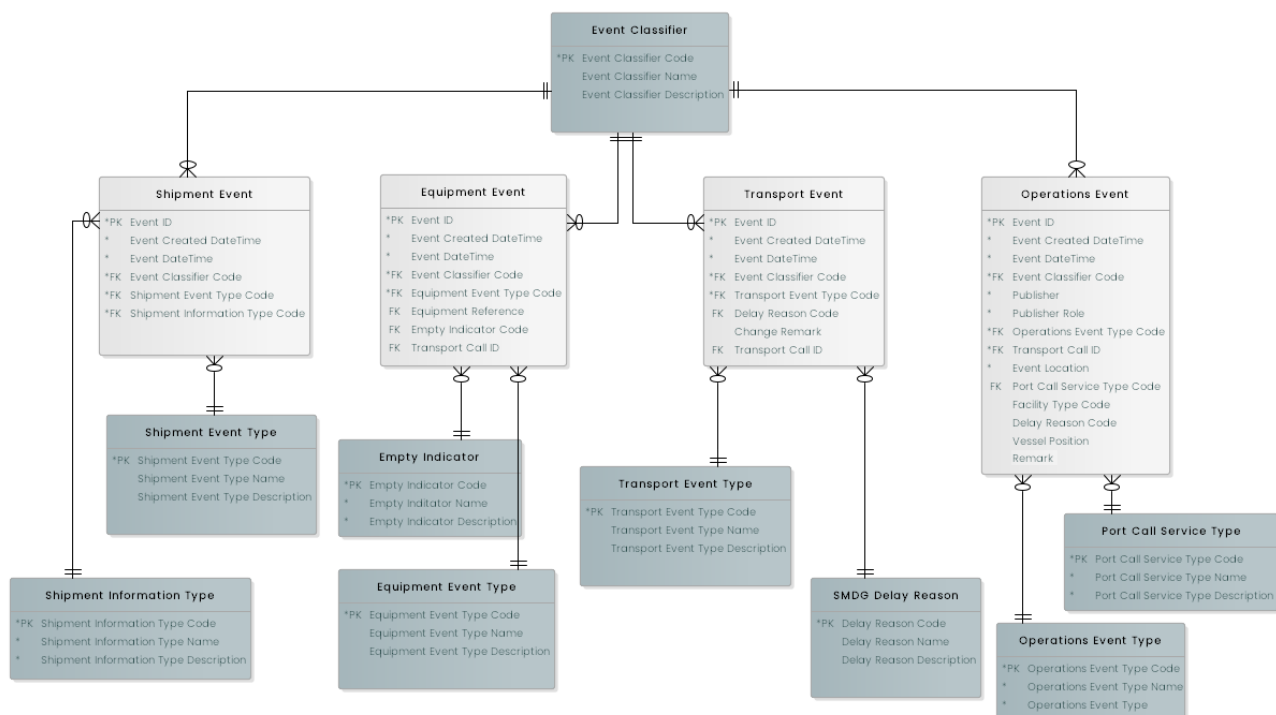


Figure 23: Events subject area

The entities within the Events subject area are defined and detailed in the following tables.

Event Classifier entity: denotes whether the event is planned, estimated or actual, requested

Attribute	Definition	Data type
Event Classifier Code	Code for the event classifier (PLN, ACT or EST, REQ).	Text (3)
Event Classifier Name	Name of the classifier.	Text(30)
Event Classifier Description	The description of the event classifier.	Text(250)

Table 66: Event Classifier entity

Empty Indicator entity: addresses the status of the equipment, specifically whether it is empty or laden. These are the two values that are currently tracked.

Attribute	Definition	Data type
Empty Indicator Code	Code to denote whether the equipment is empty or laden. The values are EMPTY or LADEN.	Text (5)

Table 67: Empty Indicator entity

Shipment Information Type entity: identifies the specific information type that a shipment event relates to.

Attribute	Definition	Data type
Shipment Information Type Code	The code to identify the type of information that is related to the shipment.	Text (3)
Shipment Information Type Name	The description of the event that is related to the type of information related to the shipment, e.g. Booking, Arrival Notice or Transportation document.	Text(100)

Table 68: Shipment Information Type entity

Shipment Event Type entity: describes the types of events that can relate to a shipment, e.g. a booking confirmed.

Attribute	Definition	Data type
Shipment Event Type Code	The code to identify the event type that is related to the shipment.	Text (4)
Shipment Event Type Name	The description of the event type that is related to the shipment, e.g. a booking <u>confirmed</u> .	Text(30)
Shipment Event Type Description	The description of each event type.	Text(250)

Table 69: Shipment Event entity

Equipment Event Type entity: describes the types of events that can relate to an equipment, e.g. an equipment loaded onto a vessel.

Attribute	Definition	Data type
Equipment Event Type Code	The code to identify the event type that is related to the equipment.	Text (4)
Equipment Event Type Name	The name of the event type that is related to the equipment, e.g. loaded.	Text(30)
Equipment Event Type Description	The description of the event type that is related to the equipment.	Text(250)

Table 70: Equipment Event Type entity

Transport Event Type entity: describes the types of events that can relate to a transport, e.g. a vessel departed.

Attribute	Definition	Data type
Transport Event Type Code	The code to identify the type of event that is related to the transport.	Text (4)
Transport Event Type Name	The name of the event type for the Transport Event Code, e.g. a vessel departed.	Text(30)

Attribute	Definition	Data type
Transport Event Type Description	The description of the event type.	Text(250)

Table 71: Transport Event Type entity

Operations Event Type entity: describes the types of events that can relate to an operation. e.g. Arrival of the means of transport:

Attribute	Definition	Data type
Operations Event Type Code	The code to identify the event type that is related to the operation.	Text (4)
Operations Event Type Name	The name of the event type that is related to the operation.	Text(30)
Operations Event Type Description	The description of the event type that is related to the operation.	Text(250)

Table 72: Operations Event Type entity

Shipment Event entity: describes an event that happens to a shipment.

Attribute	Definition	Data type
Shipment Event ID	A unique identifier for the shipment event captured.	UUID
Event Created DateTime	The date and time when the event entry was created.	DateTime
Event DateTime	The date and time when the event occurred or will occur.	DateTime
Event Classifier Code	Code for the event classifier (PLN, ACT or EST).	Text(3)
Shipment Event Type Code	The code to identify the event that is related to the shipment.	Text(4)

Attribute	Definition	Data type
Shipment Information Type Code	The code to identify the type of information that is related to the shipment.	Text(3)
Document ID	Reference to the document concerned by the event	Text(50)
Reason	Text field as part of the request message, describing the reasons for requesting the update, including their 'category' (e.g., mandatory, missing information, clauses, etc.)	Text(100)

Table 73: Shipment Event entity

Equipment Event entity: describes an event that happens to an equipment, e.g. a container loaded onto vessel at port terminal.

Attribute	Definition	Data type
Equipment Event ID	Unique identifier for the equipment event captured.	UUID
Event Created DateTime	The date and time when the event entry was created.	DateTime
Event DateTime	The date and time when the event occurred or will occur.	DateTime
Event Classifier Code	The code for the event classifier, e.g., Actual.	Text(3)
Equipment Event Type Code	The code to identify an equipment-related event type.	Text(4)
UN Location Code	The UN Location where the event occurs.	Text(5)
Facility ID	Links to the facility object containing the BIC and/or the SMGD code to specify the involved facility.	UUID
Other Facility	An alternative way to capture the facility, when no standardised DCSA facility code can be found.	Text(50)
Customer Address	An address such as business address or home address.	Text(50)

Attribute	Definition	Data type
Equipment Reference	Reference that uniquely identifies the equipment involved in the event.	Text(15)
Empty Indicator Code	Code to denote whether the equipment is empty or laden.	Text(5)
Shipment ID	Unique identifier for the shipment.	UUID
Transport ID	Specifies the transport involved in the event, where applicable. In the case of a load event, this specifies which transport the equipment was loaded onto.	UUID

Table 74: Equipment Event entity

Transport Event entity: describes an event that happens to a transport instance, e.g., a vessel departed.

Attribute	Definition	Data type
Transport Event ID	Unique identifier for the transport event captured.	UUID
Event Created DateTime	The date and time when the event entry was created.	DateTime
Event DateTime	The date and time when the event occurred or will occur.	DateTime
Event Classifier Code	Specifies the code for the classifier of the event, e.g. Actual.	Text(3)
Transport Event Type Code	The code to identify the type of event that is related to transport.	Text(4)
Delay Reason Code	Code for the delay reason as provided by SMDG.	Text(3)
Change Remark	Free text description of the reason for the change in schedule.	Text(250)
Transport Call ID	Specifies the transport call involved in the event.	Text(100)

Table 75: Transport Event entity

Operations Event entity: describes an event that happens to a vessel during a port call

Attribute	Definition	Data type
Event ID	A unique identifier for the shipment event captured.	UUID
Event Created DateTime	The date and time when the event entry was created.	DateTime
Event DateTime	The date and time when the event occurred or will occur.	DateTime
Event Classifier Code	Code for the event classifier (PLN, REQ, ACT or EST).	Text(3)
Operations Event Type Code	The code to identify the event that is related to the operations event.	Text(4)
Transport Call ID	Specifies the transport call during which the event takes place.	Text(100)
Publisher	The publisher (source) of the event (pointing to a party entity)	Text(100)
Publisher Role	The party function code of the publisher	Text(3)
Port Call Service Type Code	The code to identify the type of service provided during the port call.	Text(4)
Event Locationre	The location where the event takes place	Text(100)
Facility Type Code	The type of facility where the event takes place	Text(4)
Delay reason code	delay reasons as provided by SMDG.	Text(3)

Attribute	Definition	Data type
Vessel position	Relation to the location entity containing the location of the vessel when the message is sent expressed in latitude and longitude as per ISO 6709	Text(100)
Remark	Free text to provide additional information on the context.	Text(500)

Table 76: Operations Event entity

SMDG Delay Reason: delay reasons as provided by SMDG.

Attribute	Definition	Data type
Delay Reason Code	Code for the delay reason as provided by SMDG.	Text(3)
Delay Reason Name	Name of the delay reason as provided by SMDG.	Text(100)
Delay Reason Description	The description of the delay reason as provided by SMDG.	Text(250)

Table 77: SMDG Delay Reason entity

5.9.1 Events reference data

The figure below shows the reference data entities in the Events subject area.

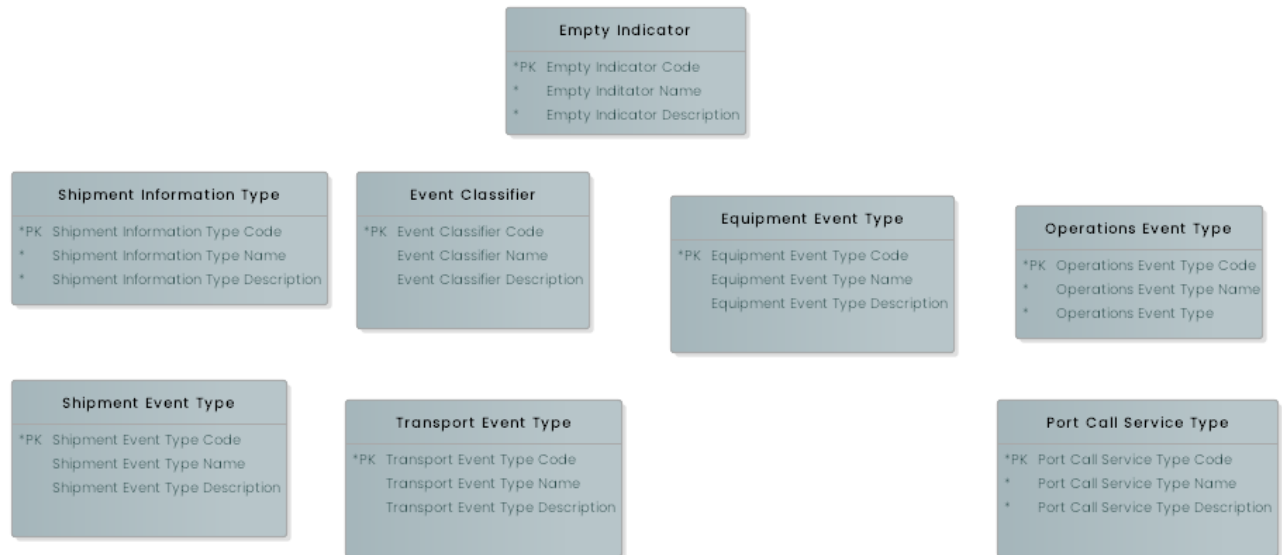


Figure 24: Events reference data entities

Table 78 contains the code and name for the event classifiers as defined by DCSA.

Event Classifier Code	Event Classifier Name
EST	Estimated
ACT	Actual
PLN	Planned
REQ	Requested

Table 78: Event Classifier

Table 79 contains the different Delay Reason codes and the description of them as defined by SMDG⁶.

Delay Reason Code	Name
1 – Ship Related	
ACC	Accident involving personnel
DEV	Deviation to avoid bad weather
STW	Stowage adjustment
2 – Shore related	
AIP	Accident involving personnel
ANA	Authorities not available
BUN	Bunkering delays
CGS	Arr OFF Proforma - Berth congestion
PRD	Low Productivity
QUA	Quarantine Inspection
YRD	Yard congestion
OTS	Others – Shore related
3 – Cargo related	
CAE	Cargo - Awaiting Exports

⁶ The full list is available at <http://www.smdg.org/smdg-code-lists/>

Delay Reason Code	Name
CIN	Cargo inspection by Authorities
DIN	Deficient or inadequate information

Table 79: Delay Reason Codes

Table 80 contains the Empty Indicator code and name defined by DCSA.

Empty Indicator Code	Empty Indicator Name
EMPTY	Empty
LADEN	Laden

Table 80: Empty Indicator

Table 81 contains the Equipment Event Type code and name defined by DCSA.

Equipment Event Type Code	Equipment Event Type Name
LOAD	Loaded
DISC	Discharged
GTIN	Gated in
GTOT	Gated out
STUF	Stuffed
STRP	Stripped
PICK	Pick-up
DROP	Drop-off
HOLD	On Hold

Equipment Event Type Code	Equipment Event Type Name
INSP	Inspected
RMVD	Removed
RSEA	Resealed

Table 81: Equipment Event Type codes

Table 82 contains the Transport Event Type code and name defined by DCSA.

Transport Event Type Code	Transport Event Type Name
ARRI	Arrived
DEPA	Departed

Table 82: Transport Event Type

The Shipment Event Type names, codes and definitions are shown under Transport document version reference data in table 24 as defined by DCSA.

Table 83 contains the Operations Event Type code and name defined by DCSA.

Operations Event Type Code	Operations Event Type Name
ARRI	Arrived
DEPA	Departed
STRT	Started
CMPL	Completed

Table 83: Operations Event Type

Table 84 contains the Publisher role code and name defined by DCSA for operation events

Publisher Code	Publisher information type Name
CA	Carrier operations
AG	Carrier local agent
VSL	Vessel
ATH	Port Authorities
PLT	Pilot
TR	Terminal

Table 84: Publisher Code

Table 85 contains the Shipment Information Type code and name defined by DCSA.

Shipment Information Type Code	Shipment Information Type Name
BKG	Booking
SHI	Shipping Instruction
VGM	Verified Gross Mass
SRM	Shipment Release Message
TRD	Transport Document
ARN	Arrival Notice

Table 85: Shipment Information Type

Table 86 contains the Port Call Service Type codes defined by DCSA

Port Call Service Type Code	Port Call Service Type Name	Port Call Service Type Description
PILO	Pilotage	The activity of conducting a vessel within restricted waters. Also, the fee for the services of a pilot.
MOOR	Mooring	The activity of attaching a vessel to a berth using mooring lines. The service is usually provided by linesmen.
CRGO	Cargo Operations	The activity of discharging, shifting, loading and lashing containers (both full and empty) as well as other cargo from/to a vessel during port stay.
TOWG	Towage	The activity of one vessel (boat/tug) assisting another vessel with manoeuvres within the port area.
BUNK	Bunkering	The transfer of liquid or gaseous fuel from land-based or floating facilities into a ship's permanent tanks
WSDP	Waste Disposal	The activity of removing waste from a vessel to shore during port stay

Table 86: Port Call Service Type codes

5.10 Vessel Sharing Agreement (VSA)

Vessel sharing agreement is used as an umbrella term to cover the different agreement types that carriers can have in place. The subject area of a VSA contains four entities: Vessel Sharing Agreement, Vessel Sharing Agreement Partner, Vessel Sharing Agreement Type and Tradelane. These entities are shown in Figure 25.

The Vessel Sharing Agreement subject area and its entities will allow for the identification of the partners in a vessel sharing agreement and which Tradelane the agreement relates to. The Vessel Sharing Agreement Type entity defines the different types of agreements, and the Vessel Sharing Agreement is used to outline the specific agreement. The Vessel Sharing Agreement Partner entity identifies the partners in the agreement. The Tradelane entity indicates which

directional trade the agreement relates to and is linked to the Service entity (described in the Service subject area) to specify which services are covered in the Tradelane.

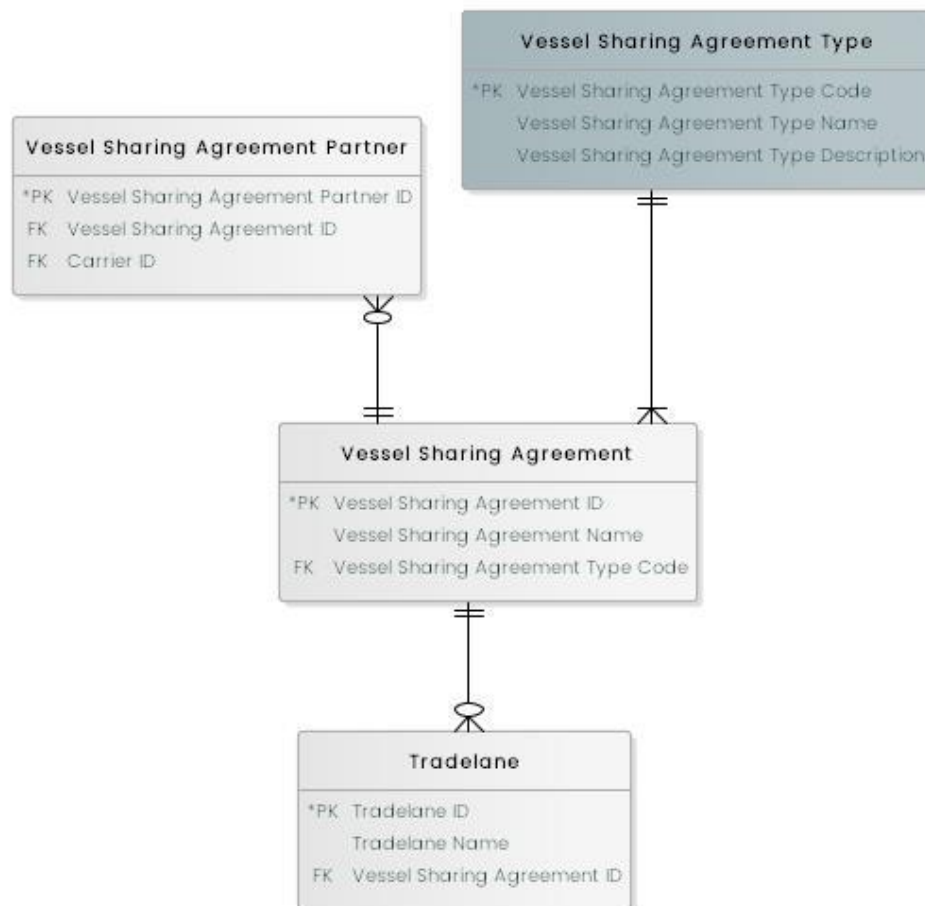


Figure 25: VSA subject area

The entities within the VSA subject area are defined and detailed in the following tables.

Vessel Sharing Agreement entity: describes an agreement between two or more shipping lines to share vessel capacity on specific trades to increase asset utilisation.

Attribute	Definition	Data type
Vessel Sharing Agreement ID	The identifier for the agreement.	UUID
Vessel Sharing Agreement Name	The name of the vessel sharing agreement.	Text(50)

Attribute	Definition	Data type
Vessel Sharing Agreement Type Code	The code to identify the specific type of vessel sharing agreement.	Text(3)

Table 87: Vessel Sharing Agreement entity

Vessel Sharing Agreement Type entity: identifies a specific type of vessel sharing agreement.

Attribute	Definition	Data type
Vessel Sharing Agreement Type Code	The code to identify the specific type of vessel sharing agreement.	Text(3)
Vessel Sharing Agreement Type Name	The name of the specific type of vessel sharing agreement.	Text(50)
Vessel Sharing Agreement Type Description	A description for a specific type of VSA, as detailed by DCSA.	Text(250)

Table 88: Vessel Sharing Agreement Type entity

Vessel Sharing Agreement Partner entity: identifies a participant in a vessel sharing agreement.

Attribute	Definition	Data type
Vessel Sharing Agreement Partner ID	The unique identifier for the VSA and its partners. The uniqueness of each row is based on the Carrier ID and Vessel Sharing Agreement ID.	UUID
Carrier ID	Identifies the carrier involved in the VSA.	UUID
Vessel Sharing Agreement ID	Identifies the VSA.	UUID

Table 89: Vessel Sharing Agreement Partner entity

Tradelane entity: describes an East/West or North/South directional trade indicator identifying the geographic area being covered by a specific carrier or service. A Tradelane can have many Services (E.g. Transpacific East-bound).

Attribute	Definition	Data type
Tradelane ID	The unique identifier for the Tradelane.	Text(8)
Tradelane Name	The name of the Tradelane.	Text(150)
Vessel Sharing Agreement ID	The identifier for the vessel sharing agreement.	UUID

Table 90: Tradelane entity

5.10.1 VSA reference data

The figure below shows the reference data entity in the VSA subject area. This entity indicates which type of agreement the partners are involved in.



Figure 26: VSA reference data entities

The table below contains the Vessel Sharing Agreement Type Code, Name and Descriptions.

Vessel Sharing Agreement Type Code	Vessel Sharing Agreement Type Name	Vessel Sharing Agreement Type Description
VSA	Vessel Sharing Agreement	An agreement between two or more carriers agreeing to share vessel capacity in specific trades using a specified number of vessels.
SCA	Slot Charter Agreement	An agreement between two carriers to sell or exchange a specific number of TEU slots in one or more trades.

Table 91: Vessel Sharing Agreement Type

5.11 Service

Services are the central constituents of each carrier's network. They are typically operated on a weekly schedule. The Service Proforma entity has been modelled on a reduced scope and only allows one version (the latest) to be stored at any point in time, with a limited number of details captured.

The subject area of Service contains two entities: Service and Service Proforma. These entities are shown in Figure 27.

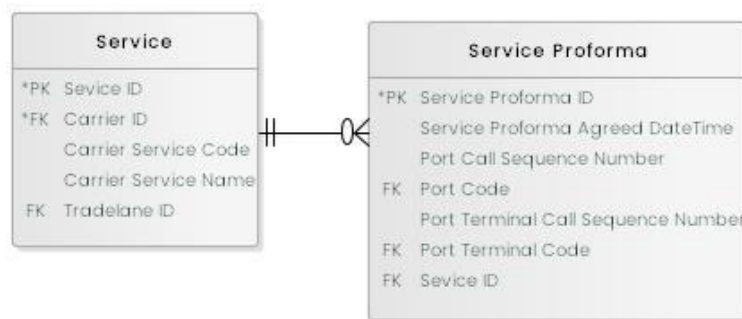


Figure 27: Service subject area

The entities within the Service subject area are defined and detailed in the following tables.

Service entity: contains the attributes identifying a given service.

Attribute	Definition	Data type
Service ID	The unique identifier of the Service.	UUID
Carrier ID	Unique internal identifier for the carrier.	UUID
Carrier Service Code	The code for the service. This is unique for each carrier.	Text(5)
Carrier Service Name	The name of the service as provided by the carrier operating the vessel.	Text(50)
Tradelane ID	The Tradelane that the service is based upon.	Text(8)

Table 92: Service entity

Service Proforma entity: identifies the Proforma that the VSA Partners have agreed to. The actual port rotation that is carried out by the vessel.

Attribute	Definition	Data type
Service Proforma ID	The unique identifier for a Service Proforma.	UUID

Attribute	Definition	Data type
Service Proforma Agreed DateTime	The date when all vessel sharing agreement partners have agreed to the new Proforma.	DateTime
Port Call Sequence Number	The port number in the sequence of ports that are or will be called on a voyage, as defined in the proforma prior to the voyage. This is useful for identifying a unique call, when calls are made to the same port more than once.	Number
Port Code	Identifies the port being called as a UN Location code.	Text(5)
Port Terminal Call Sequence Number	The Port Terminal number in the sequence of port terminals that are or will be called on a specific port call (as identified by the Port Call Sequence Number). This is useful to identify a unique port terminal call when calls are made to the same terminal more than once.	Number
Port Terminal Code	Identifies the port terminal being called as an SMDG port terminal code.	Text(11)
Service ID	The identifier of the Service.	UUID

Table 93: Service Proforma entity

5.12 Transport Journey

The subject area of Transport Journey contains five entities: Transport Call, Voyage, Transport Call Voyage, Commercial Voyage and Commercial Voyage Transport Call. These entities are shown in Figure 28.

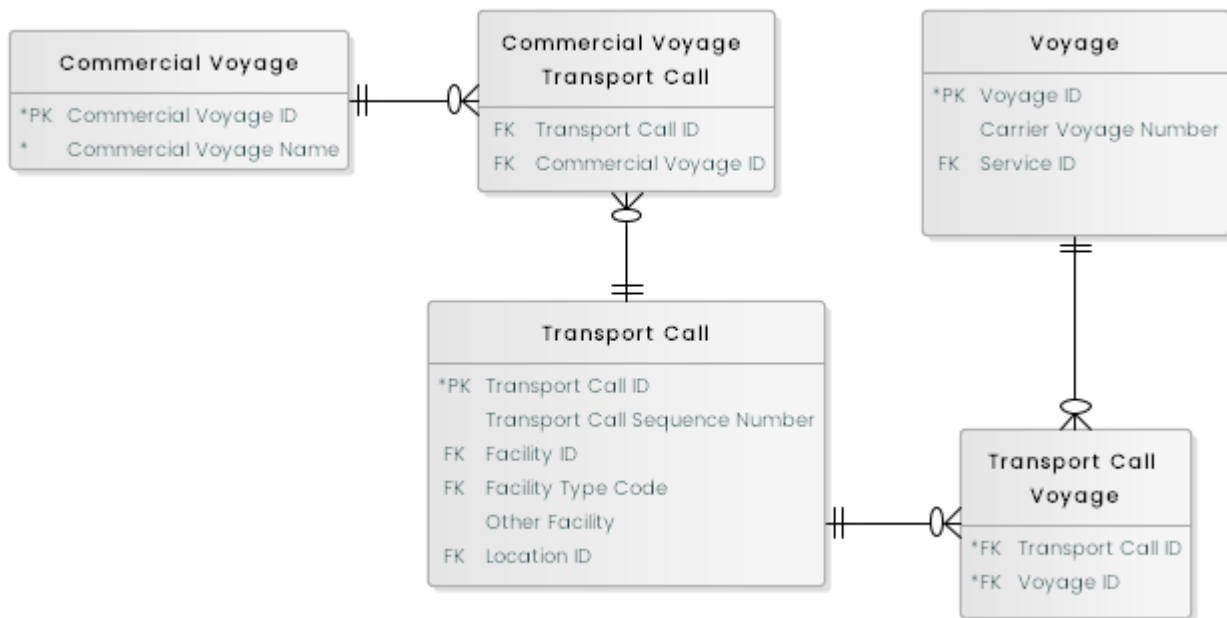


Figure 28: Transport Journey subject area

The entities within the Transport Journey subject area are defined and detailed in the following tables.

Transport Call entity: provides a list of all the locations involved in a transport journey.

Attribute	Definition	Data type
Transport Call ID	The unique identifier for a Transport Call.	Text(100)
Transport Call Sequence Number	Transport operator's key that uniquely identifies each individual call. This key is essential to distinguish between two separate calls at the same location within one voyage.	Number
Facility ID	Links to the facility object containing the BIC and/or the SMGD code to specify the involved facility.	UUID

Attribute	Definition	Data type
Facility Type Code	Code that identifies the type of facility.	Text(4)
Other Facility	An alternative way to capture the facility details, when no standardised DCSA facility code can be found.	Text(50)
Location ID	The associated location ID defined in the Location entity.	Text(100)

Table 94: Transport Call entity

Voyage entity: describes the part of a service roundtrip that typically changes at the geographical “end-point” of a vessel rotation. As such, that specific port call can have two voyage numbers: one for the discharge of final shipments on the “current” voyage, and one that identifies the commencement of loading shipments (for allocation purposes). One rotation will typically have 2 voyages, one on each haul.

Attribute	Definition	Data type
Voyage ID	The identifier of the Voyage.	UUID
Carrier Voyage Number	The vessel operator-specific identifier of the Voyage.	Text(50)
Service ID	The identifier of the Service.	UUID

Table 95: Voyage entity

Transport Call Voyage entity: provides a list of all locations involved in a voyage.

Attribute	Definition	Data type
Voyage ID	The identifier of the Voyage defined in the Voyage entity.	UUID
Transport Call ID	Identifies the transport call that relates to the voyage.	Text(100)

Table 96: Transport Call Voyage entity

Commercial Voyage entity: defines the service and the voyage from a commercial perspective and is required to accommodate having the correct voyage number on the booking confirmation and transport document.

Attribute	Definition	Data type
Commercial Voyage ID	The identifier of the Commercial Voyage	UUID
Commercial Voyage Name	Identifies the commercial voyage as shown on the booking and the transport document	Text

Table 97: Commercial Voyage entity

Commercial Voyage Transport Call entity: expresses that each commercial voyage contains multiple transport calls.

Attribute	Definition	Data type
Transport call ID	Identifies the transport call that relates to the voyage.	Text(100)
Commercial Voyage ID	The identifier of the Commercial Voyage	UUID

Table 98: Commercial Voyage Transport Call entity

6 Appendix

Bureau International des Containers et du Transport Intermodal (BIC) – Container Identification Number (2019):

<https://www.bic-code.org/bic-facility-codes/>
<https://www.bic-code.org/identification-number/>

International Organisation for Standardisation (ISO) 6346:1995 – Freight containers -- Coding, identification and marking:

<https://www.iso.org/standard/20453.html>

International Maritime Organisation (IMO) – Identification number schemes (2019):

<http://www.imo.org/en/OurWork/MSAS/Pages/IMO-identification-number-scheme.aspx>

International Telecommunication Union (ITU) – Table of International Call Sign Series (Appendix 42 to the RR):

https://www.itu.int/en/ITU-R/terrestrial/fmd/Pages/call_sign_series.aspx

ISO 6346:1995 – Freight containers – Coding, identification and marking – Amendment 3:2012:

<https://www.iso.org/standard/59778.html>

National Motor Freight Traffic Association (NMFTA) - Standard Carrier Alpha Codes (SCAC) 2019:

<http://www.nmfta.org/pages/scac>

Republic of the Marshall Islands - Vessel Registration and Mortgage Recording Procedures (MI-100, 2018):

<https://www.register-iri.com/wp-content/uploads/MI-100.pdf>

Ship-planning Message Development Group (SMDG) – Terminal Code List, Liner Code List, Delay Reason Codes, and SMDG Recommendations:

<http://www.smdg.org/smdg-master-codes-lists/>
<http://www.smdg.org/documents/smdg-recommendations/>

SMDG Liner Code:

<https://smdg.org/documents/smdg-code-lists/smdg-liner-codes/>

SMDG Terminal Code:

<https://smdg.org/documents/smdg-code-lists/smdg-terminal-code-list/> (official website)
<https://github.com/smdg-org/Terminal-Code-List/blob/master/SMDG%20Terminal%20Code%20List.csv>

United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT)

Recommendation no. 19 (2000, first version):

https://www.unece.org/fileadmin/DAM/cefact/recommendations/rec19/rec19_ecetrd138.pdf

UN/CEFACT – UNLOCODE (2019):

<https://www.unece.org/cefact/locode/service/location.html>

UN/Trade Data Element Directory (TDED) (2005):

<https://www.unece.org/fileadmin/DAM/trade/untdid/UNTDED2005.pdf>

UN/CEFACT Core Component Library (CCL) (2019):

https://www.unece.org/cefact/codesfortrade/unccl/ccl_index.html

UN/Electronic Data Interchange for Administration, Commerce and Transport (EDIFACT):

<https://www.unece.org/cefact/edifact/welcome.html>

and (accessed 2019)

<https://www.unece.org/tradewelcome/un-centre-for-trade-facilitation-and-e-business-uncfact/outputs/standards/unedifact/tradeedifactrules/part-4-edifact-rules-for-electronic-data-interchange-for-administration-commerce-and-transport/part-4-unedifact-rules-chapter-22-syntax-rules.html>

UN/CEFACT BUY/SHIP/PAY Reference Data Model (BSP RDM) (version 1, 2019)

https://www.unece.org/fileadmin/DAM/cefact/brs/BuyShipPay_BRS_v1.0.pdf

UN/CEFACT Multi-Modal Transport Reference Data Model (MMT RDM) (v1.0, 2018)

https://www.unece.org/cefact/brs/brs_index.html