INTERNATIONAL STANDARD

ISO 24533-2

First edition
2022-05

Intelligent transport systems — Electronic information exchange to facilitate the movement of freight and its intermodal transfer —

Part 2: Common reporting system

Reference number
ISO 24533-2:2022(E)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 204, *Intelligent transport systems.*

This first edition cancels and replaces the first edition (ISO/TS 24533:2012), which has been technically revised.

The main changes are as follows:

— removal of information on the interoperability of freight data exchange standards (intended to be the subject of ISO/AWI 24533-1:—[1]);

— inclusion of information on a common reporting system allowing industry and government to communicate on freight data requirements and needs in an interoperable manner.

A list of all parts in the ISO 24533 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

1) Under development. Stage at the time of publication: ISO/AWI 24533-1:2022.

Introduction

The seamless exchange of accurate, complete and timely data communication at transportation hand-offs has always been important for efficiency and accountability. Hand-offs with a universal method of exchange that allows data interoperability between all parties in the supply chain is critically important for maximizing efficiency and accountability. The efficient exchange of data also provides for security of transport information and for transfer of information related to security against terrorism as well as theft and traditional contraband. It is imperative for standards development organizations to address and facilitate the handling of these needs.

Consequently, Technical Committee ISO/TC 204, *Intelligent transport systems*, seeks to fill a role focusing on data exchange needs for the international supply chain, relating specifically to haulier transportation. This includes data needs for the interface with all modes of transportation, since freight movement normally includes interfaces with other modes of transportation. Those needs are essential for transport information and control systems. Additionally, the need for a standard method of interoperability between data exchange standards is critical for seamless movement within and between modes of transportation, the businesses those modes represent and the authorities requiring specific regulatory information. Some international shipments are carried out entirely by road conveyances, but most begin and end with haulier service and travel by other modes during the shipment. This document focuses on haulier transport interfaces through the supply chain, or those data items that deal specifically with the key transport information critical for getting the goods to the marketplace without delays related to data sharing.

The data structure and formats of interfacing modes need to accommodate each other to ensure efficiency and security from end to end. Truck, rail, air and ocean transport are vital components of intermodal, international shipping. It is recognized that a robust intermodal standard needs to include interface connections to these modes; this has been proven through demonstration tests. Research and tests carried out in the US motivated the use of a truck-air-truck supply chain, for example.

Preliminary investigations suggest that there is no single organization responsible for transport data standards through the intermodal supply chain. To achieve a coherent set of transport standards requires coordination among the various international organizations working on component parts of these international standards.

The vision expressed in this document is to allow electronic data sharing through many-to-many relationships between supply chain partners which can help ensure sustaining legacy standards as needed. This includes B2B (business to business) relationships as well as B2G (business to government) relationships, G2G (government to government) relationships, and G2B (government to business) relationships. Government relationships are also known as administrative relationships. One-to-one relationships require only two partners to have standard data relationships with each other and can require other partners to adopt the standards of the original two. Alternatively, they can require third-party translators, which increases costs in the transport of goods. Relationships that allow all parties in the supply chain to share data equally, for business as well as regulatory purposes, is the focus of this document.

This document builds on ISO 24533-1:—[2)], which focuses on road transport information exchange methodology and interoperability. ISO 24533-2 (this document) is designed to help implement the transport features of ISO/IEC 19845, but it lacks the details of a common reporting system like the single window (SW, a trade facilitation concept including standardized information elements, operating nation by nation) or the common reporting system (CRS).

The common reporting system (CRS) was initially developed as one of the European Union's freight demonstration projects under E-Freight. As such it only had applicability to the EU Member States. Under this document it provides a single, 'standardized' data model for reporting to authorities in compliance with international regulations across all transport modes. It was designed from first principles and therefore does not inherit the inefficiencies of transferring paper systems or mode-specific practices to an electronic system and has no modal or sectoral biases.

2) Under development. Stage at the time of publication: ISO/AWI 24533-1:2022.

Intelligent transport systems — Electronic information exchange to facilitate the movement of freight and its intermodal transfer —

Part 2: Common reporting system

1 Scope

This document specifies the data communication concepts applicable to the data requirements of the transport community. It also includes the regulatory authorities related to freight and its intermodal transfer to participate in common reporting.

Data communication concepts include information entities (data elements), aggregated/associated information entities (groups of data elements) and messages that comprise information exchanges at transport interfaces along the chain of participants responsible for the delivery of goods from the point of origin through to the final recipient. This includes all transport entities carrying the cargo as well as the documents and information required to facilitate the cargo movement.

This document focuses on a single "thread" of the overall end-to-end supply chain. It includes motor transport data needs within the international supply chain to satisfy the requirements of both businesses and governmental organizations on business to business (B2B), business to government (B2G), government to business (G2B) and government to government (G2G) relationships. This document is applicable to shipments that originate in one country and terminate in another. It can also be applied to shipments that originate and terminate in a single country. This document is applicable to freight movements that interface with other modes and incorporates interface requirements set for those other modes.

This document is also designed to incorporate the elements of the Govcbr message (a message developed by the World Customs organization, WCO, that can facilitate data exchange but can potentially not apply to all parties throughout the supply chain) and have them apply across the whole supply-chain, on a global basis.

This document does not constrain the requirements of customs, regulatory and safety bodies at border crossings but does include the data elements likely to be required by customs authorities and other governmental bodies within a single window environment or within a port community system environment.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
access point
business document exchange through intermediary gateway services

3.2
administration to administration
A2A
G2G
information exchange pattern in which an administration (i.e. governance body) wishes to communicate with another administration

Note 1 to entry: This is also known as “authority to authority” (A2A) or "government to government" (G2G).

3.3
administration to business
A2B
G2B
information exchange pattern in which an administration (i.e. governance body) wishes to communicate with a business (i.e. economic operator)

Note 1 to entry: This is also known as “authority to business” (A2B) or G2B "government to business" (G2B).

3.4
agent
name and address of a person or organization authorized to act for or on behalf of another party

3.5
air carrier
carrier using aircraft to transport goods

3.6
authority
statutory body existing within a jurisdiction and a specific area of responsibility that administers legislation to regulate trade and/or monitors compliance with existing legislation

3.7
business to business
B2B
information exchange pattern in which a business (i.e. economic operator) wishes to communicate with another business

3.8
business to administration
B2A
B2G
information exchange pattern in which a business (i.e. economic operator) wishes to communicate with an administration (i.e. governance body)

Note 1 to entry: This is also known as “business to authority” (B2A) or "business to government" (B2G).

3.9
buyer
customer
ultimate consignee
individual or entity purchasing goods or services

3.10
carrier
person or organization that owns and/or operates a transport means engaged in the transportation of passengers or property by land, rail, air or water

3.11
childconsignment
one of the consignments within a consolidated consignment

3.12
common reporting system
CRS
single, standardized document which contains data fields for all the information which is required for reporting to authorities or non-government organizations across all modes and in all Member States

3.13
common intermodal transport framework
CITF
decision support framework for intermodal transport policy

Note 1 to entry: See Reference [63].

3.14
conformance
adherence of a candidate's implementation to a standard

3.15
consignee
receiver
person or company to whom goods are shipped

3.16
consignment
separately identifiable number of goods items (available to be) transported from one consignor to one consignee via one or more modes of transport and specified in one single transport document

3.17
consignor
shipper
party which, by contract with a carrier, consigns or sends goods with the carrier, or has them conveyed by the carrier

3.18
consolidated shipment
the result of combining less than full load shipments from various shippers into one full transport unit (container)

3.19
consolidation
service of consolidating multiple consignments into one shipment

[SOURCE: United Nations, Special Service Description Code, definition 7161 Code ADC][64]

3.20
container
receptacle for the transport of goods, especially one readily transferable from one form of transport to another

Note 1 to entry: This can also include crates and pallets.

3.21
customs
government organization dealing with the levying of duties and taxes on imported goods from foreign countries and the control over the export and import of goods

Note 1 to entry: See Reference [59].

3.22
delivery terms
class for describing the terms and conditions applying to the delivery of goods

3.23
freight forwarder
party arranging the carriage of goods, including connected services and/or associated formalities, on behalf of a consignor or consignee

3.24
governance
system by which organizations are directed and controlled

3.25
Govcbr
message, developed by WCO, incorporating information on goods, cargo, transport equipment, conveyance and crew that is legally required for cross-border transactions to be sent to cross-border regulatory agencies, allowing these agencies to respond to a declaration

Note 1 to entry: It can also be used for sending this information from one cross-border regulatory agency to another.

3.26
intermediary
commercial party who provides services to customers, suppliers or authorities within the supply chain

Note 1 to entry: This includes, but is not limited to, freight transport.

3.27
intermodal transport
movement of goods in one and the same loading unit (e.g. intermodal container) or vehicle which uses successively several modes of transport without handling of the goods themselves when changing modes

3.28
intermodal freight
movement of cargo containers interchangeably between transport modes (i.e., motor, rail, water and air carriers) and where equipment is compatible within multiple systems

3.29
journey
physical movement of goods from the supplier to the consignee

3.30
manifest
document which specifies all cargo on board the transportation unit

Note 1 to entry: The manifest contains details of contents, shipper, consignee and other details that can potentially be required by customs or consular authorities. Copies of manifests are provided for the country of export and country of import customs authorities.

3.31
haulier
carrier using for-hire or private motorized transport on roads to transport goods

3.32
multimodal transport
carriage of goods by at least two different modes of transport

Note 1 to entry: In contrast, intermodal transport implies the change from one mode to another using the same form of loading unit. Multimodal transport implies that either there is more than one modal shift, or that loads may be broken into partial loads as part of a modal change.

[SOURCE: ISO 17261:2012, 3.33]

3.33
OASIS
not-for-profit consortium that drives the development, convergence and adoption of open standards for the global information society

3.34
seller
name and address of party selling merchandise to a buyer

3.35
shipment
identifiable collection of one or more goods items, available to be transported together from the original shipper to the ultimate consignee

Note 1 to entry: More than one shipment can be combined into one consignment.

3.36
shipment stage
stage containing information about the transport leg(s) (locations, timings, etc.) and associated non-goods related information, such as crew and passenger lists

Note 1 to entry: There are mainly three shipment stages; during main carriage, during pre-carriage, and during on-carriage.

3.37
single window
facility that allows parties involved in trade and transport to lodge standardized information and documents with a single-entry point to fulfil all import, export and transit related-related regulatory requirements

3.38
original consignor
party that provides goods

Note 1 to entry: This also can be the same entity as the consignor/shipper. The supply chain physically begins with the supplier.

3.39
tracing
function of retrieving status information concerning goods, goods items, consignments or equipment

3.40
transport means
vehicle used for the transport of goods

EXAMPLE A vessel, train or truck.

3.41
transport equipment seal
mechanical or electronic device applied to a container, unit load device, trailer, etc. to guarantee authenticity or security

3.42
Universal Business Language
UBL
OASIS committee with the aim of defining a common XML library of business documents and information elements for transport and procurement

3.43
waybill
non-negotiable document evidencing the contract for the transport of cargo

[SOURCE: UN/EDIFACT, 1001 Document name code, definition 700][62]

4 Symbols and abbreviated terms

ABIE	aggregate business information entity
BBIE	basic business information entity
BCC	basic core component
BIE	business information entity
BII	business interoperability interface
BPAWG	business process analysis working group
CC	core component
CCTS	core component technical specification
CEN	European Committee for Standardization
EAP	electronic access points
ebXML	electronic business extensible markup language
EDI	electronic data interchange
EFM	electronic freight management
FSI	freight services integrator
GII	goods item itinerary
GPS	global positioning system
IMO FAL	International Maritime Organization's Convention on Facilitation of International Maritime Traffic (IMO FAL Convention)
INF	irradiated nuclear fuel
ISSC	international ship security certificate
LSC	logistic service client
LSP	logistics services provider
MWB	multimodal eWaybill
NDR	naming and design rules
NSW	national single window
OECD	organization of economic cooperation and development
PEPPOL	Pan-European Public Procurement Online

SME	small and medium enterprises
SSP	ship security plan
TEP	transport execution plan
TNM	transport network manager
TPS	transport progress status
TR	transport regulator
TS	transportation status
TSD	transport service description
UML	unified modelling language
UN/CEFACT	United Nations Centre for Trade Facilitation and Electronic Business
UNECE	United Nations Economic Commission for Europe
UN/LOCODE	United Nations Code for Trade and Transport Locations
UNTDED	United Nations Trade Data Element Directory
URI	uniform resource identifier
URL	uniform resource locator
WCO	World Customs Organization

5 Intermodal freight context

5.1 General

This document addresses an interoperable methodology for using standard messages and tools that will maximize the efficiencies for transporting goods from a seller (or "original consignor") to a buyer (or "original consignee"), using intermodal transport that includes haulier, marine, air and rail links, while satisfying governmental regulatory requirements. It is appropriate for supporting operational freight movements that occur worldwide, whether that freight travels from point of origin to destination domestically or internationally. While this document is not focused on unimodal movements, and any unique requirements therein, it is considered complementary to standards of unimodal freight movement. The intent is to allow data to move securely and freely between all entities that need the freight information in connection with their areas of responsibility whether for non-governmental purposes or for governmental purposes.

This document includes surface transport data needs as well as all modes connecting with surface transportation within the international supply chain to satisfy the requirements of both businesses and governmental organizations, on B2B, B2G, G2G as well as G2B relationships. It may also be applied to consignments that originate and terminate in a single country. This document is applicable to freight movements that interface with other modes and incorporates requirements set for those other modes.

5.2 Intermodal vs. multimodal relationship

The terms "intermodal" and "multimodal" can be confusing when discussing freight that moves between more than one mode to reach its destination. Figure 1 shows the difference between those terms while incorporating the concept of interoperability.

As defined in this document, intermodal freight transport consists of the intermodal movement of goods in one and the same loading unit (e.g. intermodal transport equipment) or vehicle which uses several modes of transport successively without handling the goods themselves when changing modes, and it may involve several contracts of carriage. Transport modes include motor, rail, water, and air carriers.

On the other hand, multimodal transport consists of the carriage of goods by at least two different modes of transport. Multimodal transport implies that either there is more than one modal shift or that loads are broken into partial loads as part of a modal change. In multimodal transport there is one contract.

Since multimodal movements use one contract, interoperability is not as critical in those situations since there is no need for data sharing from origin to destination. However, intermodal movements involve several contracts and many different parties engaged with the movement of freight. Therefore, data transfer becomes more prevalent and the need for data streamlining becomes more important to avoid any disruption in the movement of the freight.

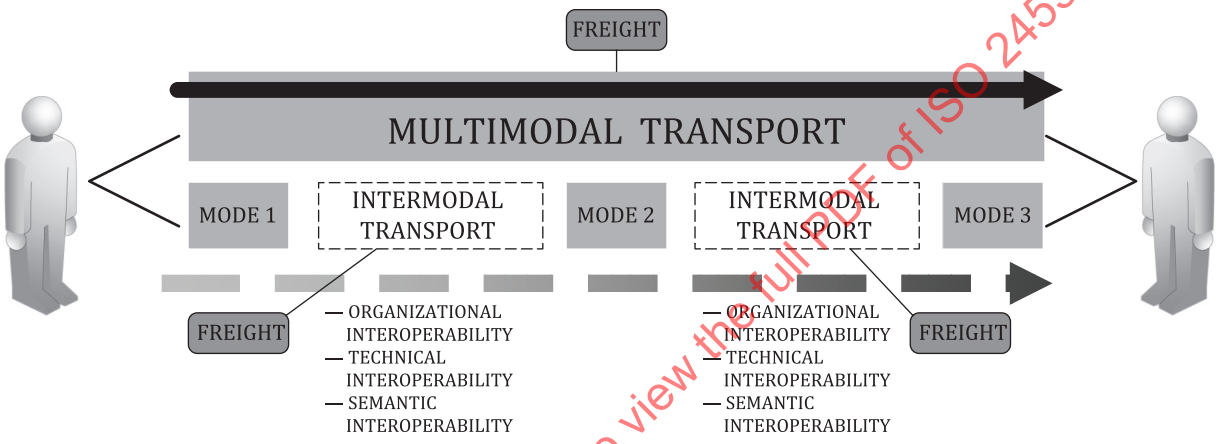


Figure 1 — Intermodal/multimodal relationships

Organizational interoperability is about being able to identify the players and organizational processes involved in the delivery of a specific eGovernment service and achieving agreement among them on how to structure their interactions, i.e. defining their “business interfaces”.

Technical interoperability is about knitting together IT systems and software, defining, and using open interfaces, standards and protocols in order to build reliable, effective and efficient information systems.

Semantic interoperability is about ensuring that the meaning of the information exchanged is not lost in the process, that it is retained and understood by the people, application and institutions involved.

5.3 Common intermodal transport framework

The common intermodal transport framework (CITF) is designed to facilitate improved interoperability between the information systems used by all stakeholders in transport and logistics. It was developed as part of ISO/IEC 19845.

Since the stakeholders have been divided into a set of roles, the CITF defines the information within "electronic documents" that need to be exchanged between the roles such that each one is able to perform the functions associated with the roles as efficiently and effectively as possible. These documents (as well as business processes involved in their exchange) were developed based on requirements collected from freight industry actors in the European projects Freightwise, e-Freight and iCargo primarily, but also receiving requirements and other input from associated European projects and a US project called Electronic Freight Management (EFM). All are related to improving freight management operations.

The standardization process started in 2008 through cooperation with the technical committee in OASIS that was developing version 2.1 of Universal Business Language (UBL). Much work was involved in adapting the ideas of the CITF to the principles of UBL and to provide the required backwards compatibility. Eventually key elements of the CITF became part of the official version of UBL 2.1. After making UBL 2.1 complete and official, OASIS started a process of having this standard accepted by ISO. This process was completed late 2015, and elements of the Common (e-Freight) Framework are now part of ISO/IEC 19845.

The development of the framework started by defining the roles that were involved in transport and logistics:

— Logistic service client (LSC) = Logistic services buyer — defined as the party ordering the logistics services from the logistic service provider and can be either the consignor or the consignee depending on the business scenario.

— Logistics services provider (LSP) — associated with the logistics supply domain, which responds to the demands from LSCs.

— Transport network manager (TNM) — associated with the transport network management domain and responsible for providing information about availability and status for the transport and logistics infrastructure.

— Transport regulator (TR) — associated with the regulation enforcement domain and responsible for ensuring that transport and logistics operations are being conducted according to the relevant rules and regulations.

The scope for the framework was all transport modes and combinations of modes into multimodal services. It was also realized that the role previously called freight services integrator (FSI) is not a separate role in relation to the ones described in the list above. The FSI characterizes an organization or person that combines the roles of logistics services client and logistics services provider in order to conduct business. From an information exchange point of view, the FSI does not have any special requirements.

The reference model described in Figure 2 illustrates the domains and a minimum set of electronic documents that are required for operators in the different domains to do their jobs effectively.

These electronic documents are:

— Transport service description (TSD)

— Transport execution plan (TEP)

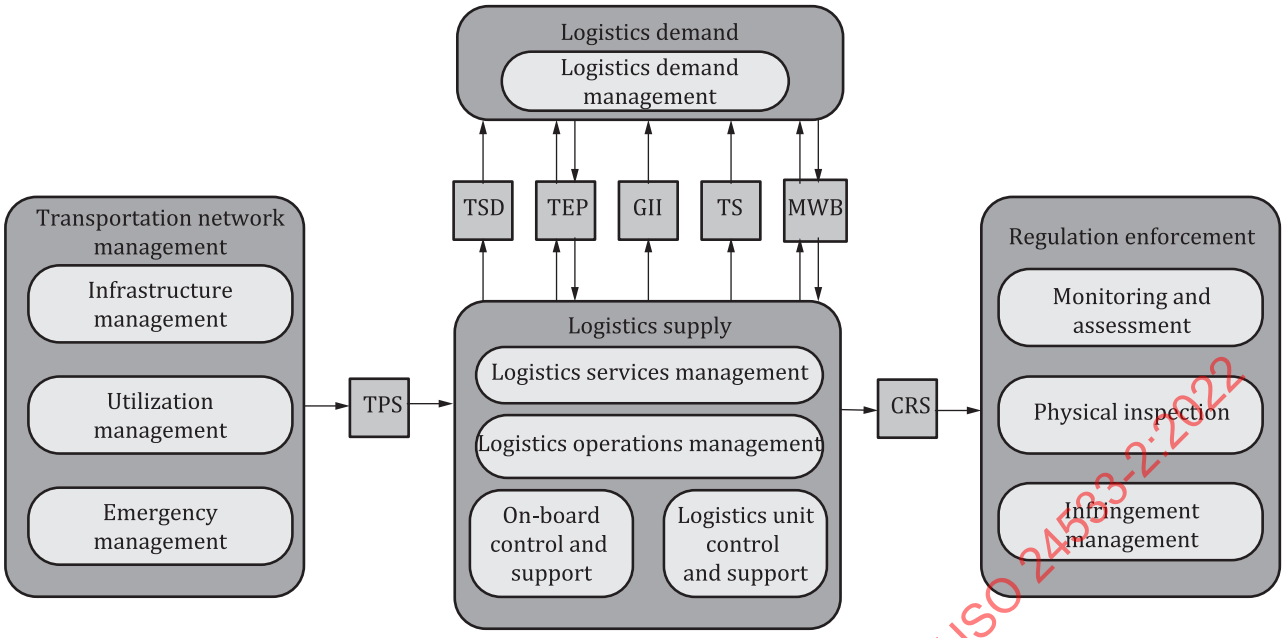
— Goods item itinerary (GII)

— Transportation status (TS)

— Multimodal eWaybill (MWB)

— Transport progress status (TPS)

— Common reporting system (CRS)



NOTE TSD, TEP, GII, TS and TPS are part of ISO/IEC 19845.

Figure 2 — Common intermodal transport framework

6 Common reporting system

The procedures active within the international supply chain are complex and often cumbersome. Numerous interactions between different parties are at work, which are guided by many factors, including type of product, country, terms of business and the methods of operation of both the consignee and the seller. Given the broad range of activities possible, within the context of transporting goods, a single transaction may involve many languages (both electronic and human), standards and operational practices.

The CRS shall be a single, harmonized information model which contains all the information fields for reporting electronically to any business or any authority in any country and across all transport modes.

It takes the form of an information model which defines the structure and content of the information that should be reported to authorities (government and non-government entities) by transport and logistics businesses. There are also several accompanying harmonized reporting process models to explain how the CRS schema is exchanged between the relevant parties.

The CRS can be thought of as a method for reporting which has many uses. Different users with different purposes complete different parts of the form; they only fill in the information that they need to. This means all parties can use the same electronic format/structure to submit the information for which they are responsible, irrespective of their present role in the transport chain. Figure 3 shows a representation of the CRS as a form with many uses.

Figure 3 — The common reporting system schema

Due to the comprehensive nature of the CRS, there is a danger that it appears to be a cumbersome message structure. It is true that the full CRS specification is sized to accommodate all the possible fields which shall be reported to authorities. However, each individual message which is sent by transport logistics businesses is of arbitrary size, depending on what is to be reported at that point. In most cases, because each party only submits the information they need to at that point, the messages will be relatively small. The CRS structure is flexible enough to be used for both small and large message submissions, to support different operational and reporting requirements.

In the context of single windows, the CRS provides a data model that can be used to fulfil the need to "*lodge standardized information and documents with a single-entry point to fulfil all import export and transit-related regulatory requirements.*"[35] The CRS provides a standard for the information and documents to fulfil all regulatory requirements in the EU which is independent of the technical implementation of the single window system.

7 The model and its requirements

7.1 Introduction

The CRS considers all the information requirements of the large number of regulations, procedures and documents which are in use across Europe. One of the key challenges in this is to create a large enough data structure to accommodate all the information fields, whilst at the same time making it flexible enough so that it can be decomposed into smaller structures which can be submitted separately by different parties and at different times throughout the transport logistics process, without losing functionality and consistency. This clause explains how the model is composed, how it should be interpreted and how it is intended to be used in practice.

7.2 Overall structure

7.2.1 General

The top-level structure of the CRS shall include the logical relationships among four core elements of transport logistics including:

1) the cargo/goods (the Consignment class);

2) the means of transport (the TransportMeans class;

3) the details of the journey/voyage (the ShipmentStage class); and

4) the parties involved (the Party class).

This is depicted in Figure 4.

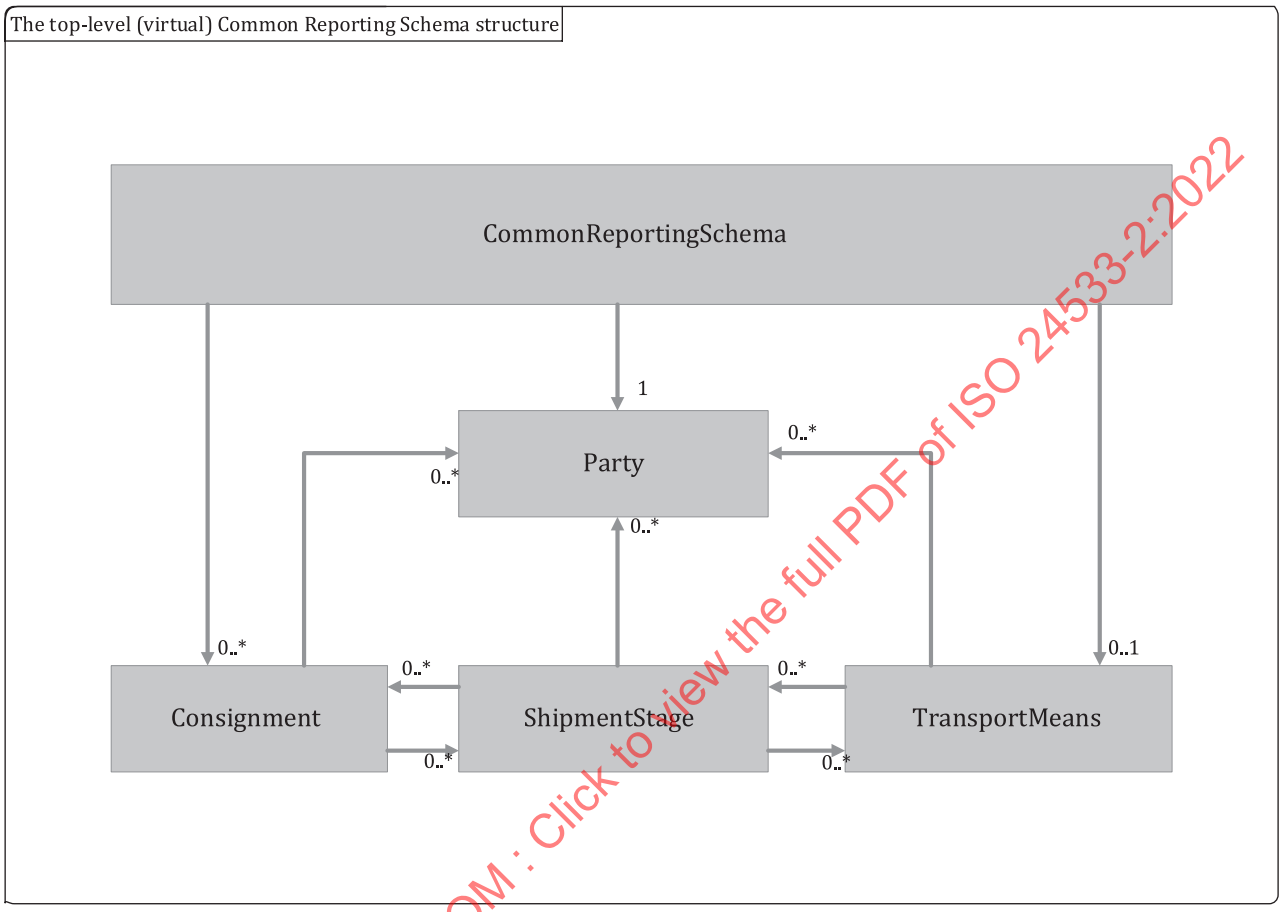


Figure 4 — The top-level (virtual) CRS schema structure

The top-level structure would not actually be instantiated in a message in the form presented in Figure 4. This model is a virtual structure that subsumes two sub-structures which are the basis for messages. The two message structures/types are described in the following subclauses. Table 1 describes the information elements that can be seen in Figure 4.

Table 1 — Information elements

Element	Content/purpose
CommonReportingSystem	Contains all the necessary message metadata and header information to support the sending/receiving of information, message identification and synchronisation
Consignment	Represents all cargo/goods information, including goods items, packages, transport equipment and dangerous goods
ShipmentStage	Contains information about the transport leg(s) (locations, timings etc.) and associated non-goods-related information, such as crew and passenger lists
TransportMeans	For each ShipmentStage, this element gives information about the means of transport (i.e. vehicle or vessel) being used (identification, registered nationality, dimensions etc.)

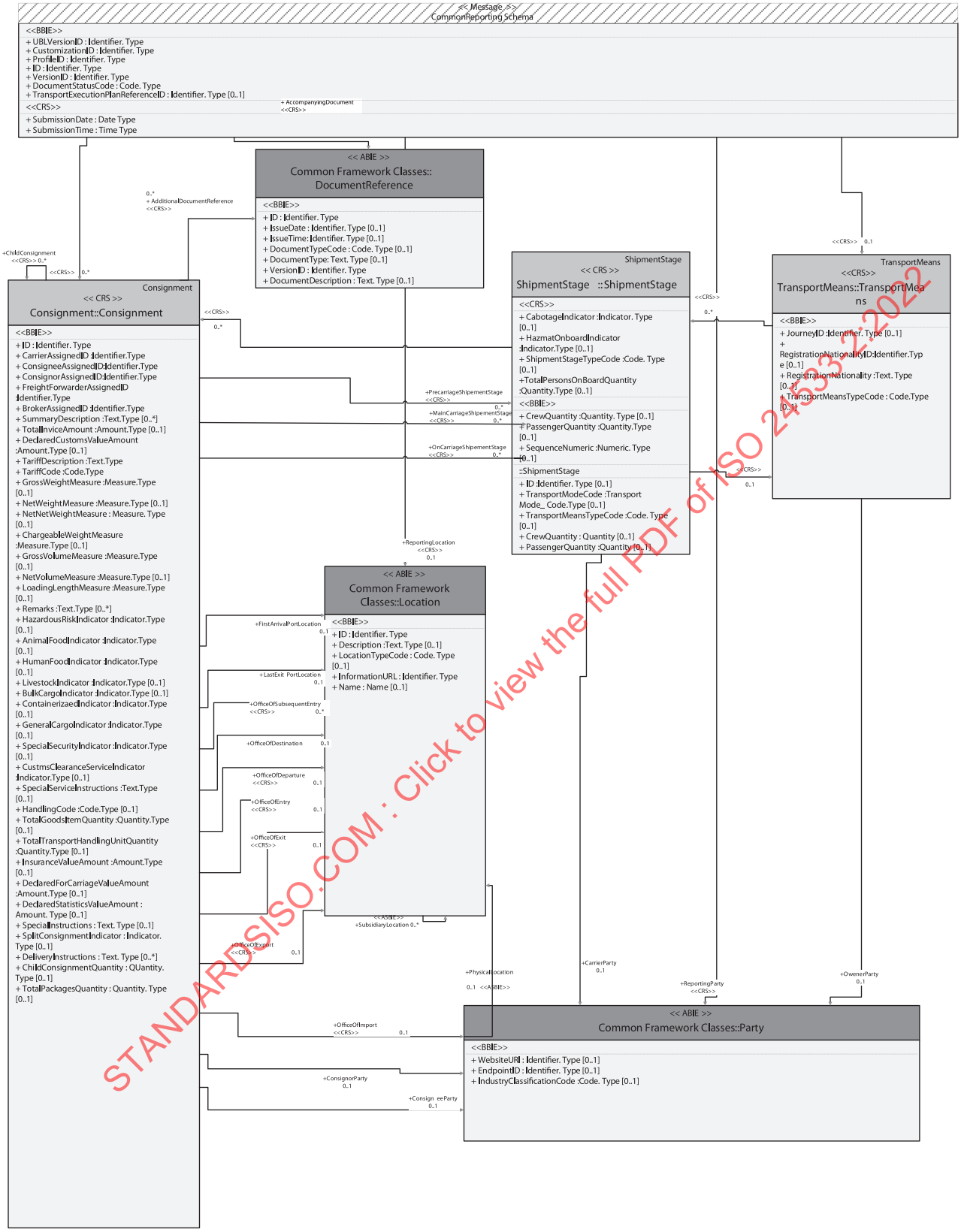
Table 1 *(continued)*

Party	Various parties (actors) are involved in the transport of goods (consignor, consignee, carrier, etc.) – this element contains all the information required to represent parties, such as name, ID, location and contact details

In the following subclauses, the top-level structure of the full CRS model is presented in three ways: in the form of a UML class diagram (Figure 5), in a tabular format used by UBL (Table 2), and in the XML schema file and element diagram (Figure 6). Annex E gives a full listing of the information elements in the CRS.

7.2.2 Class diagram

As an alternative representation of the CRS model, Figure 5 presents the CRS as a unified modelling language (UML) class diagram. Within this representation, information objects (classes) are presented with their attributes along with their relationships among the other classes within the model.



Key

Dk. blocks	Greyinformation entities from the UBL library which have been extended in the CRS
<<CRS>>	additional or extended field in the CRS
<<BBIE>>	basic business information entity from UBL

<<ABIE>> aggregate business information entity from UBL

Figure 5 — CRS as a UML class diagram

7.2.3 CRS model in tabular format and XML schema file

As an alternative representation of the CRS model, Table 2 presents the CRS model in tabular form. Within this representation information elements are presented with their names, data type and definitions along with their relationships among the various views within the model.

Table 2 — CRS model in tabular format

Element name	Data type	Associated object class	Ext?	Full profile	Consignment view	Transport means view	Definition
CommonReportingSchema	CommonReportingSchema						
UBLVersionID	Identifier. Type			1	1	1	The earliest version of the UBL 2 schema for this document type that defines all of the elements that can potentially be encountered in the current instance.
CustomizationID	Identifier. Type			1	1	1	Identifies a user-defined customization of UBL for a specific use.
ProfileID	Identifier. Type			1	1	1	Identifies a user-defined profile of the customization of UBL being used.
ID	Identifier. Type			1	1	1	Identifies a CRS instance.
VersionID	Identifier. Type			1	1	1	Identifies a version of a multimodal waybill in order to distinguish this instance of the document from other instances.
DocumentStatusCode	Document Status_ Code. Type			1	1	1	Indicates the status of the CRS.
TransportExecutionPlanReferenceID	Identifier. Type			0..1	0..1	0..1	A reference to the TEP agreed for this particular transport service.
SubmissionDate	Date. Type		X	1	1	1	Date when the CRS is submitted.

Table 2 *(continued)*

Element name	Data type	Associated object class	Ext?	Full profile	Consignment view	Transport means view	Definition
SubmissionTime	Time. Type		X	1	1	1	Time when the CRS is submitted.
ReportingParty		Party	X	1	1	1	Describes the party responsible for issuing the CRS.
ReportingLocation		Location	X	0..1	0..1	0..1	Describes the location from which the CRS is issued.
Consignment		Consignment	X	0..n	1		Describes an identifiable collection of one or more goods items to be transported between the consignor and the consignee. This information may be defined within a transport contract. A consignment may comprise more than one shipment (e.g. when consolidated by a freight forwarder).
TransportMeans		TransportMeans	X	0..1		1	Describes the transport means being subject to reporting.
DocumentReference		Document Reference	X	0..n	0..n	0..n	Describes a reference to other documents that are relevant for this CRS.

7.2.4 CRS Model as an XML-based file

As an alternative representation of the CRS model, Figure 6 presents the CRS as an XML schema file along with an element diagram.

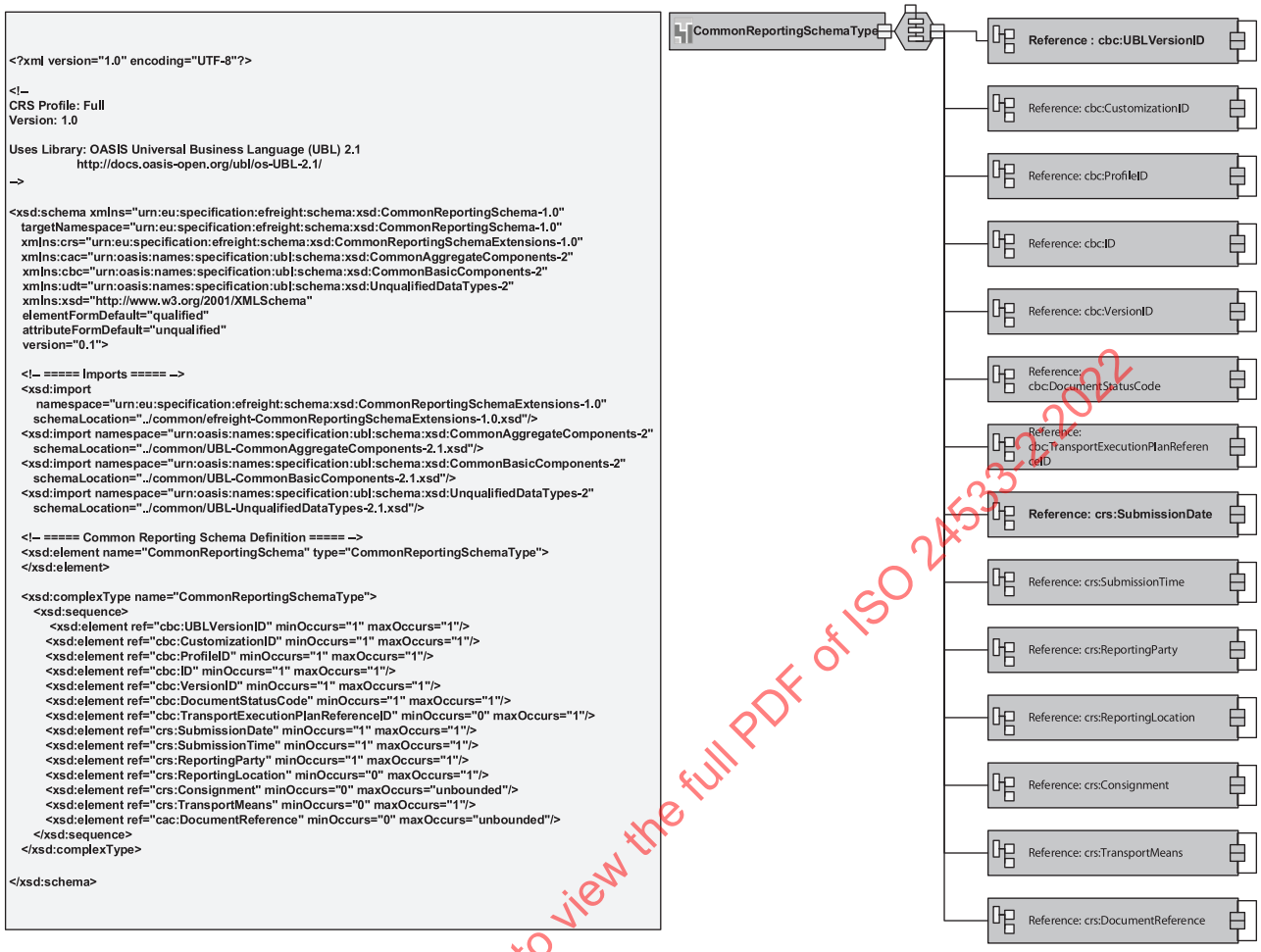


Figure 6 — CRS model in XML schema file and element diagram

7.3 Views of the CRS

7.3.1 General

Any CRS message shall be one of two sub-types which will determine the rest of the class tree. The CRS schema shall be submitted either as a consignment-oriented message, or as a transport-means-oriented message. These two views resolve the complexity of reporting for multiple transport journeys and multiple consignments simultaneously.

In the consignment-oriented message there shall be exactly one Consignment class. Each consignment shall have one or more ShipmentStages which in turn shall have one TransportMeans element. In principle this structure allows a user to make declarations for a consignment along a whole multi-leg multimodal transport chain in the same model.

In the transport-means-oriented message there shall be one specific means of transport: its lifecycle. This includes its lifecycle going from port to port, picking up and unloading different cargo each time, and changing crews and operators. Exactly one TransportMeans class shall be included. Each TransportMeans class shall have one or more ShipmentStages, which in turn shall have one or more Consignment elements. In principle this structure allows a user to make declarations for a vehicle/vessel carrying different consignments along a whole multi-leg journey in the same model.

7.3.2 Consignment-oriented view

In the consignment-oriented structure (Figure 7), the focus of the message is on the cargo/goods being transported. This sub-type is mainly used to support reporting for trade (i.e. customs).

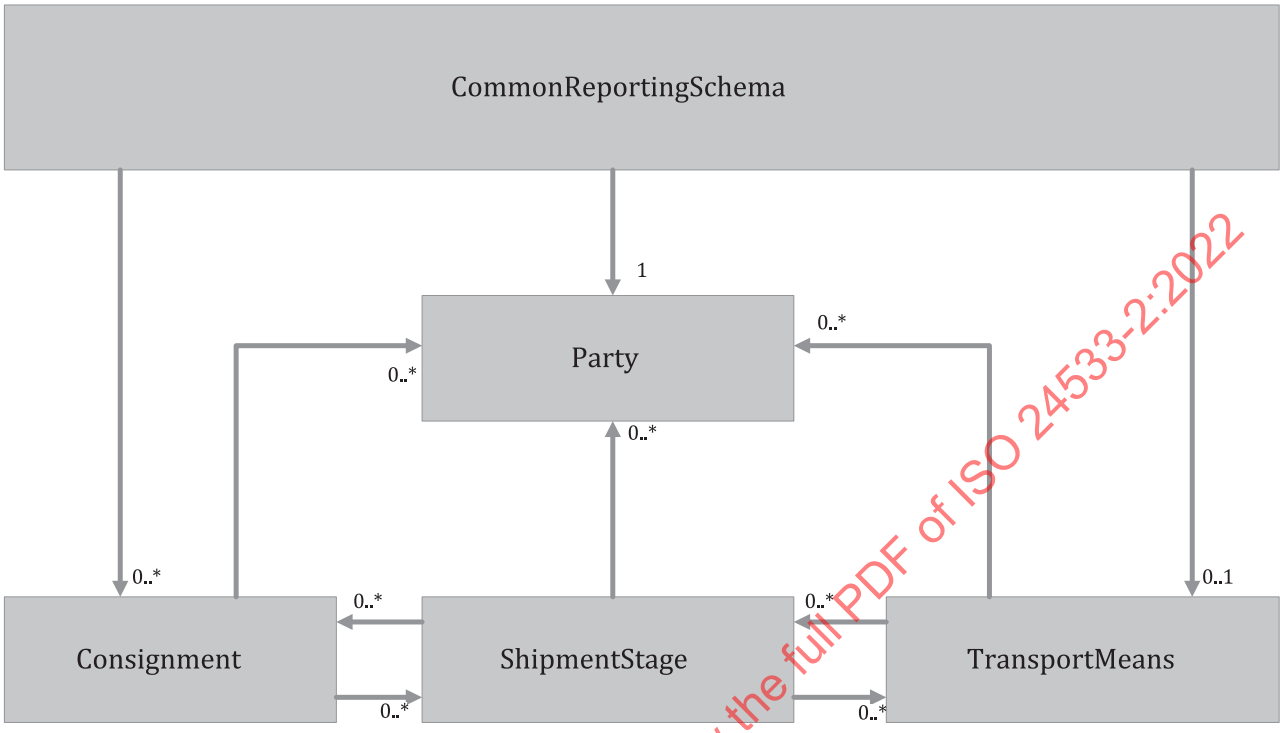


Figure 7 — Consignment-oriented CRS structure

In this structure, exactly one consignment class shall be included. At this point, the full CRS structure collapses to the model shown in Figure 7. Each consignment shall have one or more ShipmentStages, which in turn shall have one TransportMeans element. In principle, this structure allows a user to make declarations for a consignment along a whole multi-leg, multimodal transport chain in the same model.

7.3.3 Transport means-oriented view

Transport means class represents any vehicle transporting goods, i.e. vessel, truck, rail and aircraft. In the transport-means-oriented structure (Figure 8), the focus is on the means of transport. When focusing on one specific transport means, for example, vessel, its lifecycle is to go from port to port, picking up and unloading different cargo each time, changing crew and operators. The transport-means-oriented view of the CRS was designed to support the stages of this lifecycle, compared to the goods/shipment-oriented view, which follows goods items from end to end (potentially across multiple transport means). The reporting formalities refer to the obligation of the vessel to report certain information when embarking and disembarking ports, loading/unloading cargo, etc.

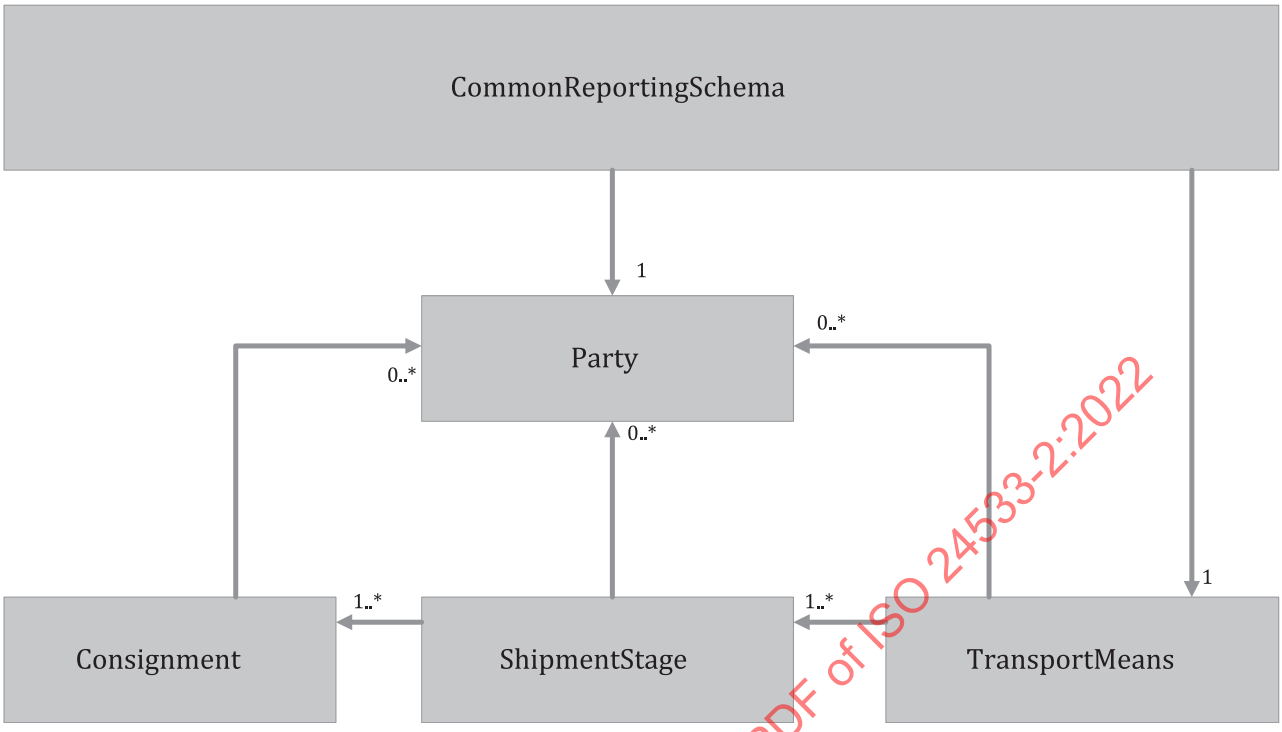


Figure 8 — TransportMeans-oriented CRS structure

In this structure, exactly one TransportMeans class shall be included. Each TransportMeans shall have one or more ShipmentStages, which in turn shall have one or more consignment element(s). In principle, this structure allows a user to make declarations for a vehicle/vessel carrying different consignments along a whole multi-leg journey in the same model.

7.4 Important structures

The main structures in the CRS are presented in the following subclauses. In the diagrams in the following subclauses, the following notation is used:

— dark grey shaded blocks indicate information structures in which some associated structures have been left off the diagram for clarity;

— light grey shaded blocks indicate information entities from the UBL library which have been extended in the CRS;

— <<CRS>> indicates an additional or extended field in the CRS;

— <<BBIE>> indicates a basic business information entity from UBL;

— <<ABIE>> indicates an aggregate business information entity from UBL.

7.5 Consignment and goods item

7.5.1 Consignment

The consignment structure (Figure 9) shall identify a collection of one or more goods items to be transported between the consignor and the consignee. This information shall be defined within a transport contract.

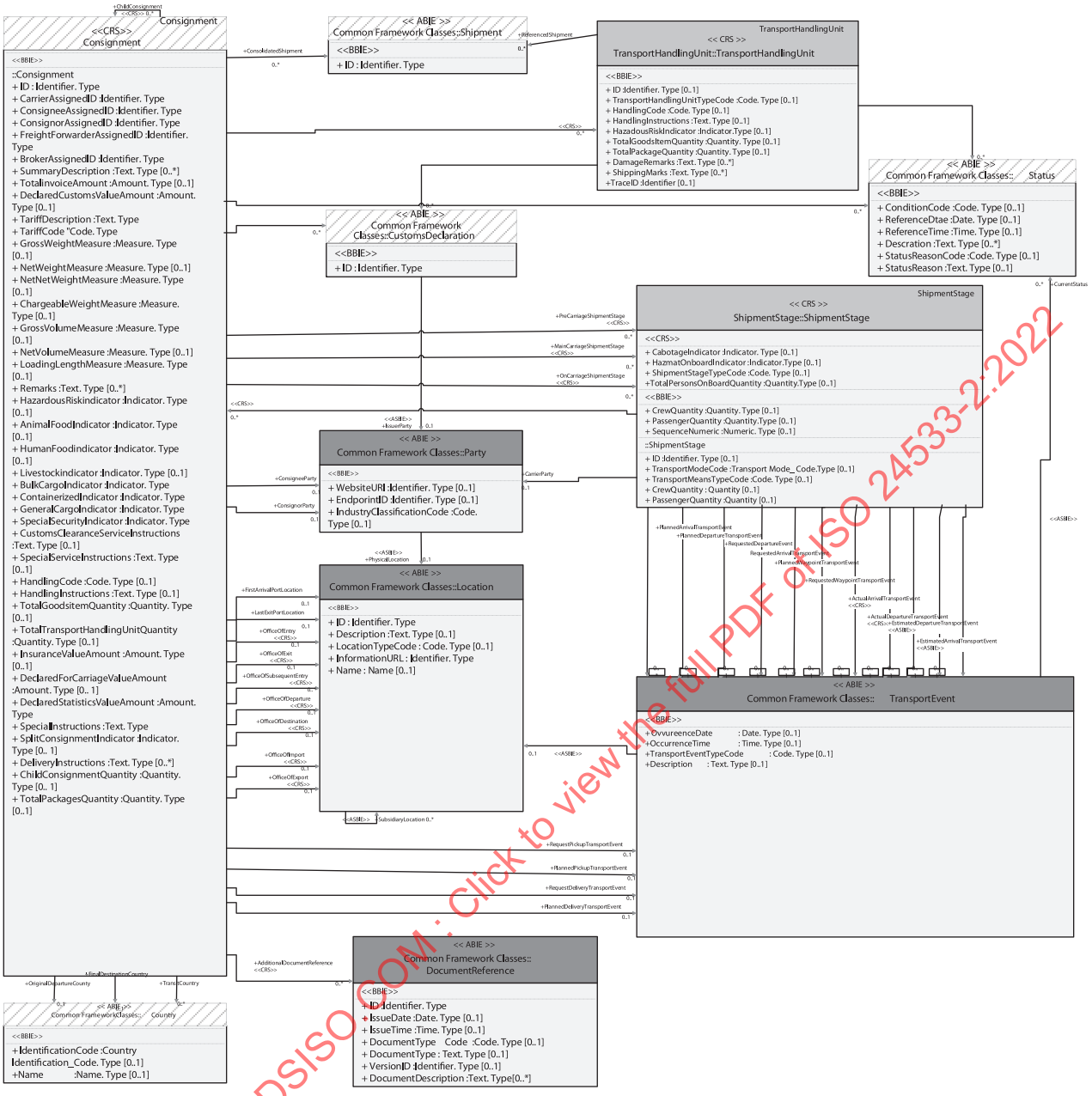


Figure 9 — Consignment structure

7.5.2 Goods item

The goods item structure, based on requirements from the European projects Freightwise, e-Freight and iCargo, describes a separately identifiable type and quantity of goods of a single product type. It is composed mainly of two classes:

1) **Goods item:** A class to describe a separately-identifiable type and quantity of goods of a single product type.

2) **Item:** A class to describe an item of trade. This includes a generic description applicable to all examples of the item together with optional subsidiary descriptions of any number of actual instances of the type.

In addition, the item class has several associations to classes that further describe the nature of the item (commodity classification), data that further identifies the item (item instance) and where the

item originates from (OriginAddress, OriginCountry), and hazardous goods descriptions if relevant (hazardous item).

7.5.3 Goods item structure

In Figure 10 the goods item structure is shown. A goods item will be contained by a package (association to package class) or a transport equipment (association to goods item container class). The measurement of the goods item is described by the zero-to-many associations to the dimension class. The trade-oriented description of a goods item is described in its association to the item.

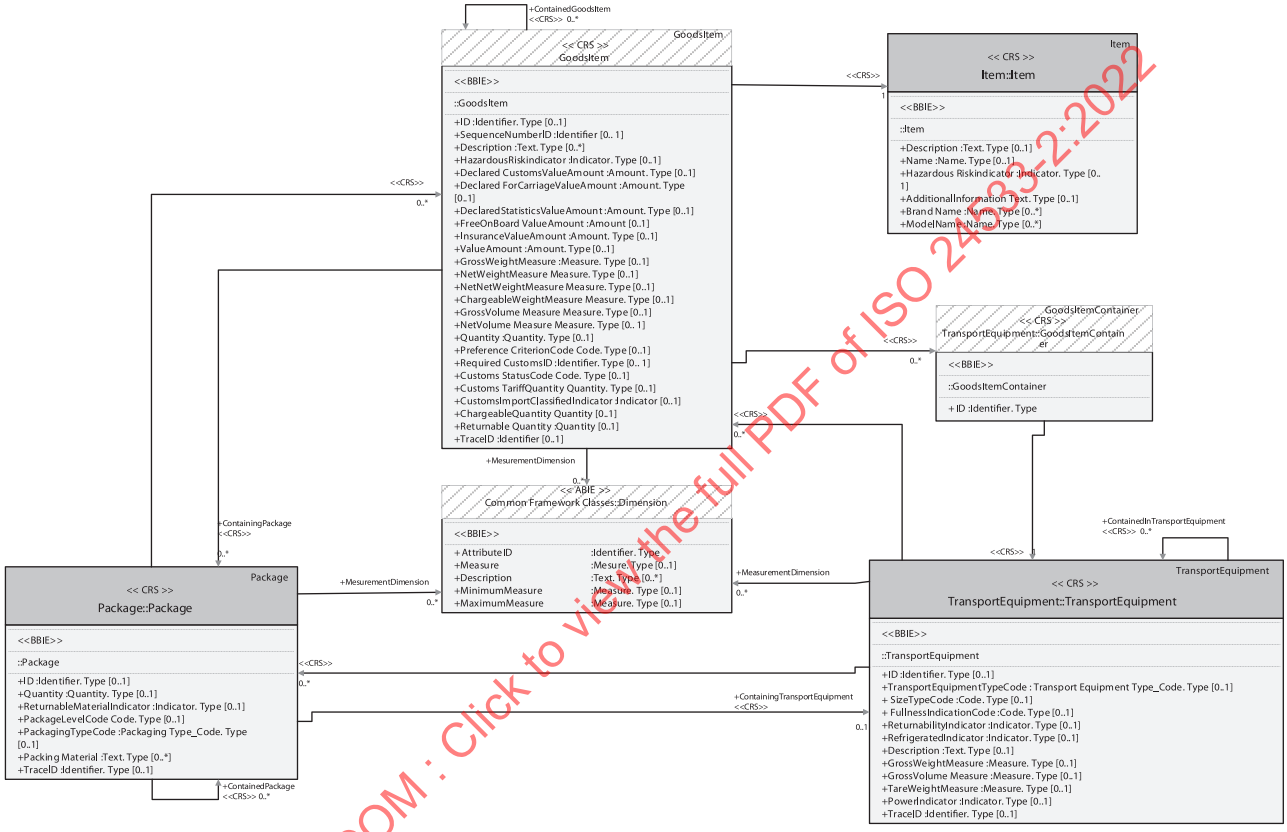


Figure 10 — Goods item structure

7.5.4 Item class structure

The item class describes specific information about a particular item (type), as shown in Figure 11. The commodity classification class contains information about the cargo type (using UNECE cargo type classification code) and commodity type (using WCO Harmonized System nomenclature). Item instance describes specific identifying data about an item. The associations towards address and country describe the origin of an item. The hazardous item class (contains more information at a sub-level such as flashpoint, emergency temperature, contact party, etc.) describes hazardous goods data if the item is of such type.

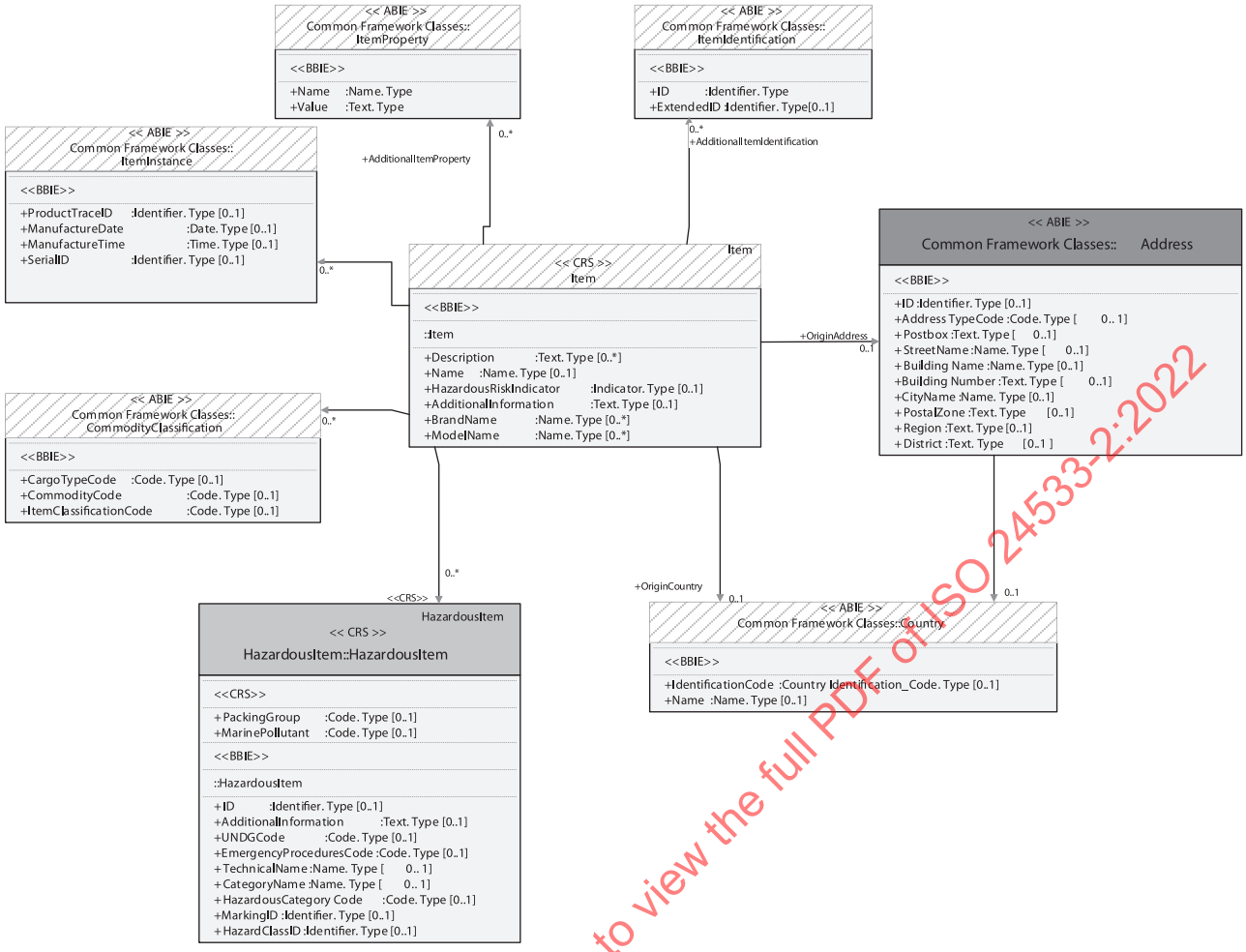


Figure 11 — Item class structure

7.5.5 Transport means structure

The transport means structure describes a particular vehicle or vessel used for the conveyance of goods or persons. It has four sub-structures representing the specific characteristics of the air, road, rail and maritime (including inland waterway) modes as shown in Figure 12.

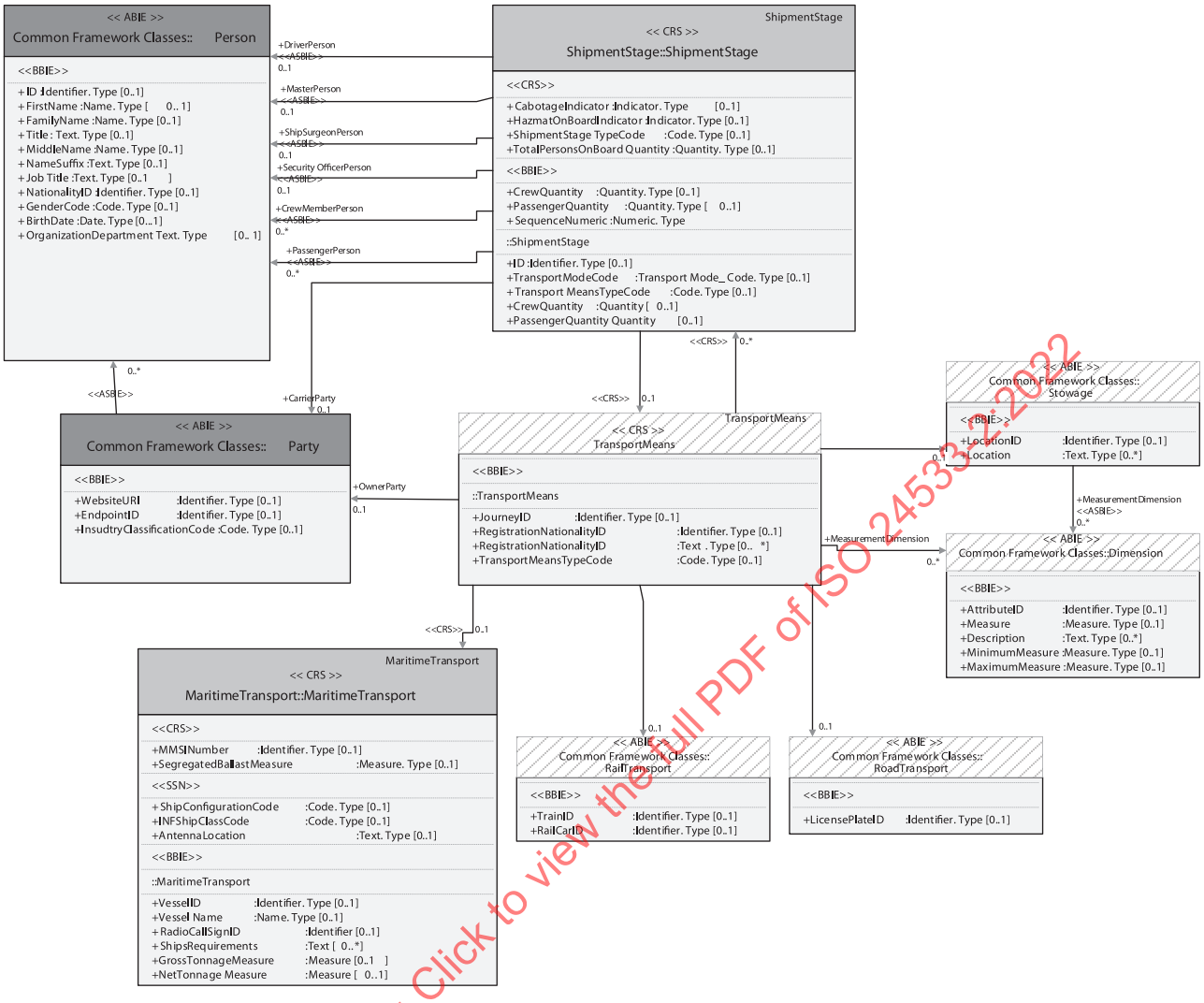


Figure 12 — Transport means structure

7.5.6 Maritime transport class

Of note is the maritime transport class. The UBL class was significantly "upgraded" by the CRS due to the extra reporting requirements in the maritime domain. The maritime transport class, representing the ship/vessel, is shown in Figure 13.

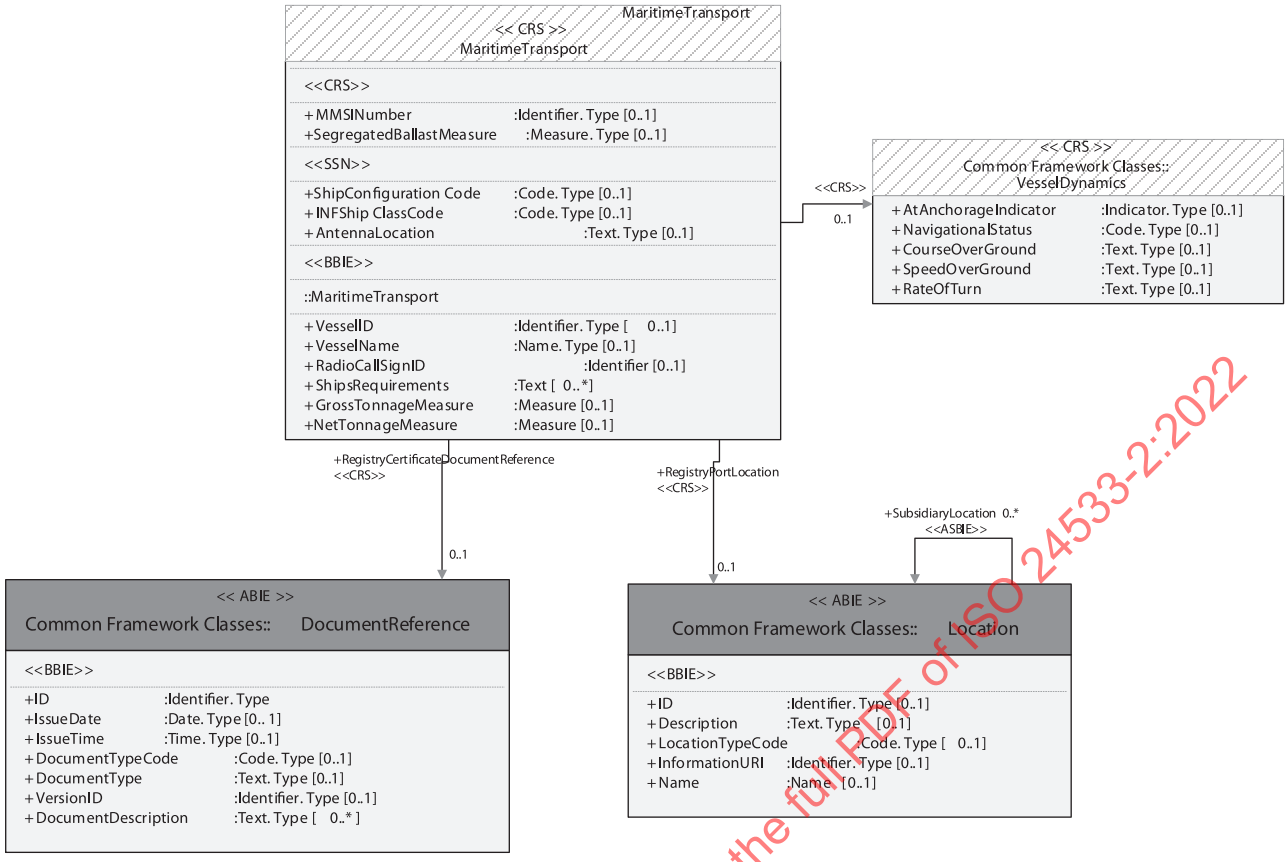


Figure 13 — Maritime transport class

7.5.7 Shipment stage

The shipment stage structure, in Figure 14, describes one stage of movement (i.e. a transport leg) in a transport of goods regardless of mode. As a minimum, it consists of a departure event at a departure location, followed sometime later by an arrival event at an arrival location. It also consists of an event during carriage. It should be noted that most of the maritime reporting formalities are associated to the shipment stage class. This is to manage the fact that it is necessary to carry out ship reporting for each port call and so each shipment stage shall have new or updated reporting information associated with it.

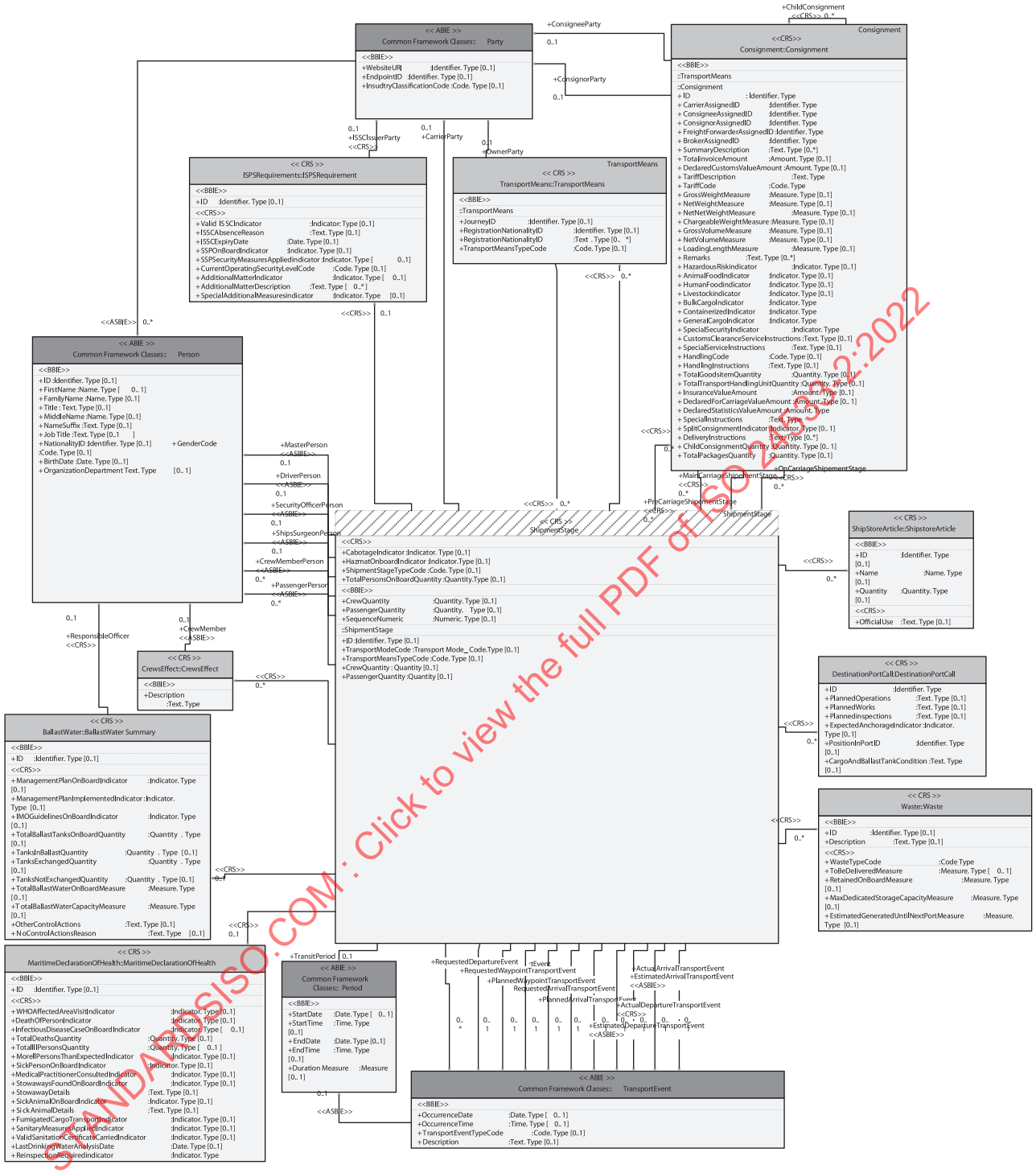


Figure 14 — Shipment stage structure

7.5.8 Location class from UBL

There are many different types of location which are used in transportation and many different methods are used to describe them. The location class from UBL is flexible enough to accommodate many different types of location description as shown in Figure 15. This is achieved through the ID attribute (which allows common location identifiers to be used, such as the UN/LOCODE) and the LocationTypeCode attribute, which is a UNECE coded value for a type of location (e.g. port, customs warehouse). Finally, any arbitrary location can always be specified using global positioning system (GPS) coordinates.

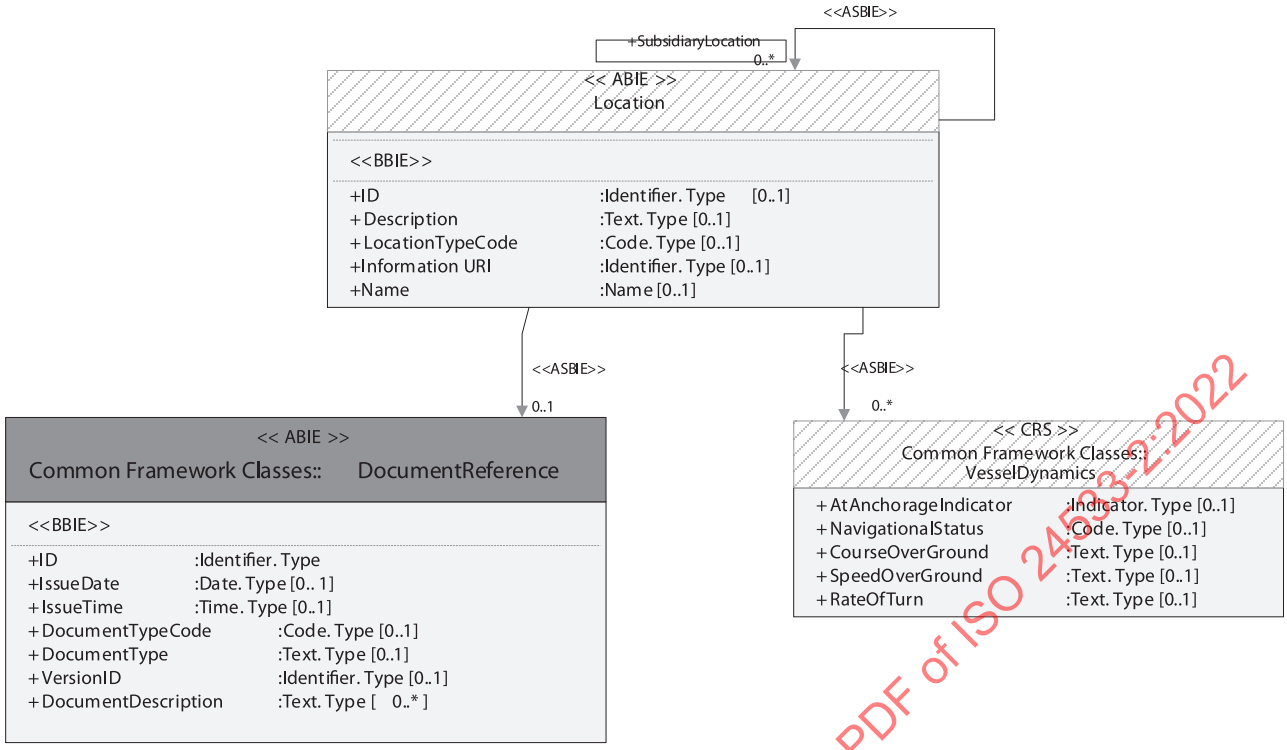


Figure 15 — Location class from UBL

8 Using the CRS in practice

8.1 General

The CRS is best used as the input to a single window system as it allows all reporting information to be submitted in the same format, and at the same time if desired, whilst ensuring that authorities receive all the information they need to perform their duties. Figure 16 shows this use case. Using the CRS, particularly when in conjunction with the information exchange capabilities of the national single window (NSW), speeds up reporting information to authorities. In each country, the NSW is configured so that each authority receives the selection of CRS information fields which meets their requirements.

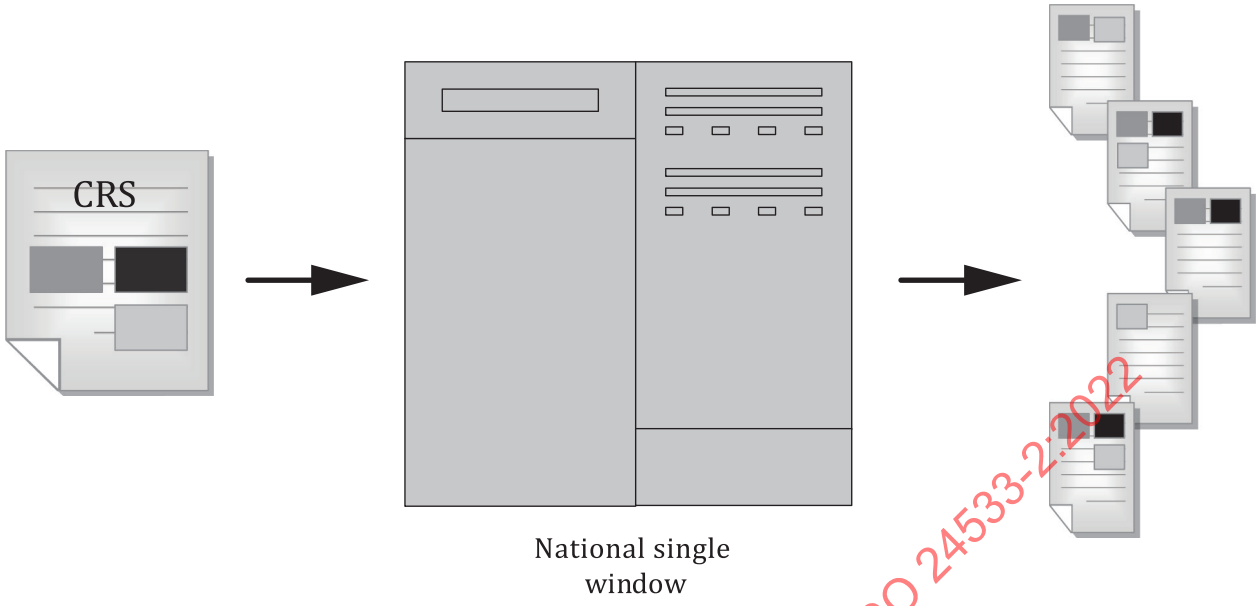


Figure 16 — Using the CRS with national single windows

8.2 CRS message profiles

The e-Freight framework follows a methodology for interoperability inspired by the European Committee for Standardization's (CEN) business interoperability interface (BII) specification. CEN BII promotes interoperable solutions for public procurement in Europe and uses the OASIS UBL standard as a basis in the information exchange. It has been suggested to be used as a model for freight data exchange interoperability.

The e-Freight framework information models, including the CRS schema, are based on the UBL common library of standardized data elements and information models. To accommodate a certain degree of flexibility with respect to implementation of information transactions, the CRS information models may be implemented according to profiles. A full profile shall include all the possible information elements, both mandatory and optional, that could be used in each transaction. A core profile shall include a core set of mandatory and optional information elements which need to be understood by both parties in the transaction.

Other informative material on using the CRS in practice is contained in Annex D.

9 Summary of benefit

The main benefits that the CRS brings can be summarized as follows:

1) **Wholly electronic data** — each data element is captured in electronic format (i.e. no scanned documents or PDF files) allowing information to be transferred, manipulated, stored and accessed easily and efficiently on a many-to-many basis.

2) **Comprehensive coverage of domain** — the model is deliberately comprehensive in its content so that it can be used as the basis for regulatory reporting in all modes. It also contains many optional fields deriving from the transport planning and operational messages which could be additionally provided by businesses in return for faster clearances or fewer checks at the border, for example. As well as this, its comprehensiveness gives the CRS longevity (i.e. it will remain valid and applicable for many years to come).

3) **Unbiased** — the CRS has been designed with no bias to country, mode or sector, which supports its ability to be substituted for any current paper reporting document across whole multimodal chains.

4) **Single specification for all electronic reporting requirements** — implementation and data mapping to existing systems, or access point providers, only needs to be carried out once, thus reducing the burden on businesses.

5) **Inherent compatibility with the common intermodal transport framework** — companies and systems implementing the common intermodal transport framework messages can easily and automatically generate CRS submissions.

6) **Uses standard information elements** — most of the information elements are already used and understood by a large international community.

7) **Aligned with existing models and standards** — easy to map to existing systems and data formats and facilitates integration with different standardization communities.

Annex A
(informative)

Background to the Common Reporting System (CRS)

A.1 General

Explosion of global trade in the last decade has resulted in increased complexity of regulation. Freight trade and transport-related authorities have established an extensive range of agency-specific and country-specific regulatory requirements for international trade and transport with little coordination amongst each other, at national, European or international levels.[50] A cross-border shipment typically involves 35 documents exchanged between 25 parties. There are more than 600 laws and 500 trade agreements to be considered. Even describing commodities according to applicable standards (e.g. Harmonized Tariff Schedule) is a time-consuming and costly exercise.

The result is that traders and transport operators are faced with a complex set of duplicative and redundant reporting requirements and related systems (forms, data models, messages, software applications, etc.). Consequently, businesses are forced to develop and maintain interfaces with many different systems to manage compliance with different national systems.[51] Ship, port and logistics operators and national administrations are required to develop different adaptors (often with limited useful life) to integrate with the plethora of different systems they encounter in their day-to-day operations. This adds significant costs to all parties, both in financial terms and in terms of problems in managing timeliness and accuracy of reporting data. Small and medium enterprises (SMEs) are particularly affected by this situation because they need access to information systems that are often closed and different from country to country and for different authorities.

Interoperability and collaborative processes are cornerstones in the quest for quality and efficiency in the movement of goods and form the foundation of the vision set by the Freight Logistics Action Plan for paperless planning, execution and completion of transport operations.[51] The current reality is that companies are faced with dissimilar business process scenarios and data interchanges when interacting with administrations for regulatory matters. Standardization helps, but organizations and industries are interpreting specifications and implementation guidelines differently and the result is a continued lack of interoperability. In recent years, the requirements for advance trade and transport notifications for safety and security purposes have increased regulatory compliance complexity yet further, and this is exacerbating the problems outlined above.

Therefore, supply chain stakeholders need a common reporting model based on business processes that interact efficiently and share common communication paradigms to be able to overcome barriers of interoperability and scalability. This will lead to greater transparency of operations and visibility of the flow of goods and ultimately reduce unnecessary administration costs. The need for such a model is also recognized in the industry and in the international community. Furthermore, the model needs to offer a level of standardization that is different from the type of standardization currently offered (where there are significant possibilities for interpretation), and in a way that makes it possible for SMEs to implement it and take part in efficient multimodal logistics networks.

A.2 The e-Freight framework

The e-Freight project developed the basis for a framework for interoperability (called the e-Freight framework) by specifying the semantics and syntax of messages exchanged between different organizations to allow them to interconnect in a standardized manner and to support their business processes in a scalable way. The e-Freight framework represents both B2B (business to business) and B2A/B2G (business to administration) relationships, as illustrated in Figure A.1.

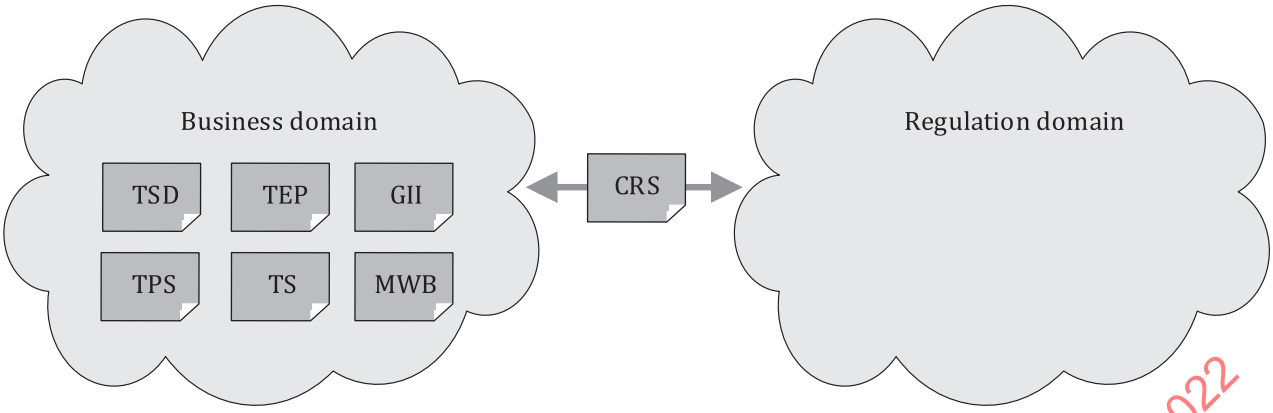


Figure A.1 — e-Freight framework information models

The e-Freight framework was developed based on detailed analysis of business requirements from the project's partners. In addition, collaboration with SDOs was established, OASIS UBL and GS1 ECOM MESSAGES, to promote harmonization and adoption at an international level. The main contribution of the e-Freight framework is a set of standardised information models that are validated both by use cases and representatives from the transport and logistics industry, work on international standards and research activities in European projects. The CRS is one of these information models.

In Figure A.1, the information models to the left are communicated between business stakeholders that undertake planning, execution and completion of transport logistics services. The CRS is the information transaction vehicle between the domains of business and regulation to allow transport and logistics operators to provide regulatory authorities with relevant and required information, and vice versa.

Information exchange within an organization was not the concern of the e-Freight project: each organization is free to manage internal information flows as they wish. However, in the interfaces between organisations, information exchange must be well defined to achieve interoperability. Nowhere is this more important than in the interface between businesses and authorities for regulatory reporting (the B2A(G) and A(G)2B information exchanges). The e-Freight framework represents this interface as an interaction between the domains of logistics supply and regulation enforcement. This is shown in Figure A.2.

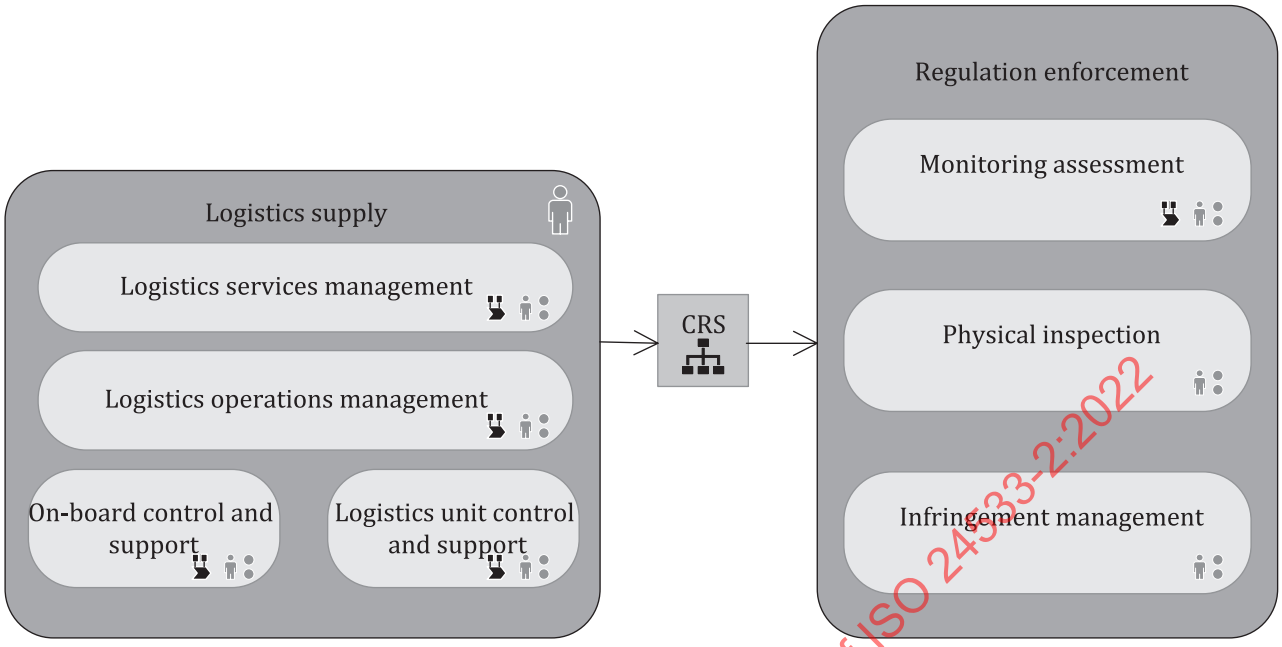


Figure A.2 — The Business-Authority (B2A/A2B) information exchange transaction

The CRS information model specifies the syntax and semantics for the interaction between the business and authority domains. It provides a harmonised information model for reporting to authorities for trade and transport in any Member States and across all transport modes, allowing authorities in the Regulation Enforcement domain to carry out their duties in ensuring that all transport and logistics related activities are being performed according to laws and regulations.

A.3 Methodology approach

The CRS development, under European freight projects, was guided by following core principles:

— the **content** of the reporting model should fulfil regulatory requirements, but the **structure** and **transactions** should be driven by the transport and logistics business processes;

— the model should be aligned as much as possible with existing models (e.g. IMO FAL Compendium, WCO Customs Data Model) as well as with the other e-Freight Framework information models, which are part of the OASIS UBL 2.1 standard (ISO/IEC 19845).[41]

The development of the model initially consisted of two streams which operated in parallel. One stream was designed to establish the legal obligations of transport and logistics operators (i.e. the "authority view") and the second analysed the requirements from the perspective of those reporting (the "business view"). The second stream was carried out in conjunction with the wider e-Freight framework analysis and development which aimed to distil the necessary and sufficient requirements for information exchange interactions between entities.

A.4 Method followed

The steps that were followed during the e-Freight project, leading to the version of the CRS, are outlined in Table A.1.

Table A.1 — E-Freight project steps

Step	Description	Output
1	Study of relevant legislation, documents and forms to extract data elements	Initial lists of data elements which are required by current legislation
2	Analysis, consolidation and rationalization of additional data set	Rationalized and consolidated list of data elements
3	Mapping to e-Freight framework (UBL library elements)	List of corresponding elements from the e-Freight framework (i.e. from the UBL library) plus a list of elements which do not have an equivalent in the framework
4	Identification of relevant code lists (and gaps)	List of relevant code lists plus a list of potential coded elements for which no code list has been defined
5	Development of first CRS model	Initial CRS information model
6	Study of WCO model and comparison with e-Freight framework	Guidance for structuring the model and aligning protocol with cross-border business processes
7	Additional data elements identified after further work and project progress (i.e. more documents studied, testing in demonstrators, validation and feedback from stakeholders)	Extended data elements library
8	Updates proposed to UBL	Some elements identified as "missing" from UBL in step 3 are added to the UBL 2.1 standard (released 2013)
9	Further updates to reflect updates to e-Freight framework and UBL 2.1, and further project testing and validation	Updated CRS information model
10	Final "version 1" published	Final CRD information model (v1.0)

In step 1, the information requirements for the content were derived by carrying out an extensive study of existing reporting documents and regulations at local, national and international levels. In nearly all cases, reporting requirements are laid down by mode-specific EU and international regulations, enforced by local and national legislation.

The study revealed that reporting is still heavily transport-mode-dependent, despite there being many similarities in the information required in each mode. Commonly, different terminology is used in different modes to refer to the same underlying data, usually because of the historical development of each mode of transport. Another observation was that the reporting process is significantly influenced by customs procedures. The customs clearance stage is a key step for all transport operations, as failure to gain this clearance shall mean the goods cannot be unloaded or shipped. The analysis of the WCO data model therefore formed an important part of the study, with the aim of identifying opportunities for alignment and re-use of the concepts.[54]

The strategy of step 2 was to take the results of the study and consolidate the information requirements into a harmonized, "mode-neutral", logical data model to support all cross-border reporting requirements in EU Member States. The results of the analysis revealed that, under current regulatory information requirements, the same fundamental types of information are required:

— **Who** is sending the cargo? **Who** is arranging the transport? **Who** will be responsible for the goods when they arrive?

— **What** is being transported? **What** is on board the vessel? **What** is being imported? **What** was the condition of the cargo?

— **How** are the goods being transported?

— **When** will they arrive? **Where** are they being delivered? **When** will they be presented to customs? **Where** are they coming from?

The logical delineation of information should therefore reflect the who, what, where, when and how of the transportation. The high-level structure of the CRS (produced in step 5) is therefore based on core information structures which provide details of the parties (consignor, consignee, carrier, etc.), the cargo, the transport means, and the journey/voyage (i.e. locations and times), as shown in Figure A.3.

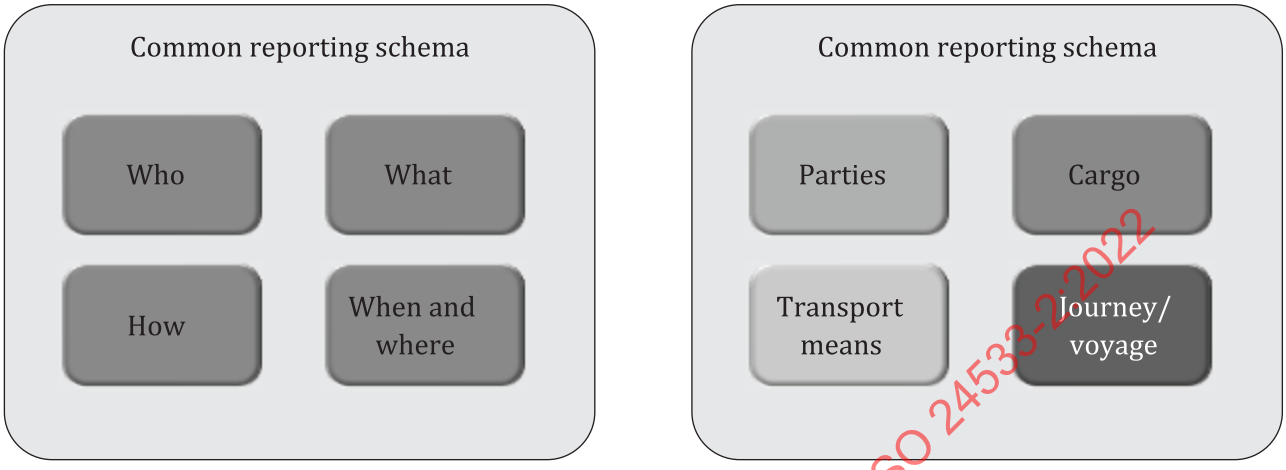


Figure A.3 — Conceptual structure of the CRS

Over the last few years, interoperability has been the concern for those involved in transport and logistics development. Despite this, interoperability is still a challenge, especially for SMEs and for those who are serving different industries. The various industry standards (GS1, papiNet, RosettaNet, Odette, etc.) all include transport-related messages, and such messages are typically implemented differently by different stakeholders.[36]

The development of ISO/IEC 19845 is a good example of an activity trying to deal with the interoperability issue. It is a communication International Standard for procurement as well as transport. Both procurement and transport have their genesis in a purchase order. The procurement side has become more developed than the transport side in many European nations as well as in Australia and New Zealand, where the document is now being used in the purchase of goods from suppliers. A method has also been developed for minimizing the concern of companies using different communication standards through the concept of four-corner model interoperability (see ISO 24533-1:—[3]). The organization supporting this activity in Europe is PEPPOL. PEPPOL is a set of artefacts and specifications enabling cross-border eProcurement. The use of PEPPOL is governed by a multilateral agreement structure which is owned and maintained by OpenPEPPOL. Development on the transport side has been slower and there is not a management organization in place to facilitate the multi-national management of intermodal freight movements. The PEPPOL document is expected to become the genesis of a multinational management organization for facilitating the worldwide movement of freight, preserving legacy systems while allowing full interoperability of communication. PEPPOL is expected to use ISO 24533-2 (this document) as its foundation document.

Having an interoperability solution is necessary, but it is not enough to enable all enterprises, and especially SMEs, to easily connect electronically to other stakeholders. Today, the most common approach is to establish direct connection between all stakeholders, as illustrated in Figure A.4.

Any company that needs to be in communication with many others will incur significant costs to establish such one-to-one connections in all relationships.

3) Under development. Stage at the time of publication: ISO/AWI 24533-1:2022.

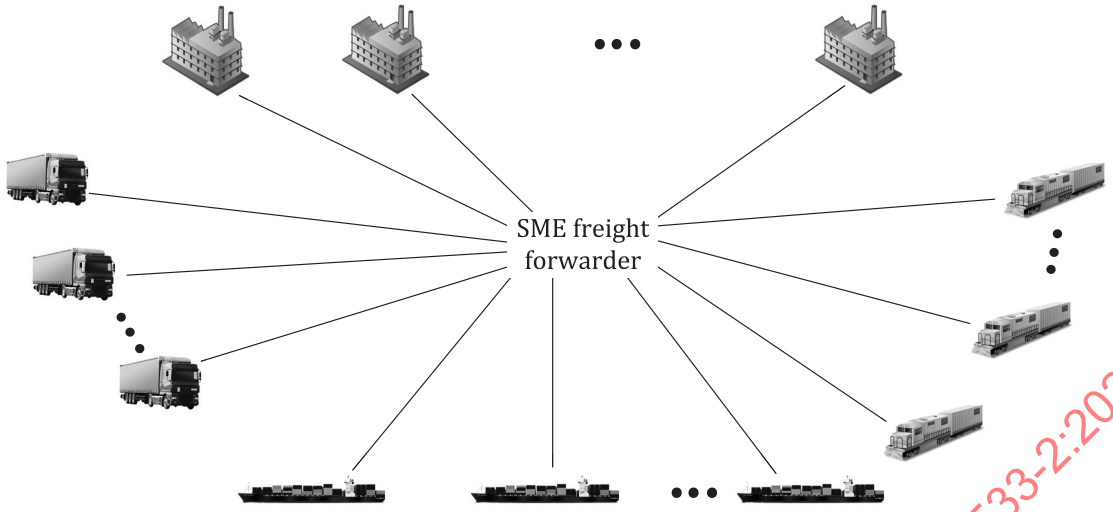


Figure A.4 — Direct Communications between supply chain partners

One way of reducing the cost of connectivity is to apply the concept of electronic access points (EAPs) developed in the e-Freight project. This is illustrated in Figure A.5. The figure shows that different stakeholders are using different standards, including regulatory agencies, like customs. To provide interoperability, in addition to connectivity, the access points are used to provide appropriate conversion between the different standards to all parties requiring the information. The EAP benefit is that each stakeholder connects only once, and, when connected, can communicate with all others, with whom address information has been exchanged (like email). This is the permission necessary to exchange information. In addition, use of EAPs provides a level of security that all parties can rely on. Lack of sufficient levels of security has been another barrier limiting the interest of electronic information exchange in the transport and logistics community.

EAPs support secure connectivity without a centralized infrastructure. The infrastructure developed by Open PEPPOL has now been taken over by DG DIGIT, which is operating under the name e-Delivery infrastructure. There are more than 100 providers of access points satisfying the PEPPOL requirements.

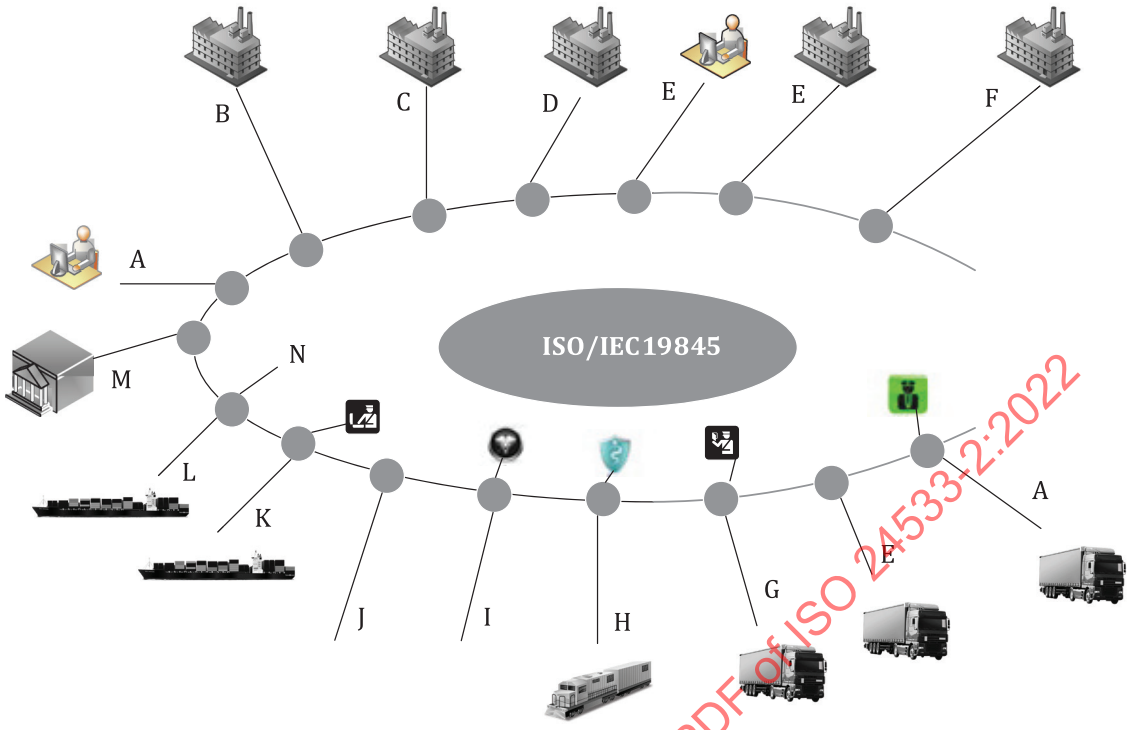


Figure A.5 — Alignment of the CRS with existing international standards and models

Steps 6 to 9 in the CRS development process shown in Table A.1 carry out an iterative process of refining the model by aligning it with other existing standards and models, and validating it against the stakeholder requirements captured in the e-Freight project. In developing the CRS, the objective was to create a data model which could harmonize and mediate between existing standard formats. Alignment with the most widely used and well-established international standards was sought. The most important of these are shown in Figure A.5.

A.5 OASIS UBL version 2.1

Since 2009, the Freightwise Framework, developed under the EU Commission, and its subsequent revisions has been subject to collaboration with OASIS UBL.[48] UBL provides a library of standardized electronic documents and common information elements related to transport and procurement. The e-Freight project has developed its own document profile based on UBL. A profile is formed by creating a subset of the UBL standardized documents to avoid including information elements that are not needed. The collaboration with UBL has resulted in 5 out of 7 of the e-Freight Framework information models becoming a part of the intermodal freight section in UBL version 2.2 released in 2015. The transportation part of the UBL standard has also been implemented in a series of implementation projects in the U.S. The electronic freight management initiative run by US Department of Transportation acts as an umbrella for these projects that focus on different geographical and functional areas within transport. UBL is therefore one of the common denominators that can facilitate collaboration between transport project activities globally.

The CRS is one of the two models which did not become part of the new UBL 2.2 specification.[48] The reason for this was twofold. Firstly, there was no pre-existing document in UBL which was like the CRS which could be extended. Secondly, the CRS is only valid in the EU Member States, and therefore does not have the international applicability required for an International Standard. However, the CRS is still part of the e-Freight framework, so to ensure internal consistency of the message structures it was necessary to use the same modelling methodologies and basic information elements to build the model. The CRS model was therefore developed using the UBL Common Library of information elements and according to high-level design principles. Where there was no suitable information element available in UBL, a new class was created, but still using the basic data types provided by UBL. This process

ensured compatibility and consistency with the rest of the e-Freight framework and hence the wider UBL standard. UBL is in the process of being upgraded. CRS is still not part of the specification but can be incorporated into the process with adoption of this document (ISO 24533-2). An updated version of UBL (2.3) was completed in June 2021 and is referenced in Reference [49].

A.6 IMO FAL and the ISO 28005 series

The International Maritime Organization's Convention on Facilitation of International Maritime Traffic (the IMO FAL Convention), contains standards and recommended practices for formalities, documentary requirements and procedures with the aim of facilitating maritime transport by reducing paperwork, simplifying formalities, documentary requirements and procedures associated with the arrival, stay and departure of ships engaged on international voyages. The IMO FAL Convention, which was adopted in 1965 and entered into force in 1967, specifies seven IMO-approved declarations, which can be required by public authorities to fulfil ship reporting requirements. Referred to as "FAL Forms", these documents have underpinned maritime transport reporting formalities for many years and are at the heart of regulatory compliance for the industry. However, the FAL Forms are historically paper documents, so efficiency savings have been limited.

The CRS has been designed to accommodate all the FAL Form information elements, but in a more structured way and without duplication of individual elements. The CRS is therefore fully aligned and compatible with the international IMO FAL requirements.

Most recently, the IMO Facilitation Committee decided to list ISO 28005-2 as a reference for XML-based electronic reporting of formalities as a way of updating the FAL Compendium. The e-Freight project has contributed to the finalization of the document and the work towards IMO FAL and ISO 28005-2 is fully aligned with the CRS model.

A.7 WCO customs data model

Over the last 20 years, the World Customs Organization (WCO) has developed a set of data requirements that support the procedural and legal needs of cross-border regulatory agencies. Originally, the target user group was customs agencies, but the more recent version (Version 3.10) of the Data Model,[57] also supports information required by other agencies for the release and clearance of transport means and goods at the border. The data model has therefore also been designed to support the implementation of single windows.

Due to the similarity between the roles of the CRS and WCO customs data model, action has been taken to ensure that the CRS is aligned with the WCO data model as it emerges.[57] Differences in the two models arise because of the different names which are used for some information elements in OASIS UBL, and because the CRS is driven by the transport planning process, rather than from the comparatively static requirements of national authorities. However, a mapping between the CRS and the WCO Data Model demonstrates the alignment and compatibility between them.

A.8 ISO 15000-5 — Core components and code lists

The United Nations Centre for Trade Facilitation and Electronic Business (UN/CEFACT) was established as an intergovernmental standard-setting body covering both commercial and governmental processes. UN/CEFACT develops and maintains several code lists and semantic libraries in support of transport and logistics. UN/CEFACT also collaborates closely with ISO, especially with ISO/TC 154 which has adopted many of its standards as International Standards, including the Core Component Technical Specification (ISO 15000-5) and the UNTDED (ISO 7372). These are the foundation of many other initiatives under the WCO, GS1 and other organizations.

The principles of core components are grounded in the Core Components Technical Specification (CEFACT and ISO/TC 154). This specification guides the development methodology used by (among others) OASIS UBL and GS1[58]. As part of the e-Freight framework, the CRS information model also uses

the same code lists and core components. There still needs to be a more formal connection between OASIS UBL and UN/CEFACT to ensure the consistency in the use of the data definitions.

ISO 15000-5 describes and specifies the core component solution as a methodology for developing a common set of semantic building blocks that represent general types of business data and provide for the creation of new business vocabularies and the restructuring of existing business vocabularies.

ISO 15000-5 can be employed wherever business information is being shared or exchanged amongst and between enterprises, governmental agencies, and/or other organizations in an open and worldwide environment. The core components user community consists of business and governmental users, business document, data, process designers and application developers of different organizations that require interoperability of business information.

This interoperability covers both interactive and batch exchanges of business data between applications using internet and web-based information exchanges, as well as traditional electronic data interchange (EDI) systems.

ISO 15000-5 forms the basis for standards development work for business analysts, business users and information technology specialists supplying the content for applications that will use a core component library.

Annex B
(informative)

EU research projects contributing to the CRS

Several projects are known to be contributing to the development of the CRS. The projects and their current contributions are listed in Table B.1.

Table B.1 — EU research projects

Project	Use/Further development
e-Freight	Developed version 1 Testing and validation with the Latvian national single window demonstrator
COMCIS	Development of an ENS profile Validation in a Belgian single window demonstrator
eMAR	Development of a "Ship Formalities" profile Validation in a Norwegian pilot study in the context of Directive 2010/65/EU
CONTAIN	Validation and refinement relating to container security and sensor information
Eurosky	Extension relating to air cargo security reporting

Annex C
(informative)

Analysis of information content

This annex provides a breakdown of information elements within the CRS model[41] to show the balance of information content between different transport modes and between reporting for cargo or transport means clearance.

The CRS information model was analysed for this purpose in order to ascertain its composition. Exact values are difficult to obtain because there are many optional data elements within the structure. Elements can also be repeated an arbitrary number of times (i.e. in lists) and some structures are recursive or nested and so cannot be counted finitely. However, the values shown graphically for comparison in Table C.1 give an indication of the proportion of the model which is required for cargo and/or transport means clearances, and for different transport modes. Figure C.1 and Figure C.2 show the information graphically for comparison purposes.

Table C.1 — Composition of the CRS

Number of data elements	Approximate value
Total in whole model[a]	2 300
Relating to transport formalities (all modes)	1 630
Relating to cargo clearance (all modes)[b]	1 470
Relating to the maritime sector	1 290
Relating to the inland waterway transport sector	1 020
Relating to the rail sector	870
Relating to the road sector	850
Common elements	800

[a] This includes all optional data elements within classes. Repeated elements (i.e. in lists) are only included once. Recursive and nested structures are only included to a depth of one level.

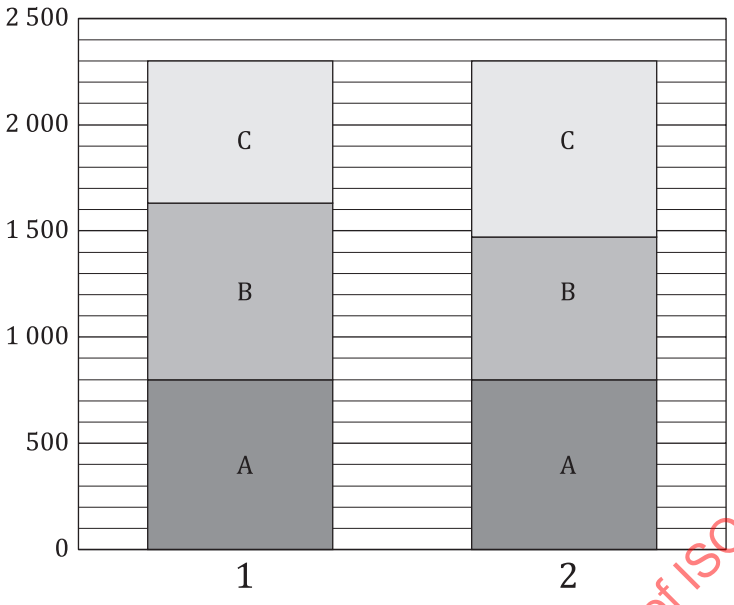
[b] Includes dangerous goods information.

The following points are to be noted.

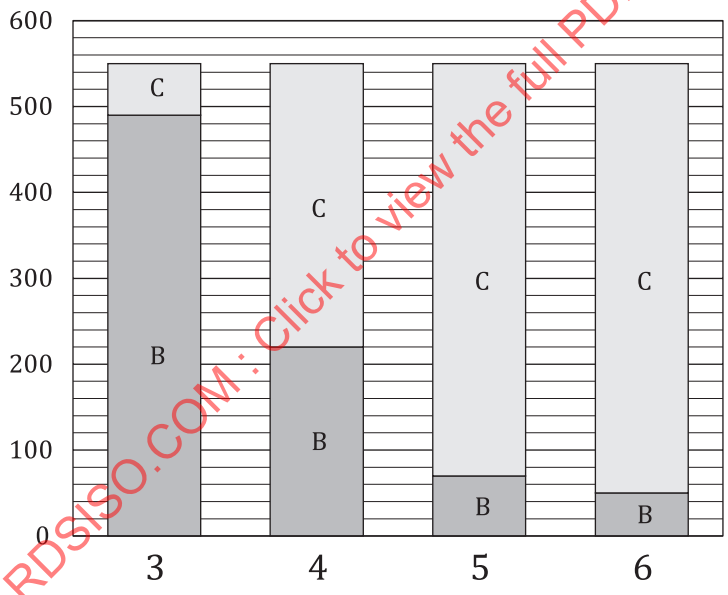
— Some elements are common to both transport formalities and cargo clearance (e.g. Vessel/Vehicle ID, ETA).

— Some elements related to cargo clearance are not included in transport formalities.

— The values for the different modes include both elements related to cargo clearance and transport formalities.



a) CRS Constitution



b) Transport Formalities Constitution

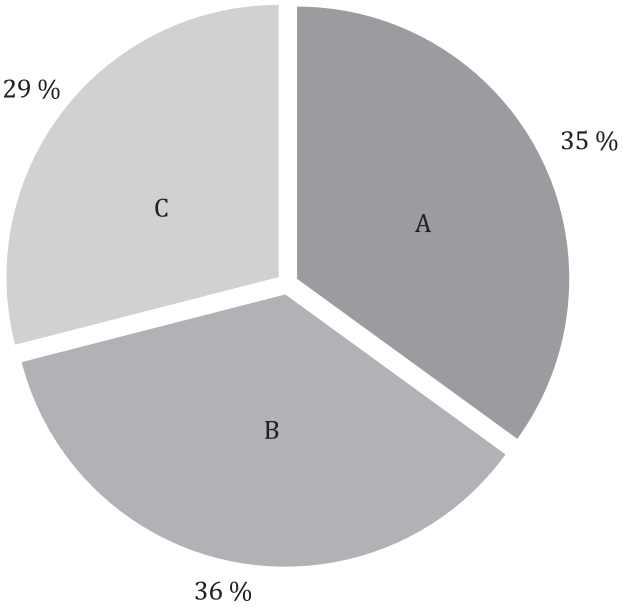
Key

1 transport formalities
2 cargo clearance
3 maritime
4 IWT
5 rail
6 road
A total for CRS
B differing elements
C common elements

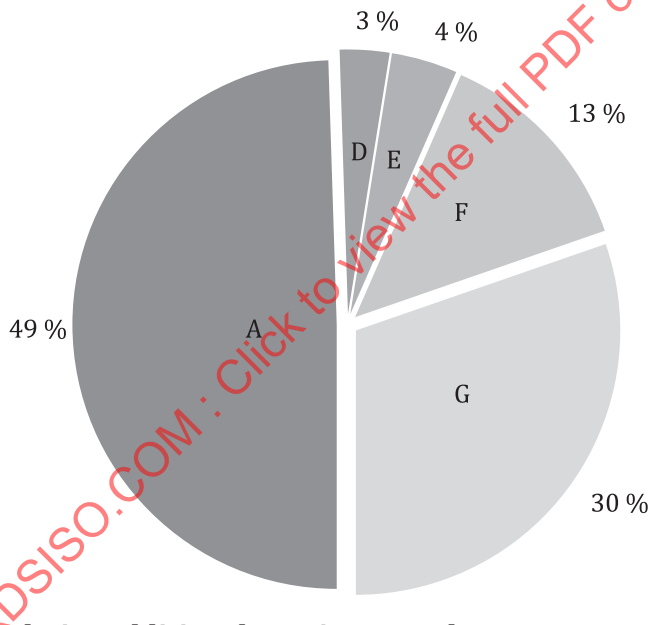
Figure C.1 — Compositions of the CRS

In Figure C.1 a) shows the relative proportions of the data elements which make up the CRS for either transport formalities or cargo clearance requirements. Similarly, Figure C.1 b) shows the relative contributions to the transport formalities requirements for each transport mode. Note that inland water transport (IWT) (4) is shown as a mode. The statistics on IWT movement can be higher for European countries than for other countries in the global community.

In terms of reporting for cargo or transport means clearance, the requirements are the same. However, it should be noted that the numbers are for all the transport modes combined. The breakdown by transport mode in Figure C.2 b) highlights the fact that maritime transport requires considerably more data elements for reporting than road or rail.



a) Relative compositions: Transport vs. cargo clearance



b) Relative additional requirements by transport mode

Key

A common elements
B differing elements
C total for CRS
D road
E rail
F IWT
G maritime

Figure C.2 — Compositions of the CRS

In terms of the number of additional elements (with respect to the common elements), maritime transport requires approximately ten times that of road and rail transport.

Annex D
(informative)

The CRS in practice

D.1 Common core

Parties claiming to be conformant with the e-Freight and Freightwise framework transactions, such as TSD, TES and GII, need to understand every data element defined in the core profile. The intention is that parties communicating with the core profile do not need to agree on the information elements to be exchanged in advance. The full profile, on the other hand, provides additional fields for specific cases or applications (such as dangerous goods transport) which shall be additionally agreed between communities of stakeholders.

This idea of a "common core" works well in business where there is a mutually beneficial requirement to exchange the minimum amount of information. In the case of reporting to authorities, a common core data set has been sought in the EU for many years but can only arise through political agreements. One common approach, currently adopted by several initiatives and projects in the EU, proposes a common core to be agreed by all Member States with the condition that each Member State requests additional data elements if they are required by national legislation.

Whilst this compromise could succeed in harmonizing a very small core set of data elements, it will not alleviate the larger problem, as businesses will be forced to adapt to different additional requirements from country to country. The notion of a core profile for the CRS is therefore not as attractive as it is in the B2B context.

In contrast, the full profile of the CRS represents a harmonization and consolidation of all possible elements, including those which are required by certain national legislation. It therefore captures the maximum, rather than minimum, requirements for reporting to authorities in WCO Member States. By implementing the full profile in an existing system, a transport operator can ensure that all possible requirements are covered.

Although this document has not yet established full or core profiles, the intention is for there to be one core UBL-based profile for interoperability across all transportation projects using UBL interchange syntax. Such profiles would be developed in the manner of the CEN/TC 434 efforts to define the semantics for a common European invoice that were subsequently deployed as part of the successful OpenPEPPOL project, now associated with ISO/IEC 19845. All of the transportation projects using ISO/IEC 19845 shall either select an existing profile or create a new one for themselves based on the core. The future ISO 24533-1 will define the interoperability principles, while this document shall define the profile(s) intended and is created by participants of existing projects looking to use the semantics available in the UBL repertoire of business objects. If all interested projects are involved in the specification of one core transportation semantic model and then map that model to the UBL business objects and their attendant available syntaxes, through access point providers using a four-corner model, then interoperability between transportation projects will be enhanced.

Core profiles should be based on the role of the reporting party (e.g. ship agent, cargo owner, freight forwarder, carrier) and the reason for reporting (e.g. pre-arrival, import, departure).

The matrix in Table D.1 proposes a framework for the development of different CRS profiles for specific roles and events:

Table D.1 — CRS message profile matrix

	Goods clearance				Transport formalities		
	Pre-arrival	**Arrival**	**Pre-departure**	**Departure**	**Pre-arrival**	**Arrival**	**Departure**
Ship agent					MRF		
Cargo agent	ENS						
Road haulier							
...							
Full profile	CRS full profile						

As an example, the cell in the matrix marked with "MRF" could be a CRS profile specifically fulfilling the requirements of the maritime reporting formalities directive (2010/65/EU). Similarly, the cell marked with "ENS" could be the CRS profile for the entry summary declaration. The MRF and ENS profiles were trialled in the Latvian NSW. Importantly, the CRS full profile represents the union of all reporting requirements for all roles and all events (indicated in the matrix by a cell spanning the bottom row).

D.2 Common reporting process

As well as a consolidated and harmonized information model for reporting, a corresponding harmonized business process model was developed to support the use of the CRS as a reporting mechanism. Figure D.1 shows the high-level reporting sequence for clearance of goods or transport means crossing the border:

Figure D.1 — Generic reporting sequence for cross-border clearance

Of course, due to the time taken to plan and execute transport and logistics operations, reporting processes for the same consignment or transport means can overlap. Figure D.2 shows two examples of how this can occur (although the amount of overlap is arbitrary). Each one of the business process streams is referred to as a "reporting context" and shall be given its own ID which is unique for that consignment or transport means within that Member State. In the maritime domain, this is commonly referred to as the "Port Call ID".

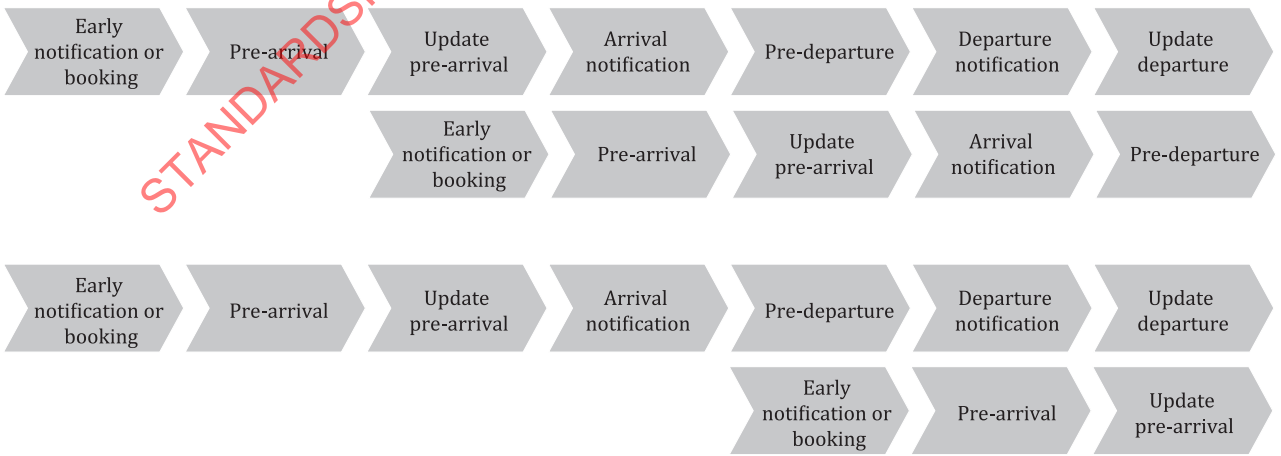


Figure D.2 — Overlapping reporting processes

The CRS supports reporting for each of the steps presented in Figure D.1 and Figure D.2. A new CRS can be created for each phase (pre-arrival, arrival, departure etc.) or the same CRS can be re-used by

submitting updates for each of the phases. A combination of the two modalities is also possible. The choice depends on the complexity of the transport operation, and the requirements and capabilities of the Member States for processing electronic information submissions.

For each of the steps, the same information transaction model applies. This model embodies the B2A/A2B information exchange pattern and is specified as part of the e-Freight framework. The information transaction model for the CRS is presented in Figure D.3 in the form of a UML sequence diagram, showing the interaction between the two relevant roles: the reporting party (usually an LSP) and the transport regulator (i.e. a national authority).

Figure D.4 is the same transaction but with the role of the SW explicitly depicted to demonstrate the case where the reporting party and transport regulator roles interact through an intermediary system.

The sequence diagrams for the transaction are made up of several process fragments which can be classified into different types:

— **opt —** process fragment in which one of a number of possible branching options is required to be chosen;

— **break —** process fragment which, when processed, ends the sequence;

— **loop —** process fragment enclosing a series of message exchanges which can be performed more than once.

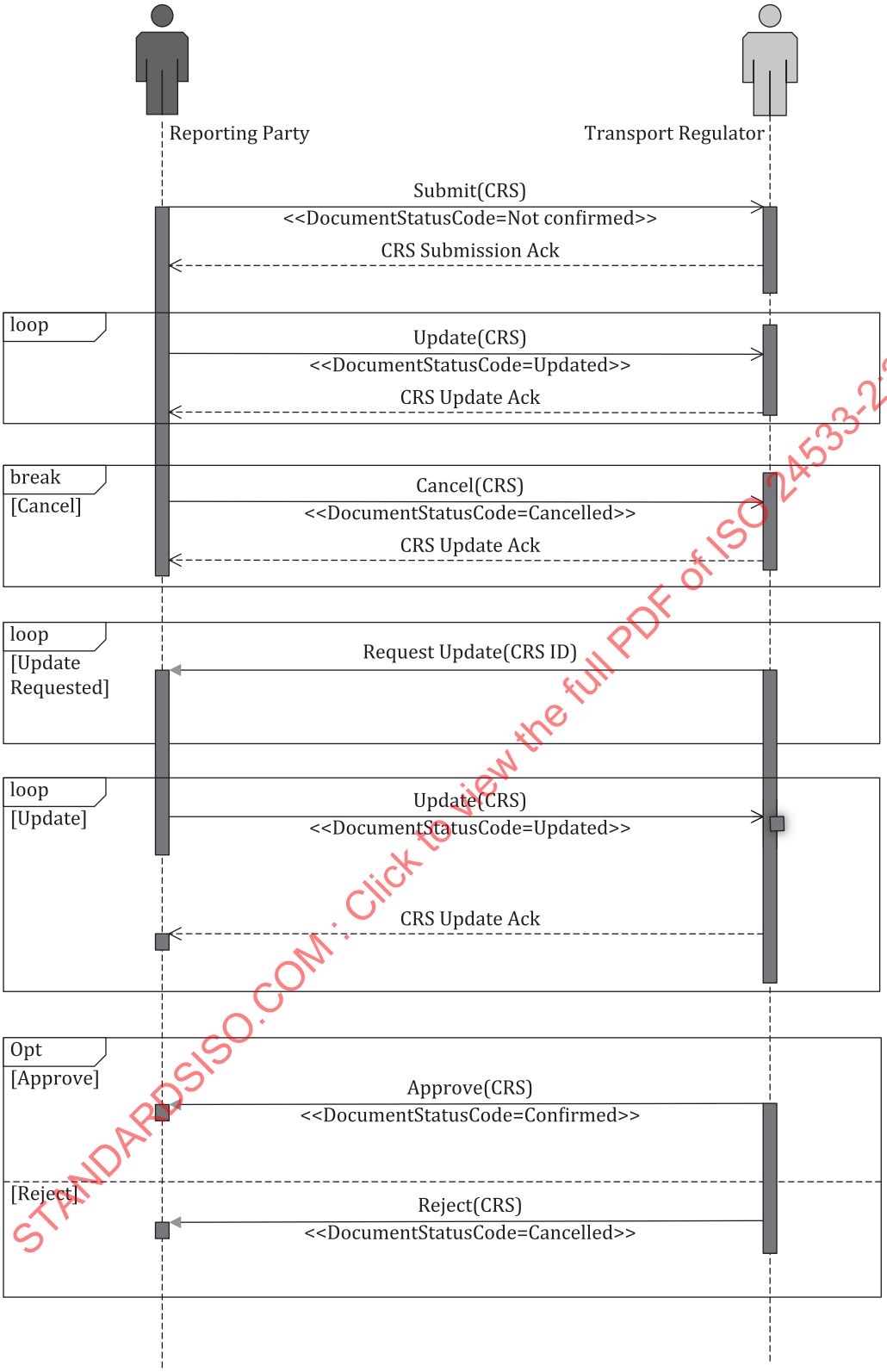


Figure D.3 — CRS information transaction model

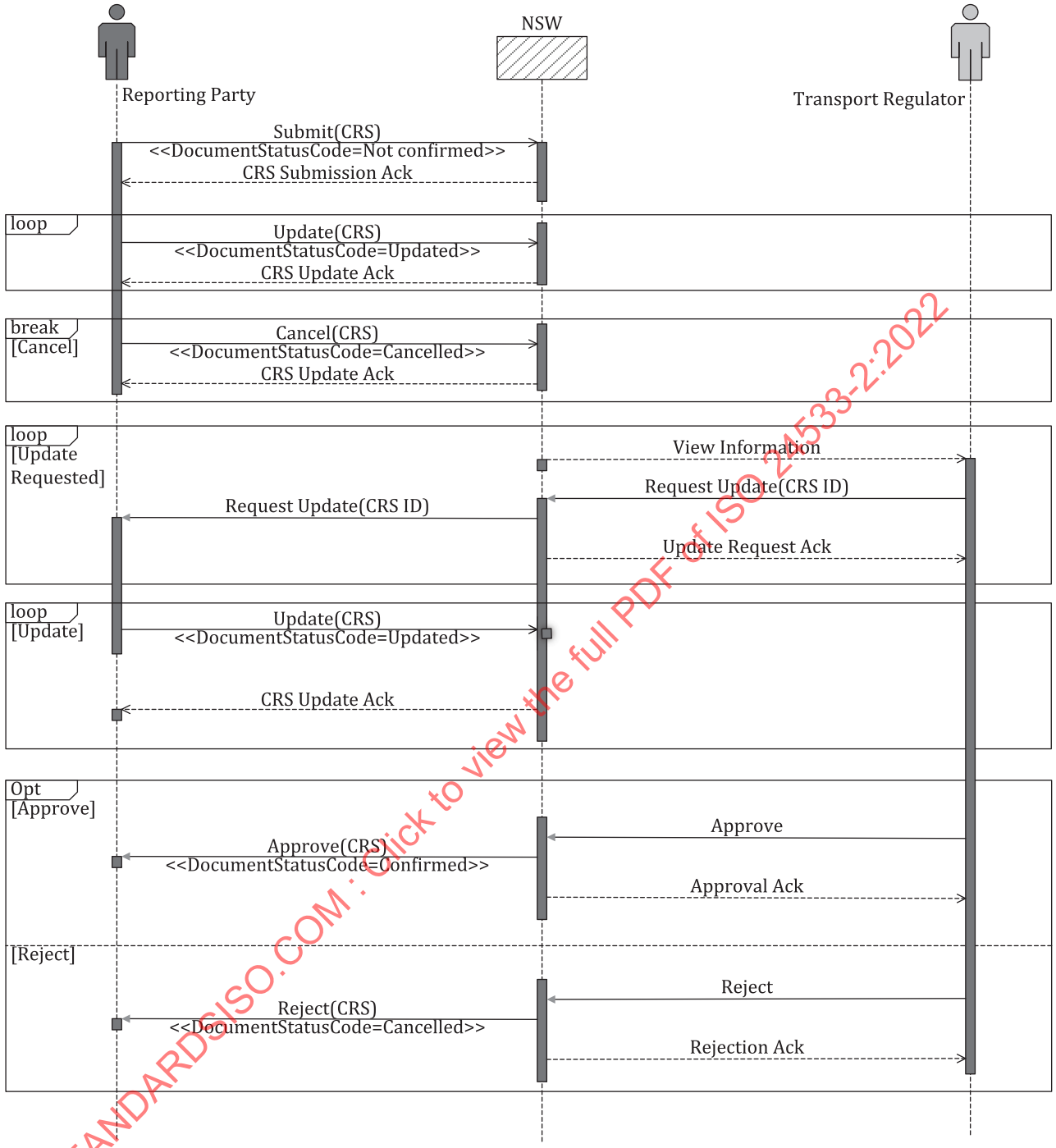


Figure D.4 — CRS information transaction model with NSW

Annex E
(informative)

The CRS elements library

The rows of Table E.1 are classified as follows:

Information Entity/Class
Attribute
Associated information entity/class

Table E.1 — CRS elements library

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
Address							A class to define common information related to an address.
ID	Identifier. Type			0..1	0..1	0..1	An identifier for this address within an agreed scheme of address identifiers.
AddressTypeCode	Code. Type			0..1	0..1	0..1	A mutually agreed code signifying the type of this address.
Postbox	Text. Type			0..1	0..1	0..1	A post office box number registered for postal delivery by a postal service provider.
StreetName	Name. Type			0..1	0..1	0..1	The name of the street, road, avenue, way, etc. to which the number of the building is attached.
BuildingName	Name. Type			0..1	0..1	0..1	The name of a building.
BuildingNumber	Text. Type			0..1	0..1	0..1	The number of a building within the street.
CityName	Name. Type			0..1	0..1	0..1	The name of a city, town or village.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
PostalZone	Text. Type			0..1	0..1	0..1	The postal identifier for this address according to the relevant national postal service, such as a ZIP Code or Post Code.
Region	Text. Type			0..1	0..1	0..1	The recognized geographic or economic region or group of countries in which this address is located.
District	Text. Type			0..1	0..1	0..1	The district or geographical division of a country or region in which this address is located.
AddressLine		Address Line		0..n	0..n	0..n	An unstructured address line.
Country		Country		0..1	0..1	0..1	The country in which this address is situated.
AddressLine							A class to define an unstructured address line.
Line	Text. Type			1	1	1	An address line expressed as unstructured text.
AirTransport							A class to identify a specific aircraft used for transportation.
AircraftID	Identifier. Type			1	1	1	An identifier for a specific aircraft.
Attachment							A class to describe an attached document. An attachment can refer to an external document or be included with the document being exchanged.
EmbeddedDocumentBinaryObject	Binary Object. Type			0..1	0..1	0..1	A binary large object containing an attached document.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
ExternalReference		External Reference		0..1	0..1	0..1	A reference to an attached document that is external to the document(s) being exchanged.
BallastWaterSummary			X				A class to define a ship's ballast water report.
ID	Identifier. Type		X	0..1	0..1	0..1	An identifier for this ballast water report.
ManagementPlanOnBoardIndicator	Indicator. Type		X	0..1	0..1	0..1	An indication that the ballast water management plan is on board.
ManagementPlanImplementedIndicator	Indicator. Type		X	0..1	0..1	0..1	An indication that the ballast water management plan is being implemented.
IMOGuidelinesOnBoardIndicator	Indicator. Type		X	0..1	0..1	0..1	An indication that the IMO ballast water guidelines are on board.
TotalBallastTanksOnBoardQuantity	Quantity. Type		X	0..1	0..1	0..1	The total number of ballast tanks on board the vessel.
TanksInBallastQuantity	Quantity. Type		X	0..1	0..1	0..1	The total number of ballast tanks in ballast.
TanksExchangedQuantity	Quantity. Type		X	0..1	0..1	0..1	The total number of ballast tanks that have been exchanged.
TanksNotExchangedQuantity	Quantity. Type		X	0..1	0..1	0..1	The total number of ballast tanks that have not been exchanged.
TotalBallastWaterOnBoardMeasure	Measure.Type		X	0..1	0..1	0..1	The total volume of ballast water on board.
TotalBallastWaterCapacityMeasure	Measure.Type		X	0..1	0..1	0..1	The total ballast water capacity of the vessel.
OtherControlActions	Text. Type		X	0..1	0..1	0..1	Description of other control actions which have been applied.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
NoControlActionsReason	Text. Type		X	0..1	0..1	0..1	The reason that no controls have been applied, if that is the case.
Uptake		BallastWater-Transaction	X	0..n	0..n	0..n	A quantity of ballast water which has been taken up.
Exchange		BallastWater-Transaction	X	0..n	0..n	0..n	A quantity of ballast water which has been exchanged.
Discharge		BallastWater-Transaction	X	0..n	0..n	0..n	A quantity of ballast water which has been discharged.
ResponsibleOfficer		Person	X	0..1	0..1	0..1	The officer responsible for ballast water management.
BallastWaterTransaction			X				A class to define an individual ballast water transaction.
TankID	Identifier. Type			1	1	1	An identifier for the ballast tank.
TankTypeCode	Code. Type			0..1	0..1	0..1	A code specifying the type of ballast tank.
Date	Date. Type			0..1	0..1	0..1	The date on which the transaction was completed.
ExchangeMethodCode	Code. Type			0..1	0..1	0..1	A code specifying the method used for an exchange transaction.
PercentageExchange	Percent. Type			0..1	0..1	0..1	The percentage of the ballast water volume that was exchanged.
VolumeMeasure	Measure. Type			1	1	1	A measure of the volume of ballast water that was transacted.
SeaHeightMeasure	Measure. Type			0..1	0..1	0..1	A measure of the sea height at the time of the transaction.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
SalinityMeasure	Measure. Type			0..1	0..1	0..1	A measure of the salinity of the ballast water at time of discharge.
UnitCode	Code. Type			0..1	0..1	0..1	A code specifying the units for ballast water volume used in the ballast water report.
Temperature		Temperature		0..1	0..1	0..1	The temperature of the ballast water at time of transaction.
Location		Location		0..1	0..1	0..1	The location where the ballast water transaction took place.
Branch							A class to describe a branch or a division of an organization.
ID	Identifier. Type			0..1	0..1	0..1	An identifier for this branch or division of an organization.
Name	Name. Type			0..1	0..1	0..1	The name of this branch or division of an organization.
CommodityClassification							A class to describe the classification of a commodity.
CargoTypeCode	Code. Type			0..1	0..1	0..1	A mutually agreed code signifying the type of cargo for purposes of commodity classification.
CommodityCode	Code. Type			0..1	0..1	0..1	The harmonized international commodity code for cross border and regulatory (customs and trade statistics) purposes.
ItemClassificationCode	Code. Type			0..1	0..1	0..1	A code signifying the trade classification of the commodity.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
Communication							A class to describe a means of communication.
ChannelCode	Channel_ Code. Type			0..1	0..1	0..1	The method of communication, expressed as a code.
Channel	Text. Type			0..1	0..1	0..1	The method of communication, expressed as text.
Value	Text. Type			0..1	0..1	0..1	An identifying value (phone number, email address, etc.) for this channel of communication.
Condition							A class to define a measurable condition of an object.
AttributeID	Identifier. Type			1	1	1	An identifier for the attribute that applies to the condition.
Measure	Measure. Type			0..1	0..1	0..1	The measurement value.
Description	Text. Type			0..n	0..n	0..n	Text describing the attribute that applies to the condition.
MinimumMeasure	Measure. Type			0..1	0..1	0..1	The minimum value in a range of measurement for this condition.
MaximumMeasure	Measure. Type			0..1	0..1	0..1	The maximum value in a range of a measurement for this condition.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
Consignment							A class to describe an identifiable collection of one or more goods items to be transported between a consignor and a consignee. This information shall be defined within a transport contract. A consignment can include items from more than one shipment (e.g. when consolidated by a freight forwarder).
ID	Identifier. Type			1	1	1	An identifier assigned to a collection of goods for both import and export.
CarrierAssignedID	Identifier. Type			0..1	0..1	0..1	An identifier for this consignment, assigned by the carrier.
ConsigneeAssignedID	Identifier. Type			0..1	0..1	0..1	An identifier for this consignment, assigned by the consignee.
ConsignorAssignedID	Identifier. Type			0..1	0..1	0..1	An identifier for this consignment, assigned by the consignor.
FreightForwarderAssignedID	Identifier. Type			0..1	0..1	0..1	An identifier for this consignment, assigned by the freight forwarder.
BrokerAssignedID	Identifier. Type			0..1	0..1	0..1	An identifier for this consignment, assigned by the broker.
SummaryDescription	Text. Type			0..n	0..n	0..n	A textual summary description of the consignment.
TotalInvoiceAmount	Amount. Type			0..1	0..1	0..1	The total of all invoice amounts declared in this consignment.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
DeclaredCustomsValueAmount	Amount. Type			0..1	0..1	0..1	The total declared value for customs purposes of all the goods in this consignment, regardless of whether they are subject to the same customs procedure, tariff/statistical categorization, country information, or duty regime.
TariffDescription	Text. Type			0..n	0..n	0..n	Text describing the tariff applied to this consignment.
TariffCode	Code. Type			0..1	0..1	0..1	A code signifying the tariff applied to this consignment.
GrossWeightMeasure	Measure. Type			0..1	0..1	0..1	The total declared weight of the goods in this consignment, including packaging but excluding the carrier's equipment.
NetWeightMeasure	Measure. Type			0..1	0..1	0..1	The total net weight of all the goods items referred to as one consignment.
NetNetWeightMeasure	Measure. Type			0..1	0..1	0..1	The total net weight of the goods in this consignment, exclusive of packaging.
ChargeableWeightMeasure	Measure. Type			0..1	0..1	0..1	The weight upon which a charge is to be based.
GrossVolumeMeasure	Measure. Type			0..1	0..1	0..1	The total volume of the goods referred to as one consignment.
NetVolumeMeasure	Measure. Type			0..1	0..1	0..1	The total net volume of all goods items referred to as one consignment.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
LoadingLengthMeasure	Measure. Type			0..1	0..1	0..1	The total length in a means of transport or a piece of transport equipment which, given the width and height of the transport means, shall accommodate all of the consignments in a single consolidation.
Remarks	Text. Type			0..n	0..n	0..n	Remarks concerning the complete consignment, to be printed on the transport document.
HazardousRiskIndicator	Indicator. Type			0..1	0..1	0..1	An indication that the transported goods in this consignment are subject to an international regulation concerning the carriage of dangerous goods (true) or not (false).
AnimalFoodIndicator	Indicator. Type			0..1	0..1	0..1	An indication that the transported goods in this consignment are animal foodstuffs (true) or not (false).
HumanFoodIndicator	Indicator. Type			0..1	0..1	0..1	An indication that the transported goods in this consignment are for human consumption (true) or not (false).
LivestockIndicator	Indicator. Type			0..1	0..1	0..1	An indication that the transported goods are livestock (true) or not (false).

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
BulkCargoIndicator	Indicator. Type			0..1	0..1	0..1	An indication that the transported goods in this consignment are bulk cargoes (true) or not (false).
ContainerizedIndicator	Indicator. Type			0..1	0..1	0..1	An indication that the transported goods in this consignment are containerized cargoes (true) or not (false).
GeneralCargoIndicator	Indicator. Type			0..1	0..1	0..1	An indication that the transported goods in this consignment are general cargoes (true) or not (false).
SpecialSecurityIndicator	Indicator. Type			0..1	0..1	0..1	An indication that the transported goods in this consignment require special security (true) or not (false).
CustomsClearanceServiceInstructions	Text. Type			0..1	0..1	0..1	Service instructions for customs clearance, expressed as text.
SpecialServiceInstructions	Text. Type			0..1	0..1	0..1	Special service instructions, expressed as text.
HandlingCode	Code. Type			0..1	0..1	0..1	The handling required for this consignment, expressed as a code.
HandlingInstructions	Text. Type			0..1	0..1	0..1	The handling required for this consignment, expressed as text.
TotalGoodsItemQuantity	Quantity. Type			0..1	0..1	0..1	The total number of goods items in this consignment.
TotalTransportHandlingUnitQuantity	Quantity. Type			0..1	0..1	0..1	The number of pieces of transport handling equipment (pallets, boxes, cases, etc.) in this consignment.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
InsuranceValueAmount	Amount. Type			0..1	0..1	0..1	The amount covered by insurance for this consignment.
DeclaredForCarriageValueAmount	Amount. Type			0..1	0..1	0..1	The value of this consignment declared by the shipper or their agent solely for the purpose of varying the carrier's level of liability from that provided in the contract of carriage, in case of loss or damage to goods or delayed delivery.
DeclaredStatisticsValueAmount	Amount. Type			0..1	0..1	0..1	The value, declared for statistical purposes, of those goods in this consignment that have the same statistical heading.
SpecialInstructions	Text. Type			0..n	0..n	0..n	Special instructions relating to this consignment.
SplitConsignmentIndicator	Indicator. Type			0..1	0..1	0..1	An indicator that this consignment has been split in transit (true) or not (false).
DeliveryInstructions	Text. Type			0..n	0..n	0..n	A set of delivery instructions relating to this consignment.
ChildConsignmentQuantity	Quantity. Type			0..1	0..1	0..1	The count of consignments being a part of this consignment (when consolidated).
TotalPackagesQuantity	Quantity. Type			0..1	0..1	0..1	The total number of packages associated with a consignment.
MainCarriageShipmentStage		Shipment Stage		0..n	0..n	0..n	A shipment stage during main carriage.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
PreCarriageShipmentStage		Shipment Stage		0..n	0..n	0..n	A shipment stage during pre-carriage (usually refers to movement activity that takes place prior to the container being loaded at a port of loading).
OnCarriageShipmentStage		Shipment Stage		0..n	0..n	0..n	A shipment stage during on-carriage (usually refers to movement activity that takes place after the container is discharged at a port of discharge).
TransportHandlingUnit		Transport Handling Unit		0..n	0..n	0..n	A transport handling unit used for loose and containerized goods.
ConsolidatedShipment		Shipment		0..n	0..n	0..n	A consolidated shipment (a shipment created by an act of consolidation).
CustomsDeclaration		Customs Declaration		0..n	0..n	0..n	An identifier associated with customs procedures.
RequestedPickupTransportEvent		Transport Event		0..1	0..1	0..1	The pickup of this consignment requested by the party requesting a transportation service (the Logistics Service Client).
RequestedDeliveryTransportEvent		Transport Event		0..1	0..1	0..1	The delivery of this consignment requested by the party requesting a transportation service (the Logistics Service Client).

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
PlannedPickupTransportEvent		Transport Event		0..1	0..1	0..1	The pickup of this consignment planned by the party responsible for providing the transportation service (the Logistics Service Provider).
PlannedDeliveryTransportEvent		Transport Event		0..1	0..1	0..1	The delivery of this consignment planned by the party responsible for providing the transportation service (the Logistics Service Provider).
Status		Status		0..n	0..n	0..n	The status of a particular condition associated with this consignment.
ConsigneeParty		Party		0..1	0..1	0..1	A party to which goods are consigned.
ConsignorParty		Party		0..1	0..1	0..1	The party consigning goods, as stipulated in the transport contract by the party ordering transport.
CarrierParty		Party		0..1	0..1	0..1	The party providing the transport of goods in this consignment between named points.
OriginalDepartureCountry		Country		0..1	0..1	0..1	The country from which the goods in this consignment were originally exported, without any commercial transaction taking place in intermediate countries.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
FinalDestinationCountry		Country		0..1	0..1	0..1	The country in which the goods in this consignment are to be delivered to the final consignee or buyer.
TransitCountry		Country		0..n	0..n	0..n	One of the countries through which goods or passengers in this consignment are routed between the country of original departure and the country of final destination.
TransportEvent		Transport Event		0..n	0..n	0..n	A class describing a significant occurrence or happening related to the transportation of goods.
FirstArrivalPortLocation		Location		0..1	0..1	0..1	The first arrival location in a type of transport. This would be a port for sea, an airport for air, a terminal for rail, or a border post for land crossing.
LastExitPortLocation		Location		0..1	0..1	0..1	The final exporting location in a type of transport. This would be a port for sea, an airport for air, a terminal for rail, or a border post for land crossing.
ChildConsignment		Consignment		0..n	0..n	0..n	One of the child consignments of which a consolidated consignment is composed.
OfficeOfEntry		Location	X	0..1	0..1	0..1	A customs office where entry controls are made.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
OfficeOfSubsequentEntry		Location	X	0..n	0..n	0..n	A customs office where subsequent entry controls are made.
OfficeOfExit		Location	X	0..1	0..1	0..1	A customs office where exit controls are made.
OfficeOfDeparture		Location	X	0..1	0..1	0..1	A customs office where departure controls are made.
OfficeOfDestination		Location	X	0..1	0..1	0..1	A customs office where final destination controls are made.
OfficeOfImport		Location	X	0..1	0..1	0..1	A customs office where import controls are made.
OfficeOfExport		Location	X	0..1	0..1	0..1	A customs office where export controls are made.
TransportHandlingUnit		Transport Handling Unit	X	0..n	0..n	0..n	A transport handling unit used for loose and containerized goods.
ChildConsignment		Consignment	X	0..n	0..n	0..n	One of the child consignments of which a consolidated consignment is composed.
MainCarriageShipmentStage		Shipment Stage	X	0..n	0..n	0..n	A shipment stage during main carriage.
PreCarriageShipmentStage		Shipment Stage	X	0..n	0..n	0..n	A shipment stage during pre-carriage (usually refers to movement activity that takes place prior to the container being loaded at a port of loading).

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
OnCarriageShipmentStage		Shipment Stage	X	0..n	0..n	0..n	A shipment stage during on-carriage (usually refers to movement activity that takes place after the container is discharged at a port of discharge).
AdditionalDocumentReference		Document Reference	X	0..n	0..n	0..n	A reference to an additional accompanying document, such as a transport or customs document.
Contact							A class to describe a contactable person or department in an organization.
ID	Identifier. Type			0..1	0..1	0..1	An identifier for this contact.
Name	Name. Type			0..1	0..1	0..1	The name of this contact. It is recommended that this be used for a functional name and not a personal name.
Telephone	Text. Type			0..1	0..1	0..1	The primary telephone number of this contact.
Telefax	Text. Type			0..1	0..1	0..1	The primary fax number of this contact.
ElectronicMail	Text. Type			0..1	0..1	0..1	The primary email address of this contact.
Note	Text. Type			0..n	0..n	0..n	Free-form text conveying information that is not contained explicitly in other structures; in particular, a textual description of the circumstances under which this contact can be used (e.g. "emergency" or "after hours").

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
OtherCommunication		Communication		0..n	0..n	0..n	Another means of communication with this contact.
Contract							A class to describe a contract.
ID	Identifier. Type			0..1			An identifier for this contract.
NominationDate	Date. Type			0..1			In a transportation contract, the deadline date by which the services referred to in the transport execution plan have to be booked. For example, if this service is a carrier service scheduled for Wednesday 16th February 2011 at 10 a.m. CET, the nomination date can be Tuesday 15th February 2011.
NominationTime	Time. Type			0..1			In a transportation contract, the deadline time by which the services referred to in the transport execution plan have to be booked. For example, if this service is a carrier service scheduled for Wednesday 16th February 2011 at 10 a.m. CET, the nomination date can be Tuesday 15th February 2011 and the nomination time 4 p.m. at the latest.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
ContractTypeCode	Code. Type			0..1			The type of this contract, expressed as a code, such as "Cost plus award fee" and "Cost plus fixed fee" from UNCEFACT Contract Type code list.
ContractType	Text. Type			0..1			The type of this contract, expressed as text, such as "Cost plus award fee" and "Cost plus fixed fee" from UNCEFACT Contract Type code list.
Note	Text. Type			0..n			Free-form text conveying information that is not contained explicitly in other structures.
VersionID	Identifier. Type			0..1			An identifier for the current version of this contract.
Description	Text. Type			0..n			Text describing this contract.
ContractDocumentReference		Document Reference		0..n			A reference to a contract document.
Country							A class to describe a country.
IdentificationCode	Country Identification_ Code. Type			0..1	0..1	0..1	A code signifying this country.
Name	Name. Type			0..1	0..1	0..1	The name of this country.
CrewsEffect			X				A class to describe articles or goods belonging to a crew member.
Description	Text. Type		X	1		1	A description of the article or goods.
CrewMember		Person	X	0..1		0..1	A reference to the crew member to whom the article or goods belongs.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
CustomsDeclaration							A class to define an identifier related to a customs procedure.
ID	Identifier. Type			1	1	1	An identifier related to a customs procedure.
IssuerParty		Party		0..1	0..1	0..1	The party issuing this customs identification.
DeliveryTerms							A class for describing the terms and conditions applying to the delivery of goods.
ID	Identifier. Type			0..1			An identifier for this description of delivery terms.
SpecialTerms	Text. Type			0..1			A description of any terms or conditions relating to the delivery items.
DeliveryLocation		Location		0..1			The location for the contracted delivery.
DestinationPortCall			X				A class to define a port call.
ID	Identifier. Type		X	1		1	An identifier for this port call.
PlannedOperations	Text. Type		X	0..1		0..1	A description of the planned operations during the port call.
PlannedWorks	Text. Type		X	0..1		0..1	A description of the planned works during the port call.
PlannedInspections	Text. Type		X	0..1		0..1	A description of any planned inspections during the port call.
ExpectedAnchorageIndicator	Indicator. Type		X	0..1		0..1	Indicates whether a ship is expected to stay at an anchorage upon arrival at the port of call.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
PositionInPortID	Identifier. Type		X	0..1		0..1	An identifier for the position of the ship in the port of call.
CargoAndBallastTankCondition	Text. Type		X	0..1		0..1	A description of the condition of the cargo and ballast tanks.
ShipsRequirements		Ships Requirements	X	0..1		0..1	A description of the ship's requirements for the port call.
PurposeOfCall		Purpose of Call	X	0..n		0..n	The ship's purpose(s) of call in this port.
Dimension							A class to define a measurable dimension (length, mass, weight, volume, or area) of an item.
AttributeID	Identifier. Type			1	1	1	An identifier for the attribute to which the measure applies.
Measure	Measure. Type			0..1	0..1	0..1	The measurement value.
Description	Text. Type			0..n	0..n	0..n	Text describing the measurement attribute.
MinimumMeasure	Measure. Type			0..1	0..1	0..1	The minimum value in a range of measurement.
MaximumMeasure	Measure. Type			0..1	0..1	0..1	The maximum value in a range of measurement.
DocumentReference							A class to define a reference to a document.
ID	Identifier. Type			1	1	1	An identifier for the referenced document.
IssueDate	Date. Type			0..1	0..1	0..1	The date, assigned by the sender of the referenced document, on which the document was issued.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
IssueTime	Time. Type			0..1	0..1	0..1	The time, assigned by the sender of the referenced document, at which the document was issued.
DocumentTypeCode	Code. Type			0..1	0..1	0..1	The type of document being referenced, expressed as a code.
DocumentType	Text. Type			0..1	0..1	0..1	The type of document being referenced, expressed as text.
VersionID	Identifier. Type			0..1	0..1	0..1	An identifier for the current version of the referenced document.
DocumentDescription	Text. Type			0..n	0..n	0..n	Text describing the referenced document.
Attachment		Attachment		0..1	0..1	0..1	The referenced document as an attachment to the document from which it is referenced.
ValidityPeriod		Period		0..1	0..1	0..1	The period for which this document reference is valid.
EmissionCalculationMethod							A class to define how an environmental emission is calculated.
CalculationMethodCode	Code. Type			0..1			A code signifying the method used to calculate the emission.
FullnessIndicationCode	Code. Type			0..1			A code signifying whether a piece of transport equipment is full, partially full, or empty. This indication is used as a parameter when calculating the environmental emission.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
MeasurementFromLocation		Location		0..1			A start location from which an environmental emission is calculated.
MeasurementToLocation		Location		0..1			An end location to which an environmental emission is calculated.
EnvironmentalEmission							A class to describe an environmental emission.
EnvironmentalEmission-TypeCode	Code. Type			1			A code signifying the type of this environmental emission.
ValueMeasure	Measure. Type			1			A value measurement for the environmental emission.
Description	Text. Type			0..n			Text describing this environmental emission.
EmissionCalculationMethod		Emission Calculation Method		0..n			A method used to calculate the amount of this emission.
ExternalReference							A class to describe an external object, such as a document stored at a remote location.
URIID	Identifier. Type			0..1	0..1	0..1	The Uniform Resource Identifier (URI) that identifies the external object as an Internet resource.
MimeCode	Code. Type			0..1	0..1	0..1	A code signifying the mime type of the external object.
FormatCode	Code. Type			0..1	0..1	0..1	A code signifying the format of the external object.
FileName	Name. Type			0..1	0..1	0..1	The file name of the external object.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
Description	Text. Type			0..n	0..n	0..n	Text describing the external object.
FinancialAccount							A class to describe a financial account.
ID	Identifier. Type			0..1	0..1	0..1	The identifier for this financial account; the bank account number.
Name	Name. Type			0..1	0..1	0..1	The name of this financial account.
AccountTypeCode	Code. Type			0..1	0..1	0..1	A code signifying the type of this financial account.
CurrencyCode	Currency_ Code. Type			0..1	0..1	0..1	A code signifying the currency in which this financial account is held.
PaymentNote	Text. Type			0..n	0..n	0..n	Free-form text applying to the payment to the owner of this account.
FinancialInstitutionBranch		Branch		0..1	0..1	0..1	The branch of the financial institution associated with this financial account.
GoodsItem							A class to describe a separately identifiable quantity of goods of a single product type.
ID	Identifier. Type			0..1	0..1	0..1	An identifier for this goods item.
SequenceNumberID	Identifier. Type			0..1	0..1	0..1	A sequence number differentiating a specific goods item within a consignment.
Description	Text. Type			0..n	0..n	0..n	Text describing this goods item to identify it for customs, statistical, or transport purposes.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
HazardousRiskIndicator	Indicator. Type			0..1	0..1	0..1	An indication that the transported goods item is subject to an international regulation concerning the carriage of dangerous goods (true) or not (false).
DeclaredCustomsValueAmount	Amount. Type			0..1	0..1	0..1	Specifies the amount declared for customs purposes of those goods in a consignment which are subject to the same customs procedure and have the same tariff/statistical heading, country information, and duty regime.
DeclaredForCarriageValueAmount	Amount. Type			0..1	0..1	0..1	The value of this goods item, declared by the shipper or his agent solely for the purpose of varying the carrier's level of liability from that provided in the contract of carriage, in case of loss or damage to goods or delayed delivery.
DeclaredStatisticsValueAmount	Amount. Type			0..1	0..1	0..1	Specifies the amount declared for statistical purposes of those goods in a consignment which have the same statistical heading.
FreeOnBoardValueAmount	Amount. Type			0..1	0..1	0..1	The monetary amount that has to be or has been paid as calculated under the applicable trade delivery.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
InsuranceValueAmount	Amount. Type			0..1	0..1	0..1	The amount covered by insurance for this goods item.
ValueAmount	Amount. Type			0..1	0..1	0..1	The amount on which a duty, tax, or fee shall be assessed.
GrossWeightMeasure	Measure. Type			0..1	0..1	0..1	The weight of this goods item, including packing and packaging but excluding the carrier's equipment.
NetWeightMeasure	Measure. Type			0..1	0..1	0..1	The weight of this goods item, excluding packing but including packaging that normally accompanies the goods.
NetNetWeightMeasure	Measure. Type			0..1	0..1	0..1	The total weight of this goods item, excluding all packing and packaging.
ChargeableWeightMeasure	Measure. Type			0..1	0..1	0..1	The weight on which a charge is to be based.
GrossVolumeMeasure	Measure. Type			0..1	0..1	0..1	The volume of this goods item, normally calculated by multiplying its maximum length, width, and height.
NetVolumeMeasure	Measure. Type			0..1	0..1	0..1	The volume contained by a goods item, excluding the volume of any packaging material.
Quantity	Quantity. Type			0..1	0..1	0..1	The number of units making up this goods item.
PreferenceCriterionCode	Code. Type			0..1	0..1	0..1	A code signifying the treatment preference for this goods item according to international trading agreements.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
RequiredCustomsID	Identifier. Type			0..1	0..1	0..1	An identifier for a set of tariff codes required to specify a type of goods for customs, transport, statistical, or other regulatory purposes.
CustomsStatusCode	Code. Type			0..1	0..1	0..1	A code assigned by customs to signify the status of this goods item.
CustomsTariffQuantity	Quantity. Type			0..1	0..1	0..1	Quantity of the units of this goods item as required by customs for tariff, statistical, or fiscal purposes.
CustomsImportClassifiedIndicator	Indicator. Type			0..1	0..1	0..1	An indicator that this goods item has been classified for import by customs (true) or not (false).
ChargeableQuantity	Quantity. Type			0..1	0..1	0..1	The number of units of the goods item to which charges apply.
ReturnableQuantity	Quantity. Type			0..1	0..1	0..1	The number of units of the goods item that will be returned.
TraceID	Identifier. Type			0..1	0..1	0..1	An identifier for use in tracing this goods item, such as the EPC number used in RFID.
Item		Item		0..n	0..n	0..n	Describes product information relating to a goods item.
GoodsItemContainer		Goods Item Container		0..n	0..n	0..n	Describes the transporting of a goods item in a unit of transport equipment (e.g. container).
ContainedGoodsItem		Goods Item		0..n	0..n	0..n	Describes any other goods items contained in this goods item.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
MeasurementDimension		Dimension		0..n	0..n	0..n	A measurable dimension (length, mass, weight, or volume) of this goods item.
ContainingPackage		Package		0..n	0..n	0..n	A package containing this goods item.
MinimumTemperature		Temperature		0..1	0..1	0..1	Information about minimum temperature.
MaximumTemperature		Temperature		0..1	0..1	0..1	Information about maximum temperature.
Item		Item	X	1	1	1	Describes product information relating to a goods item.
ContainedGoodsItem		Goods Item	X	0..n	0..n	0..n	Describes any other goods items contained in this goods item.
ContainingPackage		Package	X	0..n	0..n	0..n	A package containing this goods item.
GoodsItemContainer		Goods Item Container	X	0..n	0..n	0..n	Describes the transporting of a goods item in a unit of transport equipment (e.g. container).
GoodsItemContainer							A class defining how goods items are split across transport equipment.
ID	Identifier. Type			1	1	1	An identifier for this goods item container.
TransportEquipment		Transport Equipment		0..n	0..n	0..n	A piece of transport equipment used to contain a single goods item.
TransportEquipment		Transport Equipment	X	1	1	1	A piece of transport equipment used to contain a single goods item.
HazardousItem							A class to describe a hazardous item.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
ID	Identifier. Type			0..1	0..1	0..1	An identifier for this hazardous item.
AdditionalInformation	Text. Type			0..1	0..1	0..1	Text providing further information about the hazardous substance.
UNDGCode	Code. Type			0..1	0..1	0..1	The UN code for this kind of hazardous item.
EmergencyProceduresCode	Code. Type			0..1	0..1	0..1	A code signifying the emergency procedures for this hazardous item.
TechnicalName	Name. Type			0..1	0..1	0..1	The full technical name of the specific hazardous substance contained in this goods item.
CategoryName	Name. Type			0..1	0..1	0..1	The name of the category of hazard that applies to the item.
HazardousCategoryCode	Code. Type			0..1	0..1	0..1	A code signifying a kind of hazard for a material.
MarkingID	Identifier. Type			0..1	0..1	0..1	Identifies the marking of dangerous goods.
HazardClassID	Identifier. Type			0..1	0..1	0..1	An identifier for the hazard class applicable to this hazardous item as defined by the relevant regulation authority (e.g. the IMDG Class Number of the SOLAS Convention of IMO and the ADR/RID Class Number for the road/rail environment).
PackingGroup	Code. Type		X	0..1	0..1	0..1	Identifies the marking of dangerous goods.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
MarinePollutant	Code. Type		X	0..1	0..1	0..1	An identifier for the hazard class applicable to this hazardous item as defined by the relevant regulation authority (e.g. the IMDG Class Number of the SOLAS Convention of IMO and the ADR/RID Class Number for the road/rail environment).
ContactParty		Party		0..1	0..1	0..1	The individual, group, or body to be contacted in case of a hazardous incident associated with this item.
SecondaryHazard		Secondary Hazard		0..n	0..n	0..n	A secondary hazard associated with this hazardous item.
EmergencyTemperature		Temperature		0..1	0..1	0..1	The threshold temperature at which emergency procedures apply in the handling of temperature-controlled goods.
FlashpointTemperature		Temperature		0..1	0..1	0..1	The flashpoint temperature of this hazardous item; i.e. the lowest temperature at which vapours above a volatile combustible substance ignite in air when exposed to flame.
AdditionalTemperature		Temperature		0..n	0..n	0..n	Another temperature relevant to the handling of this hazardous item
PositionOnBoard		Stowage	X	0..1	0..1	0..1	Another temperature relevant to the handling of this hazardous item

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
ISPSRequirements			X				A class to present the information required by the ISPS code
ID	Identifier. Type		X	0..1	0..1	0..1	An identifier for this ISPS report.
ValidISSCIndicator	Indicator. Type		X	0..1	0..1	0..1	Indicates whether the ship has a valid international ship security certificate (ISSC).
ISSCAbsenceReason	Text. Type		X	0..1	0..1	0..1	The reason why the ISSC is absent.
ISSCExpiryDate	Date. Type		X	0..1	0..1	0..1	The expiry date of the ship's ISSC.
SSPOnBoardIndicator	Indicator. Type		X	0..1	0..1	0..1	Indicates whether the ship security plan (SSP) is on board.
SSPSecurityMeasuresAppliedIndicator	Indicator. Type		X	0..1	0..1	0..1	Indicates whether the security measures stated in the SSP have been applied.
CurrentOperatingSecurityLevelCode	Code. Type		X	0..1	0..1	0..1	A code specifying the current security level at which the ship is operating.
AdditionalMatterIndicator	Indicator. Type		X	0..n	0..n	0..n	An indication that there are additional security-related matters to report.
AdditionalMatterDescription	Text. Type		X	0..1	0..1	0..1	A description of the additional security-related matters.
SpecialAdditionalMeasuresIndicator	Indicator. Type		X	0..1	0..1	0..1	An indication that special additional security measures have been taken by the ship.
SpecialAdditionalMeasures	Text. Type		X	0..n	0..n	0..n	A description of special security measures taken by the ship.
PortFacilityCallRecord		Port Facility Call Record	X	0..n	0..n	0..n	A record for a ship call at a port facility.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
ShipToShipActivityRecord		Ship to Ship Activity Record Type	X	0..n	0..n	0..n	A record for a ship-to-ship activity.
LocationOfReport		Location	X	0..1	0..1	0..1	Location at which the ISPS report was made.
ISSCIssuerParty		Party	X	0..1	0..1	0..1	The party who issued the ISSC.
ShipSecurityOfficer		Person	X	0..1	0..1	0..1	The ship's security officer.
Item							A class to describe an item of trade. It includes a generic description applicable to all examples of the item together with optional subsidiary descriptions of any number of actual instances of the type.
Description	Text. Type			0..n	0..n	0..n	Text describing this item.
Name	Name. Type			0..1	0..1	0..1	A short name optionally given to this item, such as a name from a catalogue, as distinct from a description.
HazardousRiskIndicator	Indicator. Type			0..1	0..1	0..1	An indication that the transported item, as delivered, is subject to an international regulation concerning the carriage of dangerous goods (true) or not (false).
AdditionalInformation	Text. Type			0..1	0..1	0..1	Further details regarding this item (e.g., the URL of a relevant web page).
BrandName	Name. Type			0..n	0..n	0..n	A brand name of this item.
ModelName	Name. Type			0..n	0..n	0..n	A model name of this item.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
AdditionalItemIdentification		Item Identification		0..n	0..n	0..n	An additional identifier for this item.
OriginCountry		Country		0..1	0..1	0..1	The country of origin of this item.
CommodityClassification		Commodity Classification		0..n	0..n	0..n	A classification of this item according to a specific system for classifying commodities.
HazardousItem		Hazardous Item		0..n	0..n	0..n	Information pertaining to this item as a hazardous item.
AdditionalItemProperty		Item Property		0..n	0..n	0..n	An additional property of this item.
OriginAddress		Address		0..1	0..1	0..1	A region (not country) of origin of this item.
ItemInstance		Item Instance		0..n	0..n	0..n	A trackable, unique instantiation of this item.
HazardousItem		Hazardous Item	X	0..n	0..n	0..n	Information pertaining to this item as a hazardous item.
ItemIdentification							A class for assigning identifying information to an item.
ID	Identifier. Type			1	1	1	An identifier for the item.
ExtendedID	Identifier. Type			0..1	0..1	0..1	An extended identifier for the item that identifies the item with specific properties, e.g. Item 123 = Chair / Item 123 Ext 45 = brown chair.
BarcodeSymbologyID	Identifier. Type			0..1	0..1		An identifier for a system of barcodes.
PhysicalAttribute		Physical Attribute		0..n	0..n		A physical attribute of the item.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
MeasurementDimension		Dimension		0..n	0..n		A measurable dimension (length, mass, weight, or volume) of the item.
IssuerParty		Party		0..1	0..1		The party that issued this item identification.
ItemInstance							A class to describe a specific, trackable instance of an item.
ProductTraceID	Identifier. Type			0..1	0..1	0..1	An identifier used for tracing this item instance, such as the EPC number used in RFID.
ManufactureDate	Date. Type			0..1	0..1	0..1	The date on which this item instance was manufactured.
ManufactureTime	Time. Type			0..1	0..1	0..1	The time at which this item instance was manufactured.
SerialID	Identifier. Type			0..1	0..1	0..1	The serial number of this item instance.
ItemProperty							A class to describe a specific property of an item.
ID	Identifier. Type			0..1	0..1		An identifier for this property of an item.
Name	Name. Type			1	1	1	The name of this item property.
NameCode	Code. Type			0..1	0..1	0..1	The name of this item property, expressed as a code.
Value	Text. Type			0..1	0..1	0..1	The value of this item property, expressed as text.
UsabilityPeriod		Period		0..1	0..1		The period during which this item property is valid.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
ItemPropertyGroup		ItemPropertyGroup		0..n	0..n		A description of the property group to which this item property belongs.
ItemPropertyRange		ItemPropertyRange		0..1	0..1		A range of values for this item property.
ItemPropertyGroup							A class to describe a property group or classification.
ID	Identifier. Type			1	1		An identifier for this group of item properties.
Name	Name. Type			0..1	0..1		The name of this item property group.
ImportanceCode	Code. Type			0..1	0..1		A code signifying the importance of this property group in using it to describe a required Item.
ItemPropertyRange							A class to describe a range of values for an item property.
MinimumValue	Text. Type			1	1		The minimum value in this range of values.
MaximumValue	Text. Type			0..1	0..1		The maximum value in this range of values.
Location							A class to describe a location.
ID	Identifier. Type			0..1	0..1	0..1	An identifier for this location, e.g. the EAN Location Number, GLN.
Description	Text. Type			0..n	0..n	0..n	Text describing this location.
LocationTypeCode	Code. Type			0..1	0..1	0..1	A code signifying the type of location.
InformationURIID	Identifier. Type			0..1	0..1	0..1	The URI of a document providing information about this location.
Name	Name. Type			0..1	0..1	0..1	The name of this location.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
Address		Address		0..1	0..1	0..1	The address of this location.
SubsidiaryLocation		Location		0..n	0..n	0..n	A location subsidiary to this location.
LocationCoordinate		Location Coordinate		0..1	0..1	0..1	The geographical coordinates of this location.
LocationCoordinate							Information about physical (geographical) location.
CoordinateSystemCode	Code. Type			0..1	0..1	0..1	An identifier for the location system used.
LatitudeDegreesMeasure	Measure. Type			0..1	0..1	0..1	The measure of latitude in degrees.
LatitudeMinutesMeasure	Measure. Type			0..1	0..1	0..1	The measure of latitude in minutes.
LatitudeDirectionCode	Latitude Direction_ Code. Type			0..1	0..1	0..1	A code signifying the direction of latitude measurement from the equator (north or south).
LongitudeDegreesMeasure	Measure. Type			0..1	0..1	0..1	The measure of longitude in degrees.
LongitudeMinutesMeasure	Measure. Type			0..1	0..1	0..1	The measure of longitude in minutes.
LongitudeDirectionCode	Longitude Direction_ Code. Type			0..1	0..1	0..1	A code signifying the direction of longitude measurement from the prime meridian (east or west).
MaritimeDeclarationOfHealth			X				A class representing the IMO Maritime Declaration of Health.
ID	Identifier. Type		X	0..1	0..1	0..1	An identifier for this declaration.
WHOAffectedAreaVisitIndicator	Indicator. Type		X	0..1	0..1	0..1	Indicates whether the ship has visited a WHO (World Health Organization) designated affected area.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
DeathOfPersonIndicator	Indicator. Type		X	0..1	0..1	0..1	An indication that there has been a death.
InfectiousDiseaseCaseOnBoardIndicator	Indicator. Type		X	0..1	0..1	0..1	An indication that there is a case of an infectious disease on board.
TotalDeathsQuantity	Quantity. Type		X	0..1	0..1	0..1	The total number of deaths that occurred since the last declaration.
TotalIllPersonsQuantity	Quantity. Type		X	0..1	0..1	0..1	The total number of ill persons on board the ship.
MoreIllPersonsThanExpectedIndicator	Indicator. Type		X	0..1	0..1	0..1	An indication that there were more ill persons than expected.
SickPersonOnBoardIndicator	Indicator. Type		X	0..1	0..1	0..1	An indication that there is one or more ill persons on board.
MedicalPractitionerConsultedIndicator	Indicator. Type		X	0..1	0..1	0..1	An indication that a medical practitioner has been consulted.
StowawaysFoundOnBoardIndicator	Indicator. Type		X	0..1	0..1	0..1	An indication that one or more stowaways were found on board.
StowawayDetails	Text. Type		X	0..1	0..1	0..1	Details of the stowaway discoveries (when, how, where, etc.).
SickAnimalFoundOnBoardIndicator	Indicator. Type		X	0..1	0..1	0..1	An indication that one or more sick animals have been found on board.
SickAnimalDetails	Text. Type		X	0..1	0..1	0..1	Details of the sick animal discoveries (when, how, where, etc.).
FumigatedCargoTransportIndicator	Indicator. Type		X	0..1	0..1	0..1	An indication that fumigated cargo is being transported on the ship.
SanitaryMeasuresAppliedIndicator	Indicator. Type		X	0..1	0..1	0..1	An indication that sanitary measures have been applied.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
ValidSanitationCertificateCarriedIndicator	Indicator. Type		X	0..1	0..1	0..1	An indication that a valid sanitation certificate is being carried on board.
LastDrinkingWaterAnalysisDate	Date. Type		X	0..1	0..1	0..1	The date on which the last drinking water analysis took place.
ReinspectionRequiredIndicator	Indicator. Type		X	0..1	0..1	0..1	An indication that a re-inspection is required.
WHOAffectedAreaVisit		WHO Affected Area Visit	X	0..n	0..n	0..n	A record of a port call in a WHO designated affected area.
PersonnelHealthIncident		Personnel Health Incident	X	0..n	0..n	0..n	A record of a personnel health incident.
SanitaryMeasure		Sanitary Measure	X	0..n	0..n	0..n	A sanitary measure which was applied to the ship.
PlaceOfReport		Location	X	0..1	0..1	0..1	The location where the health report was made.
MedicalCertificate		Document Reference	X	0..1	0..1	0..1	A document reference for the ship's medical certificate.
ShipSanitationControlCertificate		Document Reference	X	0..1	0..1	0..1	A document reference for the ship sanitation control certificate.
ShipSanitationControlExemption		Document Reference	X	0..1	0..1	0..1	A document reference for the ship sanitation exemption certificate.
ShipSurgeon		Person	X	0..1	0..1	0..1	The ship's surgeon.
MaritimeTransport							A class to describe a vessel used for transport by water (including sea, river, and canal).
VesselID	Identifier. Type			0..1	0..1	0..1	An identifier for a specific vessel.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
VesselName	Name. Type			0..1	0..1	0..1	The name of the vessel.
RadioCallSignID	Identifier. Type			0..1	0..1	0..1	The radio call sign of the vessel.
ShipsRequirements	Identifier. Type			0..n	0..n	0..n	Information about what services a vessel shall require when it arrives at a port, such as refuelling, maintenance, waste disposal, etc.
GrossTonnageMeasure	Name. Type			0..1	0..1	0..1	Gross tonnage is calculated by measuring a ship's volume (from keel to funnel, to the outside of the hull framing) and applying a mathematical formula and is used to determine things such as a ship's manning regulations, safety rules, registration fees and port dues.
NetTonnageMeasure	Identifier. Type			0..1	0..1	0..1	Net tonnage is calculated by measuring a ship's internal volume and applying a mathematical formula and is used to calculate the port duties.
MMSINumber	Identifier. Type		X	0..1	0..1	0..1	The currently assigned Maritime Mobile Service Identity number for the ship.
SegregatedBallastMeasure	Measure. Type		X	0..1	0..1	0..1	The volume of segregated ballast for the ship.
ShipConfigurationCode	Code. Type		X	0..1	0..1	0..1	A code specifying the configuration of the ship (e.g. single hull, double hull).

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
INFShipClassCode	Code. Type		X	0..1	0..1	0..1	A code specifying the irradiated nuclear fuel (INF) class of the ship.
AntennaLocation	Text. Type		X	0..1	0..1	0..1	The location of the position-fixing antenna on the ship.
RegistryCertificateDocumentReference		Document Reference		0..1	0..1	0..1	The certificate issued to the ship by the ships registry in a given flag state.
RegistryPortLocation		Location		0..1	0..1	0..1	The port in which a vessel is registered or permanently based.
ShipMaster		Person	X	0..1	0..1	0..1	The ship master.
VesselDynamics		Vessel Dynamics	X	0..1	0..1	0..1	The dynamic properties of the vessel.
NotificationRequirement							A class to describe a notification requirement.
NotificationTypeCode	Code. Type			1			A code signifying the type of notification (e.g. pickup status).
PostEventNotificationDurationMeasure	Measure. Type			0..1			The length of time to elapse between the occurrence of a given event and the issuance of a notification.
PreEventNotificationDurationMeasure	Measure. Type			0..1			The length of time to elapse between the issuance of a notification and the occurrence of the event to which it relates.
NotifyParty		Party		0..n			A party to be notified.
NotificationPeriod		Period		0..n			A period during which a notification should be issued.
NotificationLocation		Location		0..n			A location at which a notification should be issued.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
Package							A class to describe a package.
ID	Identifier. Type			0..1	0..1	0..1	An identifier for this package.
Quantity	Quantity. Type			0..1	0..1	0..1	The quantity of items contained in this package.
ReturnableMaterialIndicator	Indicator. Type			0..1	0..1	0..1	An indicator that the packaging material is returnable (true) or not (false).
PackageLevelCode	Code. Type			0..1	0..1	0..1	A code signifying a level of packaging.
PackagingTypeCode	Packaging Type_ Code. Type			0..1	0..1	0..1	A code signifying a type of packaging.
PackingMaterial	Text. Type			0..n	0..n	0..n	Text describing the packaging material.
TraceID	Identifier. Type			0..1	0..1	0..1	An identifier for use in tracing this package, such as the EPC number used in RFID.
ContainedPackage		Package		0..n	0..n	0..n	A package contained within this package.
ContainingTransportEquipment		Transport Equipment		0..1	0..1	0..1	The piece of transport equipment containing this package.
GoodsItem		Goods Item		0..n	0..n	0..n	A goods item included in this package.
MeasurementDimension		Dimension		0..n	0..n	0..n	A measurable dimension (length, mass, weight, or volume) of this package.
ContainedPackage		Package	X	0..n	0..n	0..n	A package contained within this package.
ContainingTransportEquipment		Transport Equipment	X	0..1	0..1	0..1	The piece of transport equipment containing this package.
GoodsItem		Goods Item	X	0..n	0..n	0..n	A goods item included in this package.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
Party							Information about an organization, sub-organization, or individual fulfilling a role in a business process.
WebsiteURIID	Identifier. Type			0..1	0..1	0..1	The URI that identifies this party's web site; i.e. the web site's URL.
EndpointID	Identifier. Type			0..1	0..1	0..1	An identifier for the end point of the routing service (e.g. EAN Location Number, GLN).
IndustryClassificationCode	Code. Type			0..1	0..1	0..1	This party's industry classification code.
PartyIdentification		Party Identification		0..n	0..n	0..n	An identifier for this party.
PartyName		Party Name		0..n	0..n	0..n	A name for this party.
PostalAddress		Address		0..1	0..1	0..1	The party's postal address.
PhysicalLocation		Location		0..1	0..1	0..1	The physical location of this party.
PartyLegalEntity		Party Legal Entity		0..n	0..n	0..n	A description of this party as a legal entity.
Contact		Contact		0..1	0..1	0..1	The primary contact for this party.
Person		Person		0..n	0..n	0..n	A person associated with this party.
FinancialAccount		Financial Account		0..1	0..1	0..1	The financial account associated with this party.
PartyIdentification							A class to define an identifier for a party.
ID	Identifier. Type			1	1	1	An identifier for the party.
PartyLegalEntity							Information directly relating to the legal registration that is applicable to a party.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
RegistrationName	Name. Type			0..1	0..1	0..1	The name of a party as registered with the legal authority.
CompanyID	Identifier. Type			0..1	0..1	0..1	Identifies a company as registered with the company registration scheme.
PartyName							Information about a party s name.
Name	Name. Type			1	1	1	The name of the party.
PaymentTerms							A class to describe a set of payment terms.
ID	Identifier. Type			0..1			An identifier for this set of payment terms.
PrepaidPaymentReferenceID	Identifier. Type			0..1			An identifier for a reference to a prepaid payment.
Note	Text. Type			0..n			Free-form text conveying information that is not contained explicitly in other structures.
Amount	Amount. Type			0..1			The monetary amount covered by these payment terms.
PaymentDueDate	Date. Type			0..1			The date on which payment is due.
SettlementPeriod		Period		0..1			The period during which settlement shall occur.
PenaltyPeriod		Period		0..1			The period during which penalties shall apply.
ValidityPeriod		Period		0..1			The period during which these payment terms are valid.
Period							A class to describe a period of time.

Table E.1 *(continued)*

Element Name	Data Type	Associated Object Class	Ext?	Full Profile	Consignment View	Transport means View	Definition
StartDate	Date. Type			0..1	0..1	0..1	The date on which this period begins.
StartTime	Time. Type			0..1	0..1	0..1	The time at which this period begins.
EndDate	Date. Type			0..1	0..1	0..1	The date on which this period ends.
EndTime	Time. Type			0..1	0..1	0..1	The time at which this period ends.
DurationMeasure	Measure. Type			0..1	0..1	0..1	The duration of this period, expressed as an ISO 8601 series code.
Person							A class to describe a person.
ID	Identifier. Type			0..1	0..1	0..1	An identifier for this person.
FirstName	Name. Type			0..1	0..1	0..1	This person's given name.
FamilyName	Name. Type			0..1	0..1	0..1	This person's family name.
Title	Text. Type			0..1	0..1	0..1	This person's title of address (e.g. Mr, Ms, Dr, Sir).
MiddleName	Name. Type			0..1	0..1	0..1	This person's middle name(s) or initials.
NameSuffix	Text. Type			0..1	0..1	0..1	A suffix to this person's name (e.g. PhD, OBE, Jr).
JobTitle	Text. Type			0..1	0..1	0..1	This person's job title (for a particular role) within an organization.
NationalityID	Identifier. Type			0..1	0..1	0..1	An identifier for this person's nationality.
GenderCode	Code. Type			0..1	0..1	0..1	A code (e.g. ISO 5218) signifying the gender of this person.
BirthDate	Date. Type			0..1	0..1	0..1	This person's date of birth.