

**VTS Digital Information Service**

**Product Specification**

**Draft 0.6.3 – November 2020**

VTS Digital Information Service Product Specification

Annex A

Data Classification and Encoding Guide

**Document Revisions**

Revisions to the IALA Document are to be noted in the table prior to the issue of a revised document.

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# Overview

## Preface

The “Data Classification and Encoding Guide” has been developed to provide consistent, standardized instructions for encoding S-100 compliant VTS Digital Information Service(VTS-DIS) data. The purpose of the Data Classification and Encoding Guide is to facilitate VTS-DIS encoding. This document describes how to encode information that the modeller considers relevant. The content of a VTS-DIS is at the discretion of the producer provided that the conventions described within this document are followed.

## VTS-DIS Appendix A - Data Classification and Encoding Guide – Metadata

Note: This information uniquely identifies this Data Classification and Encoding Guide to the Product Specification and provides information about its creation and maintenance.

|  |  |
| --- | --- |
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Table 1‑1 Product specification metadata

## Terms and definitions

|  |  |
| --- | --- |
| **Term** | **Definition** |
| **aggregation** | special form of **association** that specifies a whole-part relationship between the aggregate (whole) and a component (see composition) |
| **application** | manipulation and processing of data in support of user requirements (ISO 19101) |
| **application schema** | **conceptual schema** for data required by one or more **applications** (ISO 19101) |
| **association** | semantic relationship between two or more classifiers that specifies connections among their instances  NOTE:  A binary association is an association among exactly two classifiers (including the possibility of an association from a classifier to itself) |
| **attribute** | named property of an entity  NOTE:  Describes the geometrical, topological, thematic, or other characteristic of an entity |
| **boundary** | set that represents the limit of an entity (ISO 19107) |
| **composition** | special form of **association** that specifies a “strong aggregation”.  In a composition association, if a container object is deleted then all of the objects it contains are deleted as well. |
| **Conceptual model** | model that defines concepts of a **universe of discourse** (ISO 19101) |
| **conceptual schema** | formal description of a **conceptual model** (ISO 19101) |
| **coverage** | **feature** that acts as a function to return values from its range for any direct position within its spatial, temporal or spatiotemporal **domain** (ISO 19123)  *EXAMPLE Raster image, polygon overlay, digital elevation matrix.* |
| **Curve** | 1-dimensional **geometric primitive**, representing the continuous image of a line  NOTE: The **boundary** of a **curve** is the **set** of **points** at either end of the **curve**. If the **curve** is a cycle, the two ends are identical, and the **curve** (if topologically closed) is considered to not have a boundary. The first **point** is called the **start point**, and the last **point** is the **end point**. Connectivity of the curve is guaranteed by the “continuous image of a line” |
| **data product** | **dataset** or **dataset series** that conforms to a **data product specification** |
| **data product specification** | detailed description of a **dataset** or **dataset series** together with additional information that will enable it to be created, supplied to and used by another party  *NOTE: A data product specification provides a description of the universe of discourse and a specification for mapping the universe of discourse to a dataset. It may be used for production, sales, end-use or other purpose.* |
| **Dataset** | identifiable collection of data (ISO 19115)  *NOTE: A dataset may be a smaller grouping of data which, though limited by some constraint such as spatial extent or feature type, is located physically within a larger dataset. Theoretically, a dataset may be as small as a single feature contained within a larger dataset. A hardcopy map or chart may be considered a dataset.* |
| **Dataset series** | collection of **datasets** sharing the same product specification (ISO 19115) |
| **domain** | well-defined set (ISO/TS 19103)  *NOTE: Well-defined means that the definition is both necessary and sufficient, as everything that satisfies the definition is in the set and everything that does not satisfy the definition is necessarily outside the set.* |
| **End point** | last point of a curve (ISO 19107) |
| **enumeration** | a fixed list which contains valid identifiers of named literal values. Attributes of an enumerated type may only take values from this list. |
| **Feature** | abstraction of real world phenomena (ISO 19101)  *NOTE: A feature may occur as a type or an instance. Feature type or feature instance shall be used when only one is meant.*  EXAMPLE:  The feature instance named “Turning Torso Tower” may be classified with other phenomena into a feature type “tower”. |
| **Feature association** | relationship that links instances of one **feature** type with instances of the same or a different **feature** type (ISO19110)  *NOTE 1; A feature association may occur as a type or an instance. Feature association type or feature association instance is used when only one is meant.*  *NOTE 2: Feature associations include aggregation of features.* |
| **Feature attribute** | characteristic of a **feature** (ISO 19101)  *NOTE 1: A feature attribute may occur as a type or an instance. Feature attribute type or feature attribute instance is used when only one is meant.*  *NOTE 2: A feature attribute type has a name, a data type and a domain associated to it. A feature attribute for a feature instance has an attribute value taken from the domain.* |
| **Geographic data** | data with implicit or explicit reference to a location relative to the Earth (ISO 19109)  *NOTE: Geographic information is also used as a term for information concerning phenomena implicitly or explicitly associated with a location relative to the Earth.* |
| **Geometric primitive** | geometric object representing a single, connected, homogeneous element of geometry  NOTE:  Geometric primitives are non-decomposed objects that present information about geometric configuration. They include **points, curves,** surface |
| **maximum display scale** | the largest value of the ratio of the linear dimensions of features of a dataset presented in the display and the actual dimensions of the features represented (largest scale) of the scale range of the dataset |
| **metadata** | data about data (ISO 19115) |
| **minimum display scale** | the smallest value of the ratio of the linear dimensions of features of a dataset presented in the display and the actual dimensions of the features represented (smallest scale) of the scale range of the dataset |
| **model** | abstraction of some aspects of reality (ISO 19109) |
| **point** | 0-dimensional geometric primitive, representing a position  NOTE:  The **boundary** of a point is the empty set |
| **portrayal** | presentation of information to humans (ISO 19117) |
| **quality** | totality of characteristics of a product that bear on its ability to satisfy stated and implied needs (ISO 19101) |
| **set** | unordered collection of related items (objects or values) with no repetition (ISO 19107) |
| **start point** | first point of a curve (ISO 19107) |
| **surface** | connected 2-dimensional geometric primitive, representing the continuous image of a region of a plane  NOTE:  The boundary of a surface is the set of oriented, closed **curves** that delineate the limits of the surface |
| **universe of discourse** | view of the real or hypothetical world that includes everything of interest (ISO 19101) |

Table 1‑2 List of terms and definitions

## Abbreviations

|  |  |
| --- | --- |
| **Abbreviation** | **Description** |
| DCEG | Data Classification and Encoding Guide |
| ECDIS | Electronic Chart Display and Information System |
| ENC | Electronic Navigational Chart |
| GML | Geography Markup Language |
| HO | Hydrographic Office |
| IALA | International Association of Marine Aids to Navigation and Lighthouse Authorities |
| IHO | International Hydrographic Organization |
| IMO | International Maritime Organization |
| IPCDMC | International Port Collaborative Decision Making Council |
| ISO | International Organization for Standardization |
| PCM | Port Call Message |
| REST | Representational State Transfer |
| STM | Sea Traffic Management |
| UML | Unified Modelling Language |
| URL | Universal Resource Locator |
| URN | Uniform Resource Name |
| XML | eXtensible Markup Language |

Table 1‑3 List of abbreviations

## Use of language

Within this document:

“Must” indicates a mandatory requirement;

“Should” indicates an optional requirement, that is the recommended process to be followed, but is not mandatory;

“May” means “allowed to” or “could possibly”, and is not mandatory, or recommended.

## Maintenance

Changes to the Data Classification and Encoding Guide must occur in accordance with the VTS-DIS Product Specification clause 4.x.8(x = 1~11).

# General

## Introduction

The VTS-DIS Data Classification and Encoding Guide describes how data describing the real world should be captured using the types defined in the VTS-DIS Feature Catalogue. It provides the encoding rules and guidance required to create VTS Digital Information Service Product. This standard is specifically concerned with those entities in the real world that are of relevance to VTS Digital Information Service. This concept is considered to be geo-spatial. As a result, the model defines real world entities as a combination of descriptive and spatial characteristics. Within the model these sets of characteristics are defined in terms of feature, spatial. A type is defined as a stereotype of class that is used to specify a domain of instances (objects) together with the operations applicable to the objects. A type may have attributes and may be related to other types.

## Descriptive characteristics

### Feature

A feature contains descriptive attributes that characterize real world entities.

The word ‘feature’ as used in the ISO 191xx series and in S-100 based product specifications has two distinct but related senses – ‘feature type’ and ‘feature instance’. A feature instance is a single occurrence of the feature and is represented as an object in a dataset.

The location of a feature instance on the Earth’s surface is indicated by a relationship to one or more spatial primitive instances. A feature instance may exist without referencing a spatial primitive instance.

#### Geographic feature class

**Geographic (Geo) feature types** carry the descriptive characteristics of a real world entity which is provided by a spatial primitive instance.

### Information types

An information type is an identifiable object that can be associated with features in order to carry information particular to the associated features. Information types can also be associated with other information types. This can be done where there is further supplementary information that is relevant to the information type. Information types carry attributes but not geometry.

## Spatial characteristics

### Spatial primitives

The allowable spatial primitive for each feature type is defined in the Feature Catalogue. Within this document, allowable primitives are included in the tables containing a description of each feature type. Allowable spatial primitives are point, curve and surface.

Each spatial value must be referenced by a feature instance.

## Attributes

Attributes may be simple type or complex type. Complex (C) attributes are aggregates of other attributes that can be simple type or complex type attributes. Simple (S) attributes are assigned to one of the types collected at clause 2.4.1.

The binding of attributes to a feature, the binding of attributes to attributes to construct complex attributes, and attribute multiplicity are all defined in the Feature Catalogue.

Within this document, the allowable attributes are included in the description of each feature, as well as the allowable values for enumeration type attributes.

### Simple attribute types

Each simple attribute (S) is assigned to one of attribute types in Table 2-1 (in alphabetic order):

|  |  |  |
| --- | --- | --- |
| **Abbre- viation** | **Attribute type** | **Description** |
| BO | Boolean | A value representing binary logic. The value can be either True or False. The default state for Boolean type attributes (i.e. where the attribute is not populated for the feature) is False. |
| CL | Code List | A type of flexible enumeration (see “EN” below). A code list type is a list of literals which may be extended only in conformance with specified rules. Attributes of a code list type may take values from the list or other values which are defined according to the rules. The rules should be part of the specification of the individual codelist type. A code list could either be closed (fixed) or open (extensible).  A code list type has the following properties:  1. A description of the code list type,  2. The URI where the list could be found, and  3. An encoding instruction. |
| DA | Date | A date provides values for year, month and day according to the Gregorian Calendar.  Example: 19980918 (YYYYMMDD) |
| DT | Date and Time | A DateTime is a combination of a date and a time type.  Example: 19850412T101530 (YYYYMMDDThhmmss) |
| EN | Enumer-ation | A fixed list of valid identifiers of named literal values. Attributes of an enumerated type may only take values from this list. |
| IN | Integer | A signed integer number. The representation of an integer is encapsulation and usage dependent.  Integer attribute values must not be padded by non-significant zeroes. For example, for a number of 19, the value populated for the attribute must be 19 and not 019.  Examples: 29, -65547 |
| RE | Real | A signed real (floating point) number consisting of a mantissa and an exponent. The representation of a real is encapsulation and usage dependent.  Real attribute values must not be padded by non-significant zeroes. For example, for a signal period of 2.5 seconds, the value populated for the attribute signal period must be 2.5 and not 02.50.  Examples: 23.501, -0.0001234, -23.0, 3.141296 |
| TE | Free text | A CharacterString is an arbitrary-length sequence of characters including accents and special characters from a repertoire of one of the adopted character sets. |
| TI | Time | A time is given by an hour, minute and second. Time zone according to UTC is optional. Character encoding of a time is a string that follows the local time  Example: 183059 or 183059+0100 or 183059Z |
| URN | URN | A persistent, location-independent, resource identifier that follows the  syntax and semantics for URNs specified in RFC 2141.  EXAMPLE urn:iho:s101:1:0:0:AnchorageArea |

Table 2‑1 Simple attribute types

### Mandatory and conditional attributes

Some attributes are mandatory and must be populated for a given feature type. There are some reasons why attribute values may be considered mandatory:

• They are required to support correct portrayal;

• Certain features make no logical sense without specific attributes;

• Some attributes are required for safety of navigation.

Where a value of a mandatory attribute is not known, the attribute should be populated with an empty (null) value. Where the value of a non-mandatory attribute is not known, the attribute should not be populated (i.e. not included in the dataset). Within this document, mandatory attributes (multiplicity 1,1; 1,n (n>1); or 1,\*) are identified in the description of each feature type. Missing attribute values

Where a value of a mandatory attribute is not known, the attribute should be populated with an empty (null) value.

Where the value of a non-mandatory attribute is not known, the attribute should not be included in the dataset.

In a base dataset (EN application profile), when an attribute code is present but the attribute value is missing, it means that the producer wishes to indicate that this attribute value is unknown.

In an Update dataset (ER application profile), when an attribute code is present but the attribute value is missing it means:

• that the value of this attribute is to be replaced by an empty (null) value if it was present in the original dataset, or

• that an empty (null) value is to be inserted if the attribute was not present in the original dataset.

### Missing attribute values

It is an error for the value of mandatory attribute to be populated with an empty (null) value.

Where the value of a non-mandatory attribute is not known, the attribute must not be used.

### Multiplicity

In order to control the number of allowed attribute values or sub-attribute instances within a complex attribute, S-100 uses the concept of multiplicity. This defines lower and upper limits for the number of values, whether the order of the instances is significant and if an attribute is mandatory. Common examples are shown in Table2-2:

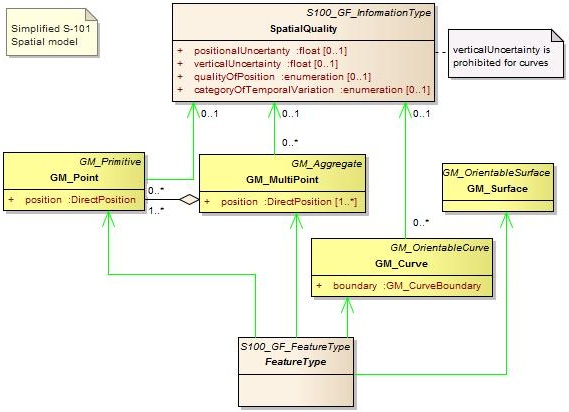
Format: MinOccurs, MaxOccurs (a \* indicates that infinite instances are possible, the term(ordered) indicates that the order of the provided instances is significant)

|  |  |
| --- | --- |
| **Multiplicity** | **Explanation** |
| 0,1 or 0..1 | An instance is not required; if provided there must only be one instance. |
| 1,1 or 1..1 | An instance is required and there must only be one instance. |
| 0,\*  or 0..1 | An instance is not required and there can be an infinite number of instances. |
| 1,\* or 1..\* | An instance is required and there can be an infinite number of instances. |
| 1,\* (ordered) | An instance is required and there can be an infinite number of instances, the order of which is significant. |
| 2,2 or 2..2 | Two instances are required and there must be no more than two. |

Table 2‑2 Multiplicity of attributes

### Spatial attribute types

Spatial attribute types must contain a referenced geometry and may be associated with spatial quality attributes. Each spatial attribute instance must be referenced by a feature instance or another spatial attribute instance.



Spatial quality attributes are carried in an information class called Spatial quality. Only points, multipoints and curves can be associated with Spatial quality. Currently no use case for associating surfaces with spatial quality attributes is known, therefore this is prohibited. Vertical uncertainty is prohibited for curves as this dimension is not supported by curves.

### Other S-100 attributes

S-100 attribute types not mentioned are not used in this specification.

### Textual information

The text populated in attributes of type **text** must not exceed 300 characters. Character strings contained in **text** sub-attributes must be UTF-8 character encoding.

### Dates and times

For attributes that use the complete date type (type *Date* or *DA*), all their components (year, month, day and time zone) must be specified.

The truncated date type (type *S100\_TruncatedDate* or *TD*), is not currently used in this specification.

Dates and times must be encoded according to the emerging time specification (UKHO\_IHMA\_2017).

## Associations

An association expresses a relationship between two classes - features, information types, or a feature and an information type. Objects in the dataset (instances of feature/information types) are related only if the link between them is encoded in the dataset.

An association end may have a multiplicity which describes how many instances the feature or information type instance at the other end is allowed to are to link to.

### Association Names

The association name is normally provided by the UML diagram at the middle of the connection line/arrow between the two involved classes and can be obtained from the feature and information type tables provided in this document).

Association names may be omitted in the UML diagrams for the following reasons:

a) the association is defined by an association class;

b) to avoid cluttering the diagram – however, the name is always documented in the feature/information type tables.

### Association roles

Either or both association ends can have a name (role).

Roles may be also omitted from the diagram to reduce clutter – again, the role name is documented in the feature/information type tables.

Note: Instead of documenting every single role, Product Specifications may describe rules for defining default roles.

## Datasets

### Types of Datasets

A dataset is a single feature which comprises a single specific message. Such a dataset may be referred to as a “message” in this product specification.

Messages may also be transferred as collections consisting of zero or more messages. Individual messages in a collection must conform to the rules for a single message, but the structure of the collection wrapper containing the messages is out of the scope of this specification.

The following types of transfers may be produced:

|  |  |
| --- | --- |
| **Dataset** | **Explanations** |
| New dataset (or message) | A single VTS-DIS message. |
| Collection | A sequence of zero or more messages. |

Table 2‑3 VTS-DIS dataset types

### Metadata

Metadata exchange is not part of the VTS-DIS data transfer and therefore metadata elements are not defined for VTS-DIS.

### Identifiers

Each VTS Digital Information Service message must have a unique identifier structured.

# Description of table format for feature and information types

**X.X Clause heading**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IHO Definition: **FEATURE:** Definition. (Authority for definition). | | | | | | | | | | | | |
| **VTS-INS[Geo Feature/Information Type]: Feature** VTS-DIS feature | | | | | | | | | | | | |
| **Primitives:** Allowable geometric primitive(s) [**Point, Curve, Surface]** | | | | | | | | | | | | |
| *Real World*  Example if real world instance(s) of the Feature. | | | *Paper Chart Symbol*  Example(s) of paper chart equivalent symbology for the Feature (if applicable). | | | | | *ECDIS Symbol*  Example(s) of proposed ECDIS symbology for the Feature. | | | | |
| **Attribute** | | | | | | **Allowable Encoding Value** | | | | **Type** | **Multiplicity** | |
| Category of beer | | | | | | 1 : ale  2 : lager  3 : porter  4 : stout  5 : pilsener  6 : bock beer  7 : wheat beer | | | | EN | 1,1 | |
| This section lists the allowable attributes for the S-101 feature. Attributes are listed in alphabetical order. Sub-attributes (Type prefix (S)) of complex (Type C) attributes are listed in alphabetical order and indented directly under the entry for the complex attribute (see below for example). | | | | | | This section lists the allowable encoding values for S-101 (for enumerate (E) Type attributes only). Further information about the attribute is available in Section XX. | | | | Attribute type (see clause X.X). | Multiplicity describes the “cardinality” of the attribute in regard to the feature. If “(ordered)” is included, the order of the instances matters. See clause X.X. | |
| Fixed date range | |  | | | |  | | | | C | 0,1 | |
| Date end | | (DATEND) | | | |  | | | | (S) DA | 0,1 | |
| Date start | | (DATSTA) | | | |  | | | | (S) DA | 0,1 | |
| **Feature/information associations** | | | | | | | | | | | | |
| **Type** | **Association Name** | **Class** | | **Role** | **Mult.** | | **Class** | | **Role** | | | **Mult.** |
| Aggr  Asso  Comp | Name of the Association | **Feature or Information Type at “this” end** | | At “this” end | At “this” end  x..y | | **Feature or Information Type(s) at “other” end** | | Role name | | | At “other” end  x..y |
| INT 1 Reference:The INT 1 location(s) of the Feature – by INT1 Section and Section Number (if applicable).  **X.X.X Sub-clause heading(s) (see S-4 – B-YYY.Y)**  Introductory remarks. Includes information regarding the real world entity/situation requiring the encoding of the Feature in the ENC, and where required nautical cartographic principles relevant to the Feature to aid the compiler in determining encoding requirements.  Specific instructions to encode the feature.  Remarks:   * Additional encoding guidance relevant to the feature.   **X.X.X.X Sub-sub-clause heading(s) (see S-4 – B-CCC.C)**  Clauses related to specific encoding scenarios for the Feature (if required).  Remarks:   * Additional encoding guidance relevant to the scenario (if required).   Distinction: List of features in the Product Specification distinct from the Feature. | | | | | | | | | | | | |

Remarks:

Attribute: Indentation of attributes indicates sub-attributes of complex attributes. Complex attributes may also be sub-attributes of complex attributes, which is indicated by further indentation of the attribute name in the tables.

Allowable Encoding Value: For (EN) type attributes, the enumerates listed are only those allowable for the particular occurrence of the attribute relevant to the feature. Allowable values may vary for the attribute depending on the feature to which the attribute is bound. Such bindings are defined in the S-211 Feature Catalogue. The full list of enumerates that may be assigned to an attribute in S-211 can be found in the Simple Attributes section of the printed feature catalogue document.

Type: The prefix (C) indicates that the attribute is a complex attribute. Complex attributes are aggregates of other attributes that can be simple type or complex type (see Product Specification main document). The prefix (S) indicates that the attribute is a sub-attribute of a complex attribute. Complex attributes that are sub-attributes of a complex attribute, and their sub-attributes, are indicated by indentation of the attribute name in the S-211 Attribute column.

Association ends and multiplicities: A lower bound of 0 in the multiplicity at any end of an association indicates only that the association is not mandatory for any particular instance of the feature at the other end (i.e., it is not mandatory for an instance of “that” feature type to have an association to a feature of “this” type). A lower bound of “1” means that if an instance of “that” type exists, it must be associated to a instance of “this” type. If the association is actually encoded then it amounts to saying that “this relationship exists between these two instances” and there must be an appropriate feature instance at both ends. Associations that are not mandatory should be encoded if and only if they convey useful information.

# Metadata Features

Metadata features such as the S-101 (ENC) Data Coverage and Quality of Bathymetric Data features are not used in this specification.

# Geo Features

## VTS Digital Information Service Message

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IHO Definition: **VTS DIGITAL INFORMATION SERVICE MESSAGE.**  Classes for distinguishing information that is sent.  Manage requests, responses to requests, and results of service requests, or distinguish which information is transmitted from Broadcasting information. Ships can be reported to VTS in this class and transmitted with requested information, while VTS can transmit with answer information in this class. | | | | | | | | | |
| **VTS-INS Geo Feature: VTSDigitalInformationServiceMessage**  **Supertype: none**  **Primitives: none** | | | | | | | | | |
|  | | | | | | | | | |
| *Real World*  not applicable | | | *Paper Chart Symbol*  **None** | | | *ECDIS Symbol*  **none** | | | |
| **Attribute** | | **Allowable Encoding Value** | | | | | **Type** | | **Multiplicity** |
| Source MRN of Vessel | |  | | | | | URN | | 0..1 |
| MMSI Code | |  | | | | | TE | | 0..1 |
| Message Identifier | |  | | | | | TE | | 1..1 |
| Message Markers | | 1: Instruction  2: Advice  3: Warning  4: Information  5: Question  6: Answer  7: Request  8: Intention | | | | | EN | | 1..1 |
| VTS Operator assignment | |  | | | | | C | | 0..1 |
| Assignment | |  | | | | | BO | | 1..1 |
| Waiting time | |  | | | | | DT | | 1..1 |
| Assignment Comment | |  | | | | | TE | | 0..1 |
| Acknowledgement Code | | 1: ACK  2: NACK | | | | | EN | | 0..1 |
| Reported At | |  | | | | | DT | | 0..1 |
| Reported By | |  | | | | | TE | | 0..1 |
| Request Reply Information | | 1: Environmental conditions(meteo)  2: Environmental conditions(hydrographical)  3: Environmental conditions(warnings)  4: Navigational conditions(warnings)  5: Navigational conditions(limitations)  6: Navigational conditions(status)  7: Navigational conditions(geographical information)  8: Navigational assistance  9: Ship information for navigational assistance | | | | | EN | | 0..\* |
| Location State | |  | | | | | C | | 0..1 |
| Effective Time | |  | | | | | DT | | 1..1 |
| Reference Object | | 3: ESCORT\_TUG  10: PILOT\_BOAT  16: TUG  17: VESSEL | | | | | CL | | 1..1 |
| Time Sequence | | 8: Arrival To  9: Departure From | | | | | EN | | 1..1 |
| Time Type | | 1: Estimated  2: Actual  3: Planned  4: Recommended  5: Required | | | | | EN | | 1..1 |
| Window After | |  | | | | | TE | | 0..1 |
| Window Before | |  | | | | | TE | | 0..1 |
| From Location | |  | | | | | C | | 0..1 |
| Location Maritime Resource Name | |  | | | | | URN | | 1..1 |
| Terminal | |  | | | | | URN | | 0..1 |
| To Location | |  | | | | | C | | 0..1 |
| Location Maritime Resource Name | |  | | | | | URN | | 1..1 |
| Terminal | |  | | | | | URN | | 0..1 |
| Administration State | |  | | | | | C | | 0..1 |
| At Location | |  | | | | | C | | 0..1 |
| Location Maritime Resource Name | |  | | | | | URN | | 1..1 |
| Terminal | |  | | | | | URN | | 0..1 |
| Effective Time | |  | | | | | DT | | 1..1 |
| Performing Actor | |  | | | | | URN | | 0..1 |
| Service Object | | 1: ANCHORING  3: ARRIVAL\_BERTH  4: ARRIVAL\_PORTAREA  5: ARRIVAL\_VTSAREA  6: BERTH\_SHIFTING  7: BERTH\_VISIT  12: DEPARTURE\_BERTH  13: DEPARTURE\_PORTAREA  16: ESCORT\_TOWAGE  26: PILOTAGE  28: PORT\_VISIT  36: TOURS  37: TOWAGE | | | | | CL | | 1..1 |
| Time Sequence | | 1: Cancelled  2: Confirmed  3: Denied  4: Requested  5: Request Received | | | | | EN | | 1..1 |
| Window After | |  | | | | | TE | | 0..1 |
| Window Before | |  | | | | | TE | | 0..1 |
|  | |  | | | | |  | |  |
|  | |  | | | | |  | |  |
| **Information associations** | | | | | | | | | |
| **Type** | **Association Name** | **Class** | | **Role** | **Mult.** | **Class** | | **Role** | **Mult.** |
| Asso | Ship Contact | ContactDetails | | theContectDetails | 0..1 | VTSInformationServiceMessage | | InformationProvidedFor | 1..1 |
|  |  |  | |  |  |  | |  |  |
| **Feature associations** | | | | | | | | | |
| **Type** | **Association Name** | **Class** | | **Role** | **Mult.** | **Class** | | **Role** | **Mult.** |
| Asso | Related Ship | ShipInformation | | ProvideInformation | 0..1 | VTSInformationServiceMessage | | InformationProvidedFor | 1..1 |
| Asso | Related Ship | ShipDynamic | | ProvideInformation | 0..1 | VTSInformationServiceMessage | | InformationProvidedFor | 1..1 |
| Asso | Related Ship | Accident | | ProvideInformation | 0..\* | VTSInformationServiceMessage | | InformationProvidedFor | 1..1 |
| Asso | Related Ship | NavigationalEquipmentCondition | | ProvideInformation | 0..1 | VTSInformationServiceMessage | | InformationProvidedFor | 1..1 |
| Asso | Related Ship | NavigationalAssistance | | ProvideInformation | 0..1 | VTSInformationServiceMessage | | InformationProvidedFor | 1..1 |
| Asso | Related VTS Area | VTSAreaInformation | | ProvideInformation | 0..1 | VTSInformationServiceMessage | | InformationProvidedFor | 1..1 |
|  |  |  | |  |  |  | |  |  |
| INT 1 Reference:  Remarks: Attribute of S-211 will be utilized. The items are approximately as follows and may be added/deleted according to the model design.  - [simpleAttribute]reportedAt  - [simpleAttribute]reportedBy  - [complexAttributeType]locationState  - [complexAttributeType]administrationState  Distinction: None | | | | | | | | | |

## Ship Information

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IHO Definition: **SHIP INFORMATION.**  'Static information/information that does not change when a ship is operated in one voyage. | | | | | | | | | | |
| **VTS-INS Geo Feature: ShipInformation**  **Supertype: none**  **Primitives: none** | | | | | | | | | | |
|  | | | | | | | | | | |
| *Real World*  not applicable | | | *Paper Chart Symbol*  **None** | | | | *ECDIS Symbol*  **none** | | | |
| **Attribute** | | | | **Allowable Encoding Value** | | | | **Type** | | **Multiplicity** |
| Vessel name | | | |  | | | | C | | 1..1 |
| Display Name | | | |  | | | | BN | | 0..1 |
| Language | | | |  | | | | TE | | 0..1 |
| Name | | | |  | | | | TE | | 1..1 |
| IMO No | | | |  | | | | TE | | 0..1 |
| MMSI Code | | | |  | | | | TE | | 1..1 |
| Call sign | | | |  | | | | TE | | 0..1 |
| Vessel's measurements | | | |  | | | | C | | 0..\* |
| Vessels Characteristics | | | | 1: length overall  2: length at waterline  3: breadth  4: draught  6: displacement tonnage  7: displacement tonnage, light  8: displacement tonnage, loaded  9: deadweight tonnage  10: gross tonnage  11: net tonnage  12: panama canal/universal measurement system net tonnage  13: suez canal net tonnage | | | | EN | | 1..1 |
| Vessels Characteristics Value | | | |  | | | | RE | | 1..1 |
| Vessels Characteristics Units | | | | 3: metric ton  4: ton  5: short ton  6: gross ton  7: net ton  9: suez canal net tonnage | | | | EN | | 1..1 |
| Category of Vessel | | | | 1: general cargo vessel  2: container carrier  3: tanker  4: bulk carrier  5: passenger vessel  6: roll-on roll-off  7: refrigerated cargo vessel  8: fishing vessel  9: service  10: warship  11: towed or pushed composite unit  12: tug and tow  13: light recreational  14: semi-submersible offshore installation  15: jack-up exploration or project installation  16: livestock carrier  17: sport fishing | | | | CL | | 0..1 |
| Flag State | | | |  | | | | TE | | 0..1 |
| Ship Crew | | | |  | | | | C | | 0..1 |
| The number of crew | | | |  | | | | IN | | 1..1 |
| Captain telephone number | | | |  | | | | TE | | 1..1 |
| On board crews | | | |  | | | | C | | 1..\* |
| Crew Name | | | |  | | | | TE | | 1..1 |
| Crew Rank | | | |  | | | | TE | | 0..1 |
| Crew Telephone Number | | | |  | | | | TE | | 0..1 |
| Cargo Information | | | |  | | | | C | | 0..\* |
| Category of Cargo | | | | 1: bulk  2 : container  3 : general  4 : liquid  5 : passenger  6 : livestock  7 : dangerous or hazardous | | | | EN | | 1..1 |
| Category of Dangerous or Hazardous Cargo | | | | 1 : IMDG Code Class 1 Div. 1.1  2 : IMDG Code Class 1 Div. 1.2  3 : IMDG Code Class 1 Div. 1.3  4 : IMDG Code Class 1 Div. 1.4  5 : IMDG Code Class 1 Div. 1.5  6 : IMDG Code Class 1 Div. 1.6  7 : IMDG Code Class 2 Div. 2.1  8 : IMDG Code Class 2 Div. 2.2  9 : IMDG Code Class 2 Div. 2.3  10 : IMDG Code Class 3  11 : IMDG Code Class 4 Div. 4.1  12 : IMDG Code Class 4 Div. 4.2  13 : IMDG Code Class 4 Div. 4.3  14 : IMDG Code Class 5 Div. 5.1  15 : IMDG Code Class 5 Div. 5.2  16 : IMDG Code Class 6 Div. 6.1  17 : IMDG Code Class 6 Div. 6.2  18 : IMDG Code Class 7  19 : IMDG Code Class 8  20 : IMDG Code Class 9  21 : Harmful Substances in packaged form | | | | EN | | 0..1 |
| Load Weight | | | |  | | | | RE | | 1..1 |
| Number of passenger | | | |  | | | | IN | | 0..1 |
| ISPS level | | | | 1: ISPS Level 1  2: ISPS Level 2  3: ISPS Level 3 | | | | EN | | 0..1 |
| Port State Control | | | |  | | | | TE | | 0..1 |
|  | | | |  | | | |  | |  |
| **Feature associations** | | | | | | | | | | |
| **Type** | **Association Name** | **Class** | | | **Role** | **Mult.** | **Class** | | **Role** | **Mult.** |
| Asso | Related Ship | ShipInformation | | | ProvideInformation | 0..1 | VTSInformationServiceMessage | | InformationProvidedFor | 1..1 |
|  |  |  | | |  |  |  | |  |  |
| INT 1 Reference:  Remarks:  Distinction: None | | | | | | | | | | |

## Ship Dynamic

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IHO Definition: **SHIP DYNAMIC.**  Dynamic information/information that may change or change when a ship is operated in one voyage. | | | | | | | | | | |
| **VTS-INS Geo Feature: ShipDynamic**  **Supertype: none**  **Primitives: Point** | | | | | | | | | | |
|  | | | | | | | | | | |
| *Real World*  not applicable | | | *Paper Chart Symbol*  **None** | | | | *ECDIS Symbol*  **none** | | | |
| **Attribute** | | | | **Allowable Encoding Value** | | | | **Type** | | **Multiplicity** |
| Ship Speed | | | |  | | | | C | | 0..1 |
| Speed Reference | | | |  | | | | EN | | 1..1 |
| Speed Value | | | |  | | | | RE | | 1..1 |
| Speed Units | | | |  | | | | TE | | 0..1 |
| Heading | | | |  | | | | RE | | 0..1 |
| Route Name | | | |  | | | | TE | | 0..1 |
| Route Version | | | |  | | | | IN | | 0..1 |
| Message identifier for Route | | | |  | | | | TE | | 0..1 |
| Bunker information | | | |  | | | | C | | 0..\* |
| Bunker Type | | | | 1: Fuel Oil  2: Marine Diesel Oil  3: Marine Gas Oil  4: Other | | | | EN | | 1..1 |
| Quantity | | | |  | | | | RE | | 1..1 |
| Comment | | | |  | | | | TE | | 0..\* |
| Vessel Statement | | | | 1: sailing  2: anchorage  3: berthing | | | | EN | | 0..1 |
| Movement Purpose | | | | 1: sailing  2: anchorage  3: berthing  4: passing | | | | EN | | 0..1 |
|  | | | |  | | | |  | |  |
|  | | | |  | | | |  | |  |
| **Feature associations** | | | | | | | | | | |
| **Type** | **Association Name** | **Class** | | | **Role** | **Mult.** | **Class** | | **Role** | **Mult.** |
| Asso | Related Ship | ShipDynamic | | | ProvideInformation | 0..1 | VTSInformationServiceMessage | | InformationProvidedFor | 1..1 |
|  |  |  | | |  |  |  | |  |  |
| INT 1 Reference:  Remarks: categoryOfStatement and movementPurpose are mandatory only for ship movement reporting.  Distinction: None | | | | | | | | | | |

## Accident

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IHO Definition: **ACCIDENT.**  Class to communicate own vessel accident information. The purpose of this class is to provide emergency information about ship accidents prior to VTS communication. | | | | | | | | | | |
| **VTS-INS Geo Feature: Accident**  **Supertype: none**  **Primitives: Point** | | | | | | | | | | |
|  | | | | | | | | | | |
| *Real World*  not applicable | | | *Paper Chart Symbol*  **None** | | | | *ECDIS Symbol*  **none** | | | |
| **Attribute** | | | | **Allowable Encoding Value** | | | | **Type** | | **Multiplicity** |
| SAR Detail | | | |  | | | | C | | 0..1 |
| Occurred time | | | |  | | | | DT | | 1..1 |
| Abandon Vessel or Not | | | |  | | | | BO | | 0..1 |
| Number of injured person | | | |  | | | | IN | | 1..1 |
| Rescue Equipment | | | | 1: SART  2: EPIRB  3: DSC | | | | EN | | 1..\* |
| Number of lifeboat | | | |  | | | | IN | | 1..1 |
| Number of lifecraft | | | |  | | | | IN | | 1..1 |
| Medical Assistance Detail | | | |  | | | | C | | 0..1 |
| Kind of medical assistance | | | | 1: boat for hospital transfer  2: radio medical advice  3: helicopter with doctor | | | | EN | | 1..1 |
| Doctor in vessel | | | |  | | | | BO | | 0..1 |
| Time for a meeting | | | |  | | | | DT | | 0..1 |
| Health Condition | | | |  | | | | TE | | 0..1 |
| Not Under Command(NUC) Detail | | | |  | | | | C | | 0..1 |
| Not Under Command situation | | | | 1: engine  2: steering gear  3: propeller | | | | EN | | 1..1 |
| Tug Request | | | |  | | | | BO | | 1..1 |
| Assistance Detail | | | |  | | | | TE | | 0..\* |
| Medical Assistance among Types of Accidents | | | |  | | | | BO | | 1..1 |
| SAR among Types of Accidents | | | |  | | | | BO | | 1..1 |
| NUC among Types of Accidents | | | |  | | | | BO | | 1..1 |
|  | | | |  | | | |  | |  |
| **Feature associations** | | | | | | | | | | |
| **Type** | **Association Name** | **Class** | | | **Role** | **Mult.** | **Class** | | **Role** | **Mult.** |
| Asso | Related Ship | Accident | | | ProvideInformation | 0..\* | VTSInformationServiceMessage | | InformationProvidedFor | 1..1 |
|  |  |  | | |  |  |  | |  |  |
| INT 1 Reference:  Remarks:  Distinction: **SendingAccidentInformationInVTSArea**. <FeatureType>Accident is a class for sending incident information of own ship to VTS Center for help. <<FeatureType>>SendingAccidentInformationInVTSArea needs to be distinguished as a caution information within the VTS area received from the VTS Center. | | | | | | | | | | |

## Navigational Equipment Condition

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IHO Definition: **NAVIGATIONAL EQUIPMENT CONDITION.**  Mechanical defects/  An item to manage the condition of items to determine whether mechanical defects that can affect the normal operation of a ship are present. | | | | | | | | | | |
| **VTS-INS Geo Feature: Navigational Equipment Condition**  **Supertype: none**  **Primitives: none** | | | | | | | | | | |
|  | | | | | | | | | | |
| *Real World*  not applicable | | | *Paper Chart Symbol*  **None** | | | | *ECDIS Symbol*  **none** | | | |
| **Attribute** | | | | **Allowable Encoding Value** | | | | **Type** | | **Multiplicity** |
| Whistles | | | |  | | | | BO | | 1..1 |
| Radar Equipment | | | |  | | | | C | | 0..\* |
| Radar Type | | | | 1: x-Band  2: s-band | | | | EN | | 1..1 |
| Abnormal Radar | | | |  | | | | TE | | 0..1 |
| Radar ARPA | | | | 1: not installed  2: normal  3: abnormal | | | | EN | | 1..1 |
| Speed log | | | | 1: not installed  2: normal  3: abnormal | | | | EN | | 1..1 |
| Electronic position-fixing | | | | 1: not installed  2: normal  3: abnormal | | | | EN | | 1..1 |
| Compass system | | | | 1: not installed  2: normal  3: abnormal | | | | EN | | 1..1 |
| Number of power units in use | | | |  | | | | TE | | 0..1 |
| Engine Telegraph | | | | 1: not installed  2: normal  3: abnormal | | | | EN | | 1..1 |
| Steering Gear | | | | 1: not installed  2: normal  3: abnormal | | | | EN | | 1..1 |
| Rudder Indicator | | | | 1: not installed  2: normal  3: abnormal | | | | EN | | 1..1 |
| RPMPitch Indicator | | | | 1: not installed  2: normal  3: abnormal | | | | EN | | 1..1 |
| Rate of Turn Indicator | | | |  | | | | IN | | 0..1 |
| VHFEquipment | | | | 1: not installed  2: normal  3: abnormal | | | | EN | | 1..1 |
| Mooring winches and lines | | | | 1: not installed  2: normal  3: abnormal | | | | EN | | 1..1 |
| Available Electronic Navigation Aids | | | |  | | | | TE | | 0..\* |
|  | | | |  | | | |  | |  |
| **Feature associations** | | | | | | | | | | |
| **Type** | **Association Name** | **Class** | | | **Role** | **Mult.** | **Class** | | **Role** | **Mult.** |
| Asso | Related Ship | NavigationalEquipmentCondition | | | ProvideInformation | 0..1 | VTSInformationServiceMessage | | InformationProvidedFor | 1..1 |
|  |  |  | | |  |  |  | |  |  |
| INT 1 Reference:  Remarks:  Distinction: None | | | | | | | | | | |

## Navigational Assistance

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IHO Definition: **NAVIGATIONAL ASSISTANCE.**  This class is intended to send navigation support results, A Navigational Assistance is a service that provides essential and timely navigational information to assist in the on board navigational decision-making process and to monitor its effects. | | | | | | | | | | |
| **VTS-INS Geo Feature: NavigationalAssistance**  **Supertype: none**  **Primitives: none** | | | | | | | | | | |
|  | | | | | | | | | | |
| *Real World*  not applicable | | | *Paper Chart Symbol*  **None** | | | | *ECDIS Symbol*  **none** | | | |
| **Attribute** | | | | **Allowable Encoding Value** | | | | **Type** | | **Multiplicity** |
| Navigational Information | | | |  | | | | C | | 0..1 |
| Proximity to Danger | | | |  | | | | TE | | 0..\* |
| Navigation in danger | | | |  | | | | TE | | 0..\* |
| Advice Message | | | |  | | | | TE | | 0..\* |
| Warning Message | | | |  | | | | TE | | 0..\* |
| Instruction Message | | | |  | | | | TE | | 0..\* |
|  | | | |  | | | |  | |  |
| **Feature associations** | | | | | | | | | | |
| **Type** | **Association Name** | **Class** | | | **Role** | **Mult.** | **Class** | | **Role** | **Mult.** |
| Asso | Related Ship | NavigationalAssistance | | | ProvideInformation | 0..1 | VTSInformationServiceMessage | | InformationProvidedFor | 1..1 |
|  |  |  | | |  |  |  | |  |  |
| INT 1 Reference:  Remarks:  Distinction: None | | | | | | | | | | |

## VTS Area Information

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IHO Definition: **VTS AREA INFORMATION.**  Class for transmitting environmental and warning information, accident information, condition(navigational, environmental) etc. within the VTS Area. | | | | | | | | | | |
| **VTS-INS Geo Feature: VTSAreaInformation**  **Supertype: none**  **Primitives: none** | | | | | | | | | | |
|  | | | | | | | | | | |
| *Real World*  not applicable | | | *Paper Chart Symbol*  **None** | | | | *ECDIS Symbol*  **none** | | | |
| **Attribute** | | | | **Allowable Encoding Value** | | | | **Type** | | **Multiplicity** |
|  | | | |  | | | |  | |  |
|  | | | |  | | | |  | |  |
|  | | | |  | | | |  | |  |
|  | | | |  | | | |  | |  |
| **Feature associations** | | | | | | | | | | |
| **Type** | **Association Name** | **Class** | | | **Role** | **Mult.** | **Class** | | **Role** | **Mult.** |
| Asso | Related VTS Area | VTSAreaInformation | | | ProvideInformation | 0..\* | VTSInformationServiceMessage | | InformationProvidedFor | 1..1 |
|  |  |  | | |  |  |  | |  |  |
| INT 1 Reference:  Remarks:  Distinction: None | | | | | | | | | | |

## Warning

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IHO Definition: **WARNING.**  Class for transmitting environmental and warning information, accident information, etc. within the VTS Area. | | | | | | | | | | |
| **VTS-INS Geo Feature: Warning**  **Supertype: VTSAreaInformation**  **Primitives: none** | | | | | | | | | | |
|  | | | | | | | | | | |
| *Real World*  not applicable | | | *Paper Chart Symbol*  **None** | | | | *ECDIS Symbol*  **none** | | | |
| **Attribute** | | | | **Allowable Encoding Value** | | | | **Type** | | **Multiplicity** |
|  | | | |  | | | |  | |  |
|  | | | |  | | | |  | |  |
|  | | | |  | | | |  | |  |
|  | | | |  | | | |  | |  |
|  | | | |  | | | |  | |  |
|  | | | |  | | | |  | |  |
| **Feature associations** | | | | | | | | | | |
| **Type** | **Association Name** | **Class** | | | **Role** | **Mult.** | **Class** | | **Role** | **Mult.** |
|  |  |  | | |  |  |  | |  |  |
|  |  |  | | |  |  |  | |  |  |
| INT 1 Reference:  Remarks:  Distinction: None | | | | | | | | | | |

## Warning Detail

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IHO Definition: **WARNING DETAIL.**  Classes for detailed information on environmental and warning information within the VTS area. | | | | | | | | | | |
| **VTS-INS Geo Feature: WarningDetail**  **Supertype: Warning**  **Primitives: none** | | | | | | | | | | |
|  | | | | | | | | | | |
| *Real World*  not applicable | | | *Paper Chart Symbol*  **None** | | | | *ECDIS Symbol*  **none** | | | |
| **Attribute** | | | | **Allowable Encoding Value** | | | | **Type** | | **Multiplicity** |
|  | | | |  | | | |  | |  |
|  | | | |  | | | |  | |  |
|  | | | |  | | | |  | |  |
|  | | | |  | | | |  | |  |
| **Feature associations** | | | | | | | | | | |
| **Type** | **Association Name** | **Class** | | | **Role** | **Mult.** | **Class** | | **Role** | **Mult.** |
| Asso | Reference | WarningDetail | | | Referred | 0..\* | EnvironmentWarning | | Refers | 1..1 |
| Asso | Reference | WarningDetail | | | Referred | 0..\* | NavigationalWarning | | Refers | 1..1 |
| INT 1 Reference:  Remarks:  Distinction: None | | | | | | | | | | |

## Environment Warning

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IHO Definition: **ENVIROMENTWARNING.**  Environmental Warning Information in the VTS Area from VTS Operator. Use S-412 to get information. | | | | | | | | | | |
| **VTS-INS Geo Feature: EnvironmentWarning**  **Supertype: none**  **Primitives: none** | | | | | | | | | | |
|  | | | | | | | | | | |
| *Real World*  not applicable | | | *Paper Chart Symbol*  **None** | | | | *ECDIS Symbol*  **none** | | | |
| **Attribute** | | | | **Allowable Encoding Value** | | | | **Type** | | **Multiplicity** |
| Valid Date Time | | | |  | | | | DT | | 1..1 |
| Message identifier for Environmental Warning | | | |  | | | | TE | | 0..1 |
|  | | | |  | | | |  | |  |
|  | | | |  | | | |  | |  |
| **Feature associations** | | | | | | | | | | |
| **Type** | **Association Name** | **Class** | | | **Role** | **Mult.** | **Class** | | **Role** | **Mult.** |
| Asso | Reference | WarningDetail | | | Referred | 0..\* | EnvironmentWarning | | Refers | 1..1 |
|  |  |  | | |  |  |  | |  |  |
| INT 1 Reference:  Remarks:  Distinction: None | | | | | | | | | | |

## Navigational Warning

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IHO Definition: **NAVIGATIONALWARNING.**  Navigation warning in the VTS Area from VTS Operator. Use S-124 to get information. | | | | | | | | | | |
| **VTS-INS Geo Feature: NavigationalWarning**  **Supertype: none**  **Primitives: PointCurveOrSurface** | | | | | | | | | | |
|  | | | | | | | | | | |
| *Real World*  not applicable | | | *Paper Chart Symbol*  **None** | | | | *ECDIS Symbol*  **none** | | | |
| **Attribute** | | | | **Allowable Encoding Value** | | | | **Type** | | **Multiplicity** |
| Navigational Warning Area Name | | | |  | | | | C | | 0..\* |
| Display Name | | | |  | | | | BO | | 0..1 |
| Language | | | |  | | | | TE | | 0..1 |
| Name | | | |  | | | | TE | | 1..1 |
| Message identifier for Navigational Warning | | | |  | | | | TE | | 0..1 |
|  | | | |  | | | |  | |  |
| **Feature associations** | | | | | | | | | | |
| **Type** | **Association Name** | **Class** | | | **Role** | **Mult.** | **Class** | | **Role** | **Mult.** |
| Asso | Reference | WarningDetail | | | Referred | 0..\* | NavigationalWarning | | Refers | 1..1 |
|  |  |  | | |  |  |  | |  |  |
| INT 1 Reference:  Remarks:  Distinction: None | | | | | | | | | | |

## Sending Accident Information In VTS Area

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IHO Definition: **SENDING ACCIDENT INFORMATION IN VTS AREA.**  Class that contains information to inform the surrounding vessel of accident information or information about the vessel requesting assistance. | | | | | | | | | | |
| **VTS-INS Geo Feature: SendingAccidentInformationInVTSArea**  **Supertype: Warning**  **Primitives: none** | | | | | | | | | | |
|  | | | | | | | | | | |
| *Real World*  not applicable | | | *Paper Chart Symbol*  **None** | | | | *ECDIS Symbol*  **none** | | | |
| **Attribute** | | | | **Allowable Encoding Value** | | | | **Type** | | **Multiplicity** |
| Accident Alarm Type | | | | 1: SAR  2: NUC  3: traffic accident | | | | EN | | 1..1 |
| Accident Ship Information | | | |  | | | | C | | 1..\* |
| Accident shipMRN | | | |  | | | | 0..1 | | URN |
| Accident ship MMSI Code | | | |  | | | | 0..1 | | TE |
| Accident Ship Name | | | |  | | | | C | | 1..1 |
| Display Name | | | |  | | | | BO | | 0..1 |
| Language | | | |  | | | | TE | | 0..1 |
| Name | | | |  | | | | TE | | 1..1 |
| Accident Ship Cargo Information | | | |  | | | | C | | 1..\* |
| Category of Cargo | | | | 1: bulk  2 : container  3 : general  4 : liquid  5 : passenger  6 : livestock  7 : dangerous or hazardous | | | | EN | | 1..1 |
| Category of Dangerous or Hazardous Cargo | | | | 1 : IMDG Code Class 1 Div. 1.1  2 : IMDG Code Class 1 Div. 1.2  3 : IMDG Code Class 1 Div. 1.3  4 : IMDG Code Class 1 Div. 1.4  5 : IMDG Code Class 1 Div. 1.5  6 : IMDG Code Class 1 Div. 1.6  7 : IMDG Code Class 2 Div. 2.1  8 : IMDG Code Class 2 Div. 2.2  9 : IMDG Code Class 2 Div. 2.3  10 : IMDG Code Class 3  11 : IMDG Code Class 4 Div. 4.1  12 : IMDG Code Class 4 Div. 4.2  13 : IMDG Code Class 4 Div. 4.3  14 : IMDG Code Class 5 Div. 5.1  15 : IMDG Code Class 5 Div. 5.2  16 : IMDG Code Class 6 Div. 6.1  17 : IMDG Code Class 6 Div. 6.2  18 : IMDG Code Class 7  19 : IMDG Code Class 8  20 : IMDG Code Class 9  21 : Harmful Substances in packaged form | | | | EN | | 0..1 |
| Load Weight | | | |  | | | | RE | | 1..1 |
| Accident Detail | | | |  | | | | TE | | 1..\* |
|  | | | |  | | | |  | |  |
| **Feature associations** | | | | | | | | | | |
| **Type** | **Association Name** | **Class** | | | **Role** | **Mult.** | **Class** | | **Role** | **Mult.** |
|  |  |  | | |  |  |  | |  |  |
|  |  |  | | |  |  |  | |  |  |
| INT 1 Reference:  Remarks:  Distinction: **Accident**. <<FeatureType>>SendingAccidentInformationInVTSArea is intended to transmit accident information in the VTS area for information purposes to ships in the area, and it needs to be distinguished from <<FeatureType>>Accident to transmit accidents in own ship. | | | | | | | | | | |

## Condition

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IHO Definition: **CONDITION.**  Class for transmitting environmental conditions and navigational conditions, etc. within the VTS Area. | | | | | | | | | | |
| **VTS-INS Geo Feature: Condition**  **Supertype: VTSAreaInformation**  **Primitives: none** | | | | | | | | | | |
|  | | | | | | | | | | |
| *Real World*  not applicable | | | *Paper Chart Symbol*  **None** | | | | *ECDIS Symbol*  **none** | | | |
| **Attribute** | | | | **Allowable Encoding Value** | | | | **Type** | | **Multiplicity** |
|  | | | |  | | | |  | |  |
|  | | | |  | | | |  | |  |
|  | | | |  | | | |  | |  |
|  | | | |  | | | |  | |  |
| **Feature associations** | | | | | | | | | | |
| **Type** | **Association Name** | **Class** | | | **Role** | **Mult.** | **Class** | | **Role** | **Mult.** |
|  |  |  | | |  |  |  | |  |  |
|  |  |  | | |  |  |  | |  |  |
| INT 1 Reference:  Remarks: Hydrography information within VTS Area should be delivered. Hydrography can be delivered through S-126, but S-126 is currently pending development. Thus, it can be supplemented in line with the development status of S-126.  Distinction: None | | | | | | | | | | |

## Environment Condition

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IHO Definition: **ENVIRONMENTCONDITION.**  Environmental condition Information in the VTS Area from VTS Operator. Use S-412 to get information. | | | | | | | | | | |
| **VTS-INS Geo Feature: EnvironmentCondition**  **Supertype: Condition**  **Primitives: none** | | | | | | | | | | |
|  | | | | | | | | | | |
| *Real World*  not applicable | | | *Paper Chart Symbol*  **None** | | | | *ECDIS Symbol*  **none** | | | |
| **Attribute** | | | | **Allowable Encoding Value** | | | | **Type** | | **Multiplicity** |
| Valid Date Time | | | |  | | | | DT | | 1..1 |
| Message identifier for Environmental Conditions | | | |  | | | | TE | | 0..1 |
|  | | | |  | | | |  | |  |
|  | | | |  | | | |  | |  |
|  | | | |  | | | |  | |  |
|  | | | |  | | | |  | |  |
| **Feature associations** | | | | | | | | | | |
| **Type** | **Association Name** | **Class** | | | **Role** | **Mult.** | **Class** | | **Role** | **Mult.** |
|  |  |  | | |  |  |  | |  |  |
|  |  |  | | |  |  |  | |  |  |
| INT 1 Reference:  Remarks: S-412 has changed name and scope to be only for metrological warnings. The EnvironmentalConditions class need to be reviewed once the S-412, S-413 and S-414 series of metrological product specifications have advanced somewhat further.  Distinction: None | | | | | | | | | | |

## Navigational Condition

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IHO Definition: **NAVIGATIONALCONDITION**  Navigation conditions in the VTS Area from VTS Operator. Use S-127 to get information. | | | | | | | | | | |
| **VTS-INS Geo Feature: NavigationalCondition**  **Supertype: Condition**  **Primitives: none** | | | | | | | | | | |
|  | | | | | | | | | | |
| *Real World*  not applicable | | | *Paper Chart Symbol*  **None** | | | | *ECDIS Symbol*  **none** | | | |
| **Attribute** | | | | **Allowable Encoding Value** | | | | **Type** | | **Multiplicity** |
| Navigational Condition Area Name | | | |  | | | | C | | 0..\* |
| Display Name | | | |  | | | | BO | | 0..1 |
| Language | | | |  | | | | TE | | 0..1 |
| Name | | | |  | | | | TE | | 1..1 |
| Message identifier for Navigational Conditions | | | |  | | | | TE | | 0..1 |
| Significant Feature Reference | | | |  | | | | TE | | 0..\* |
| **Feature associations** | | | | | | | | | | |
| **Type** | **Association Name** | **Class** | | | **Role** | **Mult.** | **Class** | | **Role** | **Mult.** |
|  |  |  | | |  |  |  | |  |  |
|  |  |  | | |  |  |  | |  |  |
| INT 1 Reference:  Remarks:  Distinction: None | | | | | | | | | | |

# Information Types

## Contact Details

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| IHO Definition: **CONTACT DETAILS.**  Information on how to reach a person or organisation by postal, internet, telephone, telex and radio systems. | | | | | | | | | | |
| **VTS-INS Information Type: ContactDetails**  **Primitives: none** | | | | | | | | | | |
|  | | | | | | | | | | |
| *Real World*  not applicable | | | *Paper Chart Symbol*  **None** | | | | *ECDIS Symbol*  **none** | | | |
| **Attribute** | | | | **Allowable Encoding Value** | | | | **Type** | | **Multiplicity** |
| CommunicationChannel | | | |  | | | | TE | | 0..\* |
| Telecommunications | | | |  | | | | C | | 0..\* |
| Telecommunication Identifier | | | |  | | | | TE | | 1..1 |
| Telecommunication Carrier  (telcomCarrier) | | | |  | | | | TE | | 0..1 |
| Contact Instructions | | | |  | | | |  | | 0..1 |
| Telecommunication Service | | | | 1: voice  2: facsimile  3: SMS  4: data  5: streamedData  6: telex  7: telegraph | | | | TE | | 0..\* |
| **Information associations** | | | | | | | | | | |
| **Type** | **Association Name** | **Class** | | | **Role** | **Mult.** | **Class** | | **Role** | **Mult.** |
| Asso | shipContact | VTS Information Service Message | | | theContactProvider | 1..1 | Contact Details | | theContactDetails | 0..1 |
|  |  |  | | |  |  |  | |  |  |
| INT 1 Reference:  Remarks:  Distinction: None | | | | | | | | | | |

# Geo Feature Attribute and Enumerate Descriptions

[See the Simple attributes and Complex attributes sections in Appendix D – Feature Catalogue.]

# Associations

## Associations Name

[See the Information Associations and Feature Associations sections in Appendix D – Feature Catalogue.]

## Association Role

[See the Roles sections in Appendix D – Feature Catalogue.]

# Meta Feature and Spatial Attribute and Enumerate Descriptions

Meta features are not used in this product specification, nor are spatial attributes.

# Complex Attributes

[See the Complex attributes section in Appendix D – Feature Catalogue.]