|  |
| --- |
| IALA Product Specification |

PSnnnn

Product Specification

Edition x.x

Date (of approval by Council)

urn:mrn:iala:pub:gnnnn

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

|  |  |  |
| --- | --- | --- |
| Date | Details | Approval |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

1. SECTION 1 – HEADING 1 STYLE 3

1.1. Section 1.1 – Heading 2 style 3

1.1.1. Section 1.1.1 – Heading 3 style 3

2. SECTION 2 – HEading 1 style 3

2.1. Section 2.1 – Heading 2 style 3

3. Section 3 – Heading 1 Style 3

3.1. Section 3.1 – Heading 2 style 3

3.2. Section 3.2 – Heading 2 style 3

3.3. Section 3.3 – Heading 2 style 3

3.3.1. Equations 3

4. DEFINITIONS 3

5. abbreviations 3

6. references 3

7. Further reading 3

APPENDIX 1 Example of appendix Title (Head 1) style 3

ANNEX A Example of Annex title (Head 1) style 3

List of Tables

Table 1 Example of table with row headers 3

Table 2 Example of table with column headers 3

List of Figures

Figure 1 Example of wrapping in line with text 3

Figure 2 Example of wrapped square 3

Figure 3 Example of how to achieve right justified equation number 3

# Example of HEADING 1 STYLE

This guideline template should be used in conjunction with the *IALA Style Guide*. Utilising the styles provided in the **Styles Gallery** is key to using the document templates. Selecting the appropriate style from the Style Gallery will apply most text (and often layout) formatting required to comply with the *IALA Style Guide.* There should be no need to apply font formatting, numbering or bullets by selecting options from the **Font** or **Paragraph** dialog boxes.

The main text within a document is written in the **Body text** style, which is Calibri and 11 font size. Section titles can be inserted for up to four levels of text and should be created using the **Heading 1**, **Heading 2** etc. styles. Ensure the correct heading styles are selected as there are similar heading styles for the annexe and appendix entries, respectively. The blue colour used in the section headings and table texts is Red Green Blue (RGB) R0, G85, B140. The styles are referenced throughout this template and highlighted in bold.

**Heading 1 separation line style** follows the first carriage return after the first level heading title, and the style **Body text** follows the second carriage return after the separation line (if the line disappears, reposition the cursor at the end of the section heading text and press carriage return).

## Example of Heading 2 style

**Heading 2 separation line** style follows the second carriage return after the second level heading title, and the style **Body text** follows the second carriage return after the separation line.

### Example of Heading 3 style

**Body Text** style follows the first carriage return after the third level heading title; there is no separation line at this level.

#### Figures – Heading 4 style

**Body Text** style follows the first carriage return after the fourth level heading title; there is no separation line at this level.

Footnotes should be used sparingly but can be inserted and are found in **Footnote Reference** style at the bottom of the page[[1]](#footnote-1).



1. Example of wrapping in line with text

Figures should be centred with wrapping **In Line with Text** and labelled by writing the figure titles using the **Figure caption** style below the figure. It is important to note that figures and tables should be labelled in this manner with their respective styles to ensure that the tables in the contents section are updated correctly.

##### Alternative figure layout – Heading 5 style

Alternatively, figures can be offset with **Square** text wrapping so that the text does not overlap the figure but arranges the paragraph such that it continues onto the next line in an appropriately sized paragraph.

If no figures are included in the guideline, the respective table on the contents page should be deleted.

1. Example of wrapped square

# SECTION 2 – HEading 1 style

Sections should be typed continuously, and generally page breaks or section breaks should not be entered between main sections. It may be necessary sometimes to insert a page break to allow for aesthetic layout e.g., not breaking a list over two pages.

## Section 2.1 – Heading 2 style

Tables should be centred on the page. The table label should be created using the **Table caption** style and the caption should be positioned above the table.

Table text should be **Table heading** style for the column or row headings and **Table text** style for the content. The style **Table inset list** can be used for bulleted content within a table. The default table layout is for left justified and vertically centred table text but this can be amended using the table Layout menu to suit the content.

1. Example of table with row headers

| Table heading | Table text |
| --- | --- |
| Table heading | Table text |
| Table heading | Table text |

Space below the table should be maintained or inserted as necessary for clarity.

1. Example of table with column headers

| Table heading | Table heading | Table heading | Table heading |
| --- | --- | --- | --- |
| Table text | Table text | Table text | Table text |
| Table text | Table text | Table text | Table text |
| Table text | * Table inset list * Table inset list * Table inset list | Table text | Table text |

If no tables are included in the guideline, the respective table on the contents page should be deleted.

# Section 3 – Heading 1 Style

## Section 3.1 – Heading 2 style

The choice of numbered or bullet point lists depends on the context and content of the text and further guidance is given in the “*IALA Style Guide*”. Bullets are preferred unless it is important that the list is numbered e.g., for future reference or for a sequence.

Three levels of list styles are provided and these styles should be used rather than the default Microsoft Word numbering lists:

1. List 1 style example

**List 1 text** style example

* 1. **List a** style example

**List a text** style example

* + 1. **List i** style example

**List i text** style example

Each list style has a corresponding list text style that can be used for example, if the list requires more than one paragraph and the subsequent text needs to be aligned. If more than one list is used throughout the document it may be necessary to right click and select **Restart at 1** for subsequent lists.

## Section 3.2 – Heading 2 style

There are three levels of bullet point styles available:

* **Bullet 1** style

**Bullet 1 text** style

* **Bullet 2** style

**Bullet 2** **text** style

* **Bullet 3** style

**Bullet 3 text** style

Each bullet style has a corresponding bullet text style that can be used for example, if the bullet requires more than one paragraph and the subsequent text needs to be aligned.

## Section 3.3 – Heading 2 style

### Equations

#### Layout

If equations are included in the main body of the text, they should be explicitly referred to in the running text and centred on the page. Equations should be numbered consecutively with a right justified number in brackets e.g. (1) on the same line as the equation.

Any explanatory terms should be indented immediately below the equation starting with the non-capitalised term “where” and each term punctuated with a semi-colon until the penultimate term which should also include a semi-colon and the non-capitalised word “and”. For example:

The modified impulse response function is expressed by Equation (1):

where

*;*

*;*

*; and*

*.*

#### Numbering

The preferred method for including equations in the template documents is the Microsoft Word Equation Editor found in the **Insert** menu. The preferred layout and number reference described above can be achieved by typing #(x) where x is the number required immediately after the equation.



1. Example of how to achieve right justified equation number

For example, typing the formula followed by #(2) (as shown in Figure 3) and then pressing return will result in the following equation centred on the page and number being displayed on the same line to the right:

Note that equations do not automatically renumber using this method. If another equation is inserted between two existing equations the number must be adjusted manually.

Although the Microsoft Word Equation Editor is the preferred way of inserting equations, sometimes it is necessary to insert equations created elsewhere and copy those into the document as pictures. In the example below, the equation is included as a picture, wrapped **In Front of Text**:

“The area of a circle is shown in equation (3):

The picture can be copied directly into the document. To insert the corresponding number manually select **Equation number** paragraph style. The author may need to manually adjust the picture position to ensure it is centred and level with the number, achieving consistency with the automatically generated Microsoft Word Equation Editor layout described above.

# DEFINITIONS

The definitions of terms used in this Guideline can be found in the *International Dictionary of Marine Aids to Navigation* (IALA Dictionary) at <http://www.iala-aism.org/wiki/dictionary> and were checked as correct at the time of going to print. Where conflict arises, the IALA Dictionary should be considered as the authoritative source of definitions used in IALA documents.

# abbreviations

This section should be typed with the **Abbreviations** style. The acronym or initialism is typed and then tab is pressed so that the style inserts the appropriate tabs and paragraph spacings e.g.:

NGO Non-governmental organisation

VTS Vessel Traffic Services

The list should be typed in alphabetical order. The text automatically aligns as an indented paragraph until carriage return is hit and then the next term can be entered.

# references

References are sources directly referred to in the running text and should be given a sequential number, starting at 1. The reference number should be included as close to the referenced text as possible and included as a number within square brackets.

The reference should be listed in the References section in the following syntax using the **Reference** **list** style:

[Author surname,] <space> [initial.] <space> [year] <space> [title.]

For example:

“Hawking also suggests ways that quantum mechanics can be combined with the theory of special relativity [1]. This text builds on his discussion of the instability of black holes described in *A Brief History of Time* [2].”

should be included in the reference list as follows:

1. Hawking, S. (2001) The Universe in a Nutshell.
2. Hawking, S. (1988) A Brief History of Time.

The **Reference list** style will add a number for the reference as soon as you start typing the text and the paragraph will automatically align with the first line of text. Press return to enter a new reference in the list.

# Further reading

Any texts that are recommended to the reader without direct reference in the text should be listed within this section using the same syntax as the reference list. Sources should be listed using the **Further reading** style.

1. Einstein, A. (1905) Relativity: The Special and General Theory of Relativity
2. Idle, E. (1984) The Galaxy Song

# Index

**No index entries found.**

### Service Negotiation

The IVEF interface is a service based protocol. This means that the data exchange between the parties is not pre-defined, but rather the result of a negotiation between the information provider and the information consumer.

#### Introduction

When a client (an e-Navigation Gateway acting as an information sink) wants to connect to server (an e-Navigation Gateway acting as an information source), it has to initiate the service by authenticating. To do this, the client sends a Login message to the server, the server validates the login requests and if correct, it sends a LoginResponse message. The server initiates the default service for that particular user. An example of a service is:

‘*using an interval of 10 seconds, output all position information and voyage information about all vessels that are within in the following area (x,y) – (x1,y1) – (x2, y2) – (x3,y3)[[2]](#footnote-2)*

After the client is logged on, the server starts outputting the traffic image that matches the specification in the service.

The client can also send a ServiceRequest to terminate or change the active service. Services can be defined with different transmission characteristics, which allows a server push or client pull of the information, or a combination.

#### Service parameters

A service is defined by a number of parameters:

1. Object Selection, which objects should be sent?
   1. Area based;
   2. Filter based on the object properties (e.g. ship length > 50 m).
2. Item Selection, which information elements should be sent?
   1. Track Information;
   2. Vessel Information;
   3. Voyage Information.
3. Transmission Selection, when should it be sent?
   1. Single Occurrence (Pull);
   2. Periodic, with specified update rate (Push);
   3. A-Periodic, synchronous with update (Push).

A filter, based on object properties is a logical expression consisting of object property terms. These terms may be combined by the logical operators ‘or’, ‘and’ or ‘exclusive or’ in increasing order of precedence. An object property term may be negated by preceding it with ‘not’.

Object property terms may contain the standard numerical predicates ‘=’, ‘!=’, ‘>’, ‘>=’, ‘<’ and ‘<=’. In case of string-valued object properties, the predicates ‘=’, ‘!=’ and the wildcards ‘\*’ and ‘?’ are supported, where ‘\*’ means any sequence of characters, including the empty sequence and ‘?’ means any single character.

Filters are validated against the known object properties and the set of rules above. Invalid filters will be rejected.

#### Information flow dynamics

The interface supports the following messages; the contents and meaning of the messages mentioned below are covered in section 3.4.3.1

1. Interface Messages

| Message | From | To | Description | |
| --- | --- | --- | --- | --- |
| *Control Information Messages* | | | | |
| Login | Client | Server | This message is used to identify the client |
| Login Response | Server | Client | Login accepted or refused, if refused a reason will be supplied |
| Logout | Client | Server | This message is used to terminate the IVEF Service |
| Ping | Both | Both | Heartbeat message |
| Pong | Both | Both | Response to a Heartbeat message |
| Service Request | Client | Server | This message contains the definition of the service requested by the client. It will replace the current service. |
| Service Request Response | Server | Client | Request accepted or refused, if refused a reason will be supplied |
| Service Status | Server | Client | This message will be sent by the server to indicate the status of the service[[3]](#footnote-3). |
| *Real Time Messages* | | | | |
| Object Data | Server | User | The track, vessel- and voyage related data of objects in the traffic image. | |

#### Timing and priorities

Control Information Messages have a higher priority than Real-Time Messages. This means that in an overload situation, Object Data Messages may be dropped in favour of Control Information Messages.

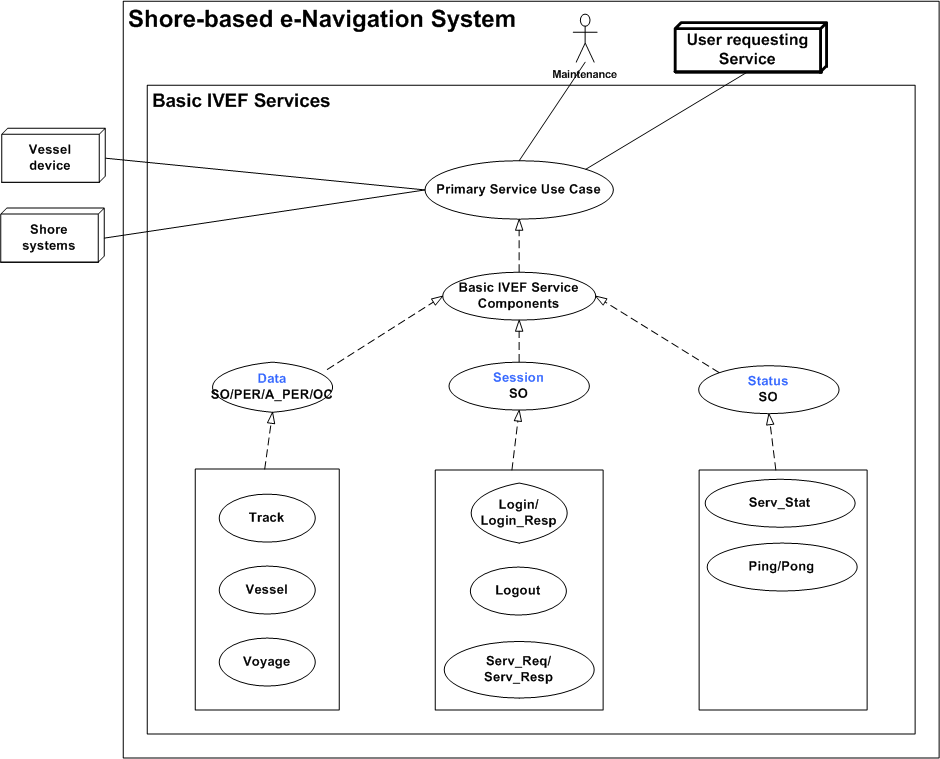
The service must start with a login message. The server will terminate the connection on transport layer when any other message is received, in order to prevent a possible Denial-of-Service (DoS) by mis-configured or malicious clients. If a service is interrupted at transport level, both server- and client sides will terminate the session and the client must login again to regain access to the service.

Messages, sent as a response to another message (LoginResponse, ServiceRequestReponse and Pong), must be responded to within agreed-upon period (e.g. 4 seconds). If the response message is not received within a specified timeout period, the sender may retry sending the message before terminating the service.

Ping messages must be sent when the sender has no other means[[4]](#footnote-4) to detect whether the receiver is still connected. The Ping message must be sent after an agreed-upon period of inactivity.

### Part I: Primary service use cases of the BIS

The primary service use cases all have in common, that they are justified by at least one interaction with a ‘requesting service’ within the common e-Navigation system architecture: The ‘requesting service’ is any other service of the common shore-based e-Navigation system architecture making a request (*logon*) to the BIS in the previous chapter.



1. Overview of the primary service use cases of the IVEF Service

Note: The dotted lines indicate an inheritance relationship.

The complete list of external BIS Components and their categories is given below:

***BIS Components:***

|  |  |
| --- | --- |
| **STATUS** | Service Status |
| **DATA** | Object Data |
| **SESSION** | Session Management |

***BIS Transmission Category***

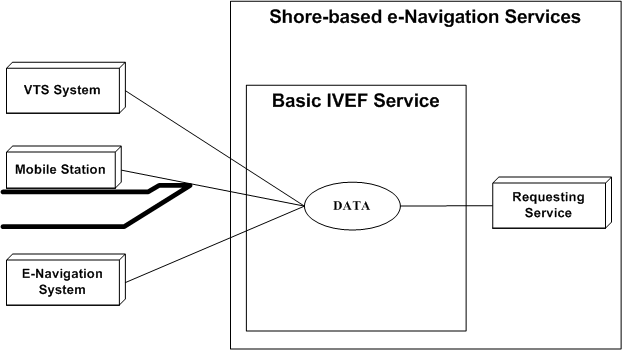
|  |  |
| --- | --- |
| **SO** | Single occurrence (non-real-time) |
| **PER** | Periodic, with a specified update rate (real-time) |
| **A-PER:** | A-periodic, synchronous with the received track update (real-time) |
| **OC** | On change, updates are sent as data elements change |

***BIS Basic Service Data Elements:***

|  |  |
| --- | --- |
| **LOGIN:** | Authentication request |
| **LOGIN\_RESP:** | Authentication response |
| **LOGOUT:** | Service termination notification |
| **SERV\_REQ:** | Service request (category, area) |
| **SERV\_RESP:** | Service response |
| **SERV\_STAT:** | Service Status |
| **PING:** | Alive request |
| **PONG:** | Alive response |
| **TRACK:** | Track data |
| **VESSEL:** | Vessel data |
| **VOYAGE:** | Voyage data |

#### Service Component DATA

##### Service Model



1. The DATA Service Component

##### Description

The DATA service component provides the following information:

1. Object track information; generally dynamic information about an object such as present position and speed.
2. Optionally Object vessel data; more or less pertinent information about an object such as call sign, IMO number and object dimensions.
3. Optionally Voyage data; such as Destination and ETA.

**Service Data Structure**

See APPENDIX 1.

##### VESSEL: Vessel Data

**Use**

The vessel information is used to identify and classify ships.

**Risks**

The vessel information is obtained from several sources including manual entry onboard a ship or in a VTS system or from database systems. It is possible that this data may be incorrect.

**Service Data Structure**

See APPENDIX 1.

**Operating Characteristics**

1. The BIS shall start automatically upon logon confirmation.
2. The data will be sent depending on transmission category.

##### TRACK: Track Data

**Use**

The track data combined with the data derived from VESSEL and, optionally, VOYAGE represents the actual traffic image.

**Risks**

The track data that is exchanged is the result multi-sensor fusion of various sensors. Sensor data is inherently noisy and subject to all kinds of disturbances therefore the track represents the best effort representation of the true situation, but not necessary the true situation itself.

**Service Data Structure**

See APPENDIX 1.

**Operational Characteristics**

1. The BIS shall start automatically upon logon confirmation.
2. The data will be sent depending on transmission category.

##### VOYAGE: Voyage-related Data

**Use**

The voyage-related ship information is used to classify ships with regard to cargo, draught, destination and the route.

**Risks**

1. The voyage information is entered onboard a ship or in a VTS system and it is possible that this data may be incorrect.
2. Information on the type of cargo provides only the classification of dangerous goods (Carrying DG, HS, or MP, IMO hazard or pollutant category A, B, C, D). This may not be sufficient in case of SAR/Pollution prevention.

**Service Data Structure**

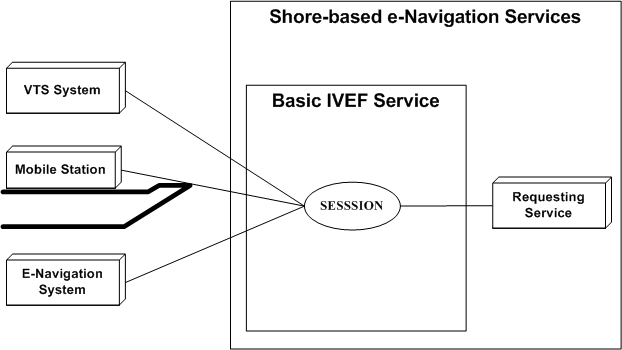
See APPENDIX 1.

**Operational Characteristics**

1. The BIS shall start automatically upon logon confirmation.
2. The data will be sent depending on transmission category.

#### Service Component SESSION

##### Service Model



1. The Session Service Component

##### Description

The SESSION service component is responsible for set-up, termination and terms-of-service negotiation.

##### LOGIN/LOGIN\_RESP/LOGOUT

**Use**

1. A session is started by issuing a login request with the appropriate account details.
2. The account details are verified and the service responds with a login response granting or denying access to the service.

A session can be terminated by issuing a logout request.

**Risks**

Secured communication should be considered on the transport layer. IVEF provides only authentication support. Encryption and non-repudiation must be established on transport layer using suitable technologies (VPN, https, ssl, direct lines…).

**Service Data Structure**

See APPENDIX 1.

##### SERVICE\_REQ/ SERVICE \_RESP

**Use**

1. A service request is used to negotiate the terms-of-service, i.e. data content, area of interest and frequency of delivery.
2. A service request is acknowledged by a service response. Once acknowledge it will replace the previous service request.

**Risks**

1. A service request could lead to a data link overload. The client is responsible for issuing the service request that matches the available resources.
2. The server could be overloaded by to many user requests. Proper mechanism should be applied.

**Service Data Structure**

See APPENDIX 1.

#### Service Component STATUS

##### Service Model



1. The Status Service Component

##### Description

The STATUS service component provides service-related status information and maintains alive status.

##### PING/PONG/SERV\_STAT

**Use**

1. PING / PONG are messages exchanged at regular time intervals to verify alive status of the data link.
2. SERV\_STAT indicates the status of the server to the client (ok/not ok) with an optional description.

**Risks**

No risks.

**Service Data Structure**

See APPENDIX 1.

### Part II: Secondary service use cases of the BIS

#### LOCAL ADAPTATION

**Use**

The TAGGED\_ITEM message can be used for non-standard, additional data exchange.

**Risks**

Requires additional agreement between client side and server side.

**Service Data Structure**

See APPENDIX 1.

## Security Model of the IVEF Service

The security model concerns the following aspects of the service:

* Authentication – this concerns both clients of the service and providers of the service.
* Authorization – this concerns the clients of the service.
* Data protection – this concerns the data that is being exchanged.
* Physical security – this concerns access to the server- and client systems and the interconnecting network.

The security model of the Basic IVEF Service addresses only the first two items, i.e., authentication and authorisation. The latter two items are outside the scope of this document. For data protection, suitable encryption methods can be defined at communication link-level (see section 3.4) or by providing a, so-called, Virtual Private Network (VPN) for clients.

The IVEF service is usually strictly contained within a shore-based e-Navigation system. Hence, it is assumed that appropriate measures for safeguarding the physical security of the service have been taken at the system level.

The model that is chosen for authentication and authorisation is a simple one, based on a shared secret between client and server (such a shared secret is commonly referred to as ‘password’). There is no specific authentication of the server (although this can arranged e.g., by using SSL certificates) and knowledge of the shared secret is assumed to identify the client. Once the client has authenticated itself, a set of client-specific rules is enforced by the server to guarantee that only those data are sent to the client for which the client has been authorised (see also section 3.9).

Note that the security model of the IVEF service is, in fact, independent of the traffic image exchange service and can easily be replaced by a more elaborate security model (e.g., based on certificates) if required.

## Interfacing Model of the IVEF Service

The IVEF Service refers to the Presentation and Application layers as defined by the Open Systems Interconnection (OSI) Reference Model [3].

1 – Physical Layer

2 – Data Link Layer

3 – Network Layer

4 – Transport Layer

5 – Session Layer

**6 – Presentation Layer**

**7 – Application Layer**

1. The ISO/OSI Reference Model

The definition of the lower-level telecommunication support layers is beyond the scope of the IVEF Service definition. Transmission of an IVEF-coded vessel traffic image can make use of any available communication medium, for instance a packet-switched Wide Area Network (WAN) or a Local Area Network (LAN).

The specific lower-level telecommunication protocol layers should be agreed upon by all partners of the data exchange, taking into account requirements such as data rates, reliability, security and latency.

In order to ease the exchange of data between different systems (e.g. potential network interconnection) it is advisable to apply standard telecommunication protocols (e.g. TCP/IP).

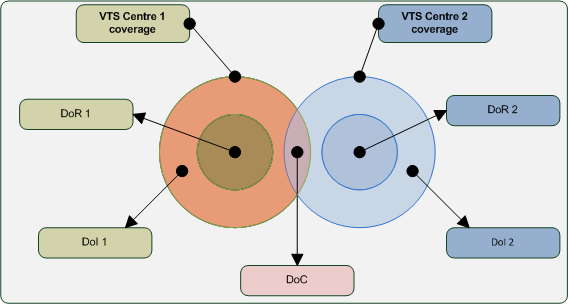
The IVEF Service uses XML [3] as a Presentation Layer protocol and defines the structure of the data to be exchanged over the communication medium.

## Quality Parameters of the IVEF Service

The quality parameters of the IVEF Service depend on the intended use of the service: is it a real-time service, suitable for Vessel Traffic Services, or a near-realtime or non-realtime monitoring service that is regularly updated?

An important assumption of the service is that the server and client systems operate with a common time reference. Therefore, it is recommended to use a time service that provides UTC time, e.g., based on GNSS or internet time servers (NTP), at both the server and client.

A possible application of the IVEF Service is the provision of monitoring data to a stakeholder, for example a ship owner that wants to have information on his fleet. In such a case, only the relevant data will be delivered; everything else will be filtered out. Also, the update rate will be fairly low, say in the order of a few messages per hour. Furthermore, neither availability of the service nor message delays are critical issues.



1. Domains of Interest, Responsibility and Co-operation

Although the IVEF Service is a one-way service (from server to client), a common operational scenario, where VTSs are involved, is a mutual service, where each VTS provides data to the other (Figure 1).

In such a scenario, three areas are considered

1. *Domain of Interest (DoI)* – the geographical area which is of interest to a particular VTS centre. In general, this is the total sensor coverage area.
2. *Domain of Responsibility (DoR)* – the area for which the VTS centre is mandated to provide their VTS service, i.e. an Information Service, Traffic Organisation Service or Navigational Assistance Service.
3. *Domain of Cooperation (DoC)* – a subarea within the cross-section of the DoIs of the two VTSs where special processing is done to guarantee continuity of position, speed and course of objects.

In order to use the concept of the DoC, additional functionality is required in both VTSs.

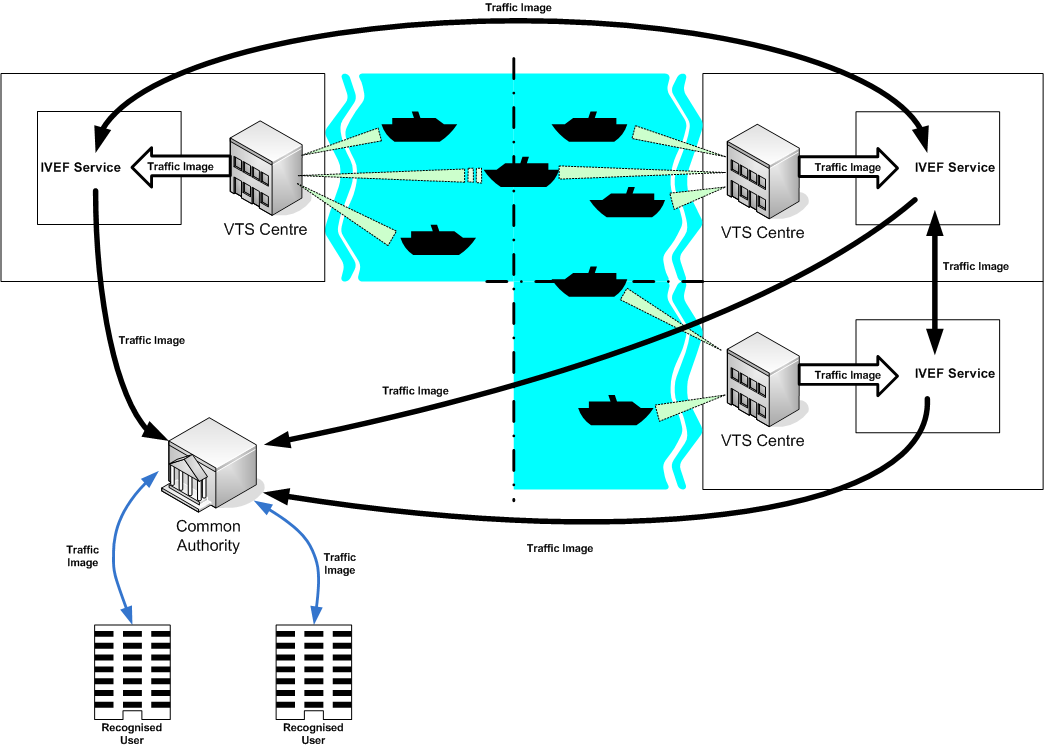
This additional functionality consists of:

* the capability of associating multiple tracks to a single object, i.e. in the DoC, both systems will have a track and these tracks must be correlated to the same physical object, for instance via matching position and speed, or some other method; and
* the capability of smoothing out differences between the correlated tracks for the same object. The recommended processing to guarantee continuity across the Domain of Cooperation is to use a weighted average of the track states (see Figure 13).

In such a scenario, there should be a mutual agreement between the VTSs involved about the quality of service. This agreement should address:

* availability and timeliness of the IVEF Service;
* emergency/breakdown procedures, if applicable; and
* integrity of the VTS data delivered. This also concerns possible filtering of the data, for instance for commercial reasons.

A more complicated use case is where there are multiple providers of an IVEF Service to a common authority (Figure 14). The common authority is responsible for further distribution of the data to recognised data users. This means that the common authority is also responsible for validation of these users. In this case, there will be agreements between the common authority and the IVEF Service providers, but also between the common authority and the recognised data users. Obviously, the quality aspects in these agreements may be quite different, depending on the intended use of the data.



1. IVEF Service using a Common Authority

## Test model of the IVEF Service

### Well-formed messages

Each IVEF Service Message must comply with the W3C XML specification [3]. This specification defines an XML document as a text, which is well-formed, i.e., it satisfies a list of syntax rules provided in the specification. The list of rules is fairly lengthy; the most important rules are:

* A message contains only properly encoded legal Unicode characters.
* None of the special syntax characters such as ‘<’ and ‘&’ appear except when performing their markup-delineation roles.
* The begin-, end-, and empty-element tags, which delimit the elements, are correctly nested, with none missing and none overlapping.
* The element tags are case-sensitive; the begin- and end tags must match exactly.
* There is a single ‘root’ element, which contains all the other elements.

### Valid messages

In addition to being well-formed, an IVEF Service Message must also be valid. This means that data elements and attributes must comply with the definition as specified in APPENDIX 1. In addition, the values must adhere to minimum value, maximum value, length, precision etc., as specified in APPENDIX 1.

### Valid data

All track numbers, at any given time instant, should be unique.

### Interaction behaviour

A login should be answered by a login response as indicated in Figure 15. The same holds, modus modendi, for ping/pong and service req/service respectively.



1. Login/Logout Activity Graph

## Administration Model of the IVEF Service

The Administration Model describes the aspects of the service that can be configured by service provider. For the IVEF Service, this concerns the maintenance of the user database. The user database contains the shared secret for each user and the user authorisations, i.e.. the restrictions, that are enforced by the server, on the data that is provided to a particular user. Additionally, the user database may contain default services for each user. These default services may be adapted by the respective user or be left to the discreteness of the service provider.

Considering the complexity of the user database, the provision of a graphical Human-Machine Interface (HMI) is strongly recommended for this purpose.

# References

1. IALA Recommendation on the e-Navigation Architecture – the Shore Perspective, IALA Recommendation eNAV-101.
2. Generic e-Navigation Service Engineering Model Template, (draft) IALA Recommendation eNAV-210, 2009.
3. Open Systems Interconnection (OSI) Reference Model, International Standards Organization (ISO) Standard 7498-1, 1994.
4. Extensible Markup Language (XML) 1.0 (Fifth Edition), W3C Recommendation 26 November 2008, <http://www.w3.org/TR/2008/REC-xml-20081126/> .
5. The Transport Layer Security (TLS) Protocol, Version 1.2, August 2008, <http://www.ietf.org/rfc/rfc5246.txt> .
6. The SSL Protocol, Version 3.0, November, 1996, <http://www.mozilla.org/projects/security/pki/nss/ssl/draft302.txt> .
7. ZLIB Compressed Data Format Specification, Version 3.3, May 1996, <http://www.ietf.org/rfc/rfc1950.txt> .

# Definitions

**Object** – a vessel, wind turbines, off-shore platform, bridge, an Aid-to-Navigation or a helicopter (SAR).

**Gateway Service –** a generic type of service, as defined in [1].

**Vessel Traffic Image** **–** the consolidated information about vessels and their movements in a particular area of interest.[[5]](#footnote-5)

# Abbreviations

BIS Basic IVEF Services

DoC Domain of Cooperation

DoI Domain of Interest

DoR Domain of Responsibility

DoS Denial of Service

GNSS Global Navigation Satellite System

HMI Human-Machine Interface

IALA International Association of Marine Aids to Navigation and Lighthouse Authorities

IALA UMDM IALA Universal Maritime Data Model

IVEF Inter-system Vessel traffic image Exchange Format

ISO The International Standards Organisation

LAN Local-Area Network

NTP Network Time Protocol

OSI Open Systems Interconnection

SAR Search and Rescue

SSL Secure Socket Layer

TCP/IP Transmission Control Protocol/Internet Protocol

TIE Traffic Image Exchange

UTC Universal Time Coordinated

VTS Vessel Traffic Services

W3C World-Wide Web Consortium

WAN Wide-Area Network

XML eXtensible Markup Language

1. DATA DEFINITION

# Element Definitions

**Element MSG\_IVEF**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Root MESSAGE | | Diagram |  | | Children | [**Body**](#id5), [**Header**](#id2) | |  |
|  |  |  |

**Element Header**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | HEADER part of every message with version and uniqueness information | | Diagram |  | | Used by | |  |  | | --- | --- | | Element | [**MSG\_IVEF**](#id1) | | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [MsgRefId](#id3) | required | Must be an Universally Unique Identifier for each message (TU-T Rec. X.667 | ISO/IEC 9834-8.) Reply messages refer to this id to identify the message they are replying to. In its canonical form, a UUID consists of 32 hexadecimal digits, displayed in 5 groups separated by hyphens, in the form 8-4-4-4-12 for a total of 36 characters, enclosed by brackets. For example: {550e8400-e29b-41d4-a716-446655440000} | | [Version](#id4) | required | Defines the version of the protocol used. Syntax is major.minor.patch patch releases fix only bugs, minor releases may add functionality but are compatible, major releases are not compatible | | |  |
|  |  |  |

**Element** [**MSG\_IVEF**](#id1) **/ Body**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Diagram |  | | Children | [**LoginRequest**](#id6), [**LoginResponse**](#id10), [**Logout**](#id14), [**ObjectDatas**](#id15), [**Ping**](#id114), [**Pong**](#id116), [**ServerStatus**](#id120), [**ServiceRequest**](#id124), [**ServiceRequestResponse**](#id135) | |  |
|  |  |  |

**Element LoginRequest**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | DATA login message with details of the user | | Diagram |  | | Used by | |  |  | | --- | --- | | Element | [**MSG\_IVEF/Body**](#id5) | | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [Encryption](#id7) | required | 1 = plain 2 - 6 the 5 most common encryption 0 = custom | | [Name](#id8) | required | Login name | | [Password](#id9) | required | Password value | | |  |
|  |  |  |

**Element LoginResponse**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | DATA login response with acceptance or deny with optional reason | | Diagram |  | | Used by | |  |  | | --- | --- | | Element | [**MSG\_IVEF/Body**](#id5) | | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [Reason](#id11) | optional | String describing reason for declining, only used when result is ‘Declined’ | | [ResponseOn](#id12) | required | Corresponds to the original MsgRefId from the Login.xml message. Must be an Universally Unique Identifier (TU-T Rec. X.667 | ISO/IEC 9834-8.) | | [Result](#id13) | required | 1 = Accepted 2 = Declined | | |  |
|  |  |  |

**Element Logout**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | DATA logout message, the server will drop the connection if logout is successfull | | Diagram |  | | Used by | |  |  | | --- | --- | | Element | [**MSG\_IVEF/Body**](#id5) | | |  |
|  |  |  |

**Element** [**Body**](#id5) **/** [**MSG\_IVEF**](#id1) **/ ObjectDatas**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Diagram |  | | Children | [**ObjectData**](#id16) | |  |
|  |  |  |

**Element ObjectData**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | DATA regarding an object in the supliers domain, contains at least 1 one of the sub elements (TrackData, VesselData, VoyageData) | | Diagram |  | | Used by | |  |  | | --- | --- | | Element | [**MSG\_IVEF/Body/ObjectDatas**](#id15) | | | Children | [**TaggedItem**](#id111), [**TrackData**](#id17), [**VesselData**](#id40), [**VoyageData**](#id81) | |  |
|  |  |  |

**Element TrackData**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | DATA describing a position report of an object | | Diagram |  | | Used by | |  |  | | --- | --- | | Element | [**ObjectData**](#id16) | | | Children | [**NavStatus**](#id25), [**Pos**](#id18) | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [COG](#id27) | required | Course over ground in degrees. (0-360) | | [EstAccCOG](#id29) | optional | Estimated accuracy standard deviation of the calculated value expressed in degrees | | [EstAccSOG](#id28) | optional | Estimated accuracy standard deviation of the calculated value expressed in m/s | | [Heading](#id32) | optional | Heading of the target in degrees | | [Id](#id30) | required | The unique identification of this track. Valid from first message with TrackStatus!=Terminated to first message with TrackStatus=Terminated | | [Length](#id31) | optional | Measured length of the target in meter | | [ROT](#id33) | optional | Rate of turn in degrees per minute | | [SOG](#id34) | required | Speed over ground in meters per second | | [SourceId](#id35) | optional | Unique identification of the producer (UN/LOCODE) in case multiple producers exist on the same LOCODE, the local competent authority can optionally addended this with a local code (e.g. BE ANR 01 = Antwerp, 01) | | [SourceName](#id36) | required | Identification of the originator of the data | | [TrackStatus](#id38) | required | 1 = Updated, (sensors are updating the track) 2 = Coasted, (no sensor is updating the track) 3 = Dropped | | [UpdateTime](#id37) | required | Date and time in UTC format (YYYY-MM-DDThh:mm:ss.sssZ) (subset of ISO 8601) this position was measured. | | [Width](#id39) | optional | Measured Width of the target in meter | | |  |
|  |  |  |

**Element Pos**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | DATA position measurement of the geometrical centre of the object or location | | Diagram |  | | Used by | |  |  | | --- | --- | | Elements | [**Area**](#id125), [**TrackData**](#id17), [**VoyageData/Waypoint**](#id82) | | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [Altitude](#id19) | optional | The altitude of the target above the WGS-84 ellipsoid in meters | | [EstAccAlt](#id20) | optional | Estimated accuracy standard deviation of the calculated position of a target expressed in m | | [EstAccLat](#id21) | optional | Estimated accuracy standard deviation of the calculated position of a target expressed in m | | [EstAccLong](#id22) | optional | Estimated accuracy standard deviation of the calculated position of a target expressed in m | | [Lat](#id23) | required | Latitude (WGS84) in degrees. (+/- 90 degrees; North = positive; South = negative) Examples: -90deg (south) = -90.0000000 0deg0min1sec (north) = 0.0000016 50deg50min (north) = 50.8333333 | | [Long](#id24) | required | Longitude (WGS84) in degrees. (+/- 180 degrees; East = positive; West = negative). Examples: -180deg (west) = -180.0000000 0deg0min1sec (east) = 0.0000016 | | |  |
|  |  |  |

**Element** [**TrackData**](#id17) **/ NavStatus**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Diagram |  | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [Value](#id26) | required | Navigation status of the target 0 = under way using engine 1 = at anchor 2 = not under command 3 = restricted manoeuvrability 4 = constrained by her draught 5 = moored 6 = aground 7 = engaged in fishing 8 = under way sailing 9 = engaged in fishing other than trawling   10 = air-cushion vessel in non displacement mode or WIG craft taking off, landing or in flight 11 = power driven vessel towing astern 12 = power driven vessel pushing ahead or towing alongside 13 = in distress or requiring assistance   14 = AIS SART, seeking to attract attention 15 = undefined default | | |  |
|  |  |  |

**Element VesselData**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | DATA regarding static elements of an object | | Diagram |  | | Used by | |  |  | | --- | --- | | Element | [**ObjectData**](#id16) | | | Children | [**Construction**](#id41), [**Identifier**](#id58) | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [BlackListed](#id74) | optional | Vessel is blacklisted by a NCA | | [Class](#id73) | optional | 0 = Unknown 1 = Vessel 2 = Aids to Navigate | | [Id](#id75) | required | The unique identification of this vesseldata. Valid from first message with TrackStatus!=Terminated to first message with TrackStatus=Terminated | | [SourceId](#id77) | optional | Unique identification of the producer (UN/LOCODE) in case multiple producers exist on the same LOCODE, the local competent authority can optionally addended this with a local code (e.g. BE ANR 01 = Antwerp, 01) | | [SourceName](#id78) | required | Identification of the originator of the data | | [SourceType](#id79) | required | Source/originator type: 0 = Unknown, 1 = Transponder, 2 = Database (VTS Plan Server), 3 = Manual (VTS Officer), 4 = Fused, 5 = External Source | | [SpecialAttention](#id76) | optional | Vessel is under special attention of the NCA or fairway authorities | | [UpdateTime](#id80) | required | Date and time in UTC format (YYYY-MM-DDThh:mm:ss.sssZ) (subset of ISO 8601) this data was compiled | | |  |
|  |  |  |

**Element** [**VesselData**](#id40) **/ Construction**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | attributes of the object regarding the physical construction | | Diagram |  | | Children | [**UnType**](#id42) | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [DeadWeight](#id48) | optional | Dead weight in tons | | [GrossWeight](#id49) | optional | Gross weight in tons | | [HullColor](#id46) | optional | Color of Hull (in RGB hex) for SAR operations | | [HullType](#id47) | optional | Type of hull (1 = single, 2 = double, 3 = triple) | | [Length](#id50) | optional | The overall length of the target in meter as confirmed by NCA | | [LloydsShipType](#id51) | optional | Number indicating type of vessel | | [MaxAirDraught](#id53) | optional | Maximum air draught of the object in meters, to be used if voyage data is not available | | [MaxDraught](#id54) | optional | Maximum draught of the object in meters, to be used if voyage data is not available | | [MaxPersonsOnBoard](#id55) | optional | The maximum number of persons on board of the object (crew, support, passengers, pilots) | | [MaxSpeed](#id56) | optional | The maximum speed the object is able to sustain with normal draft and load | | [Width](#id57) | optional | Overall width of the target in meter as confirmed by the NCA | | [YearOfBuild](#id52) | optional | The year the vessel was build in 4 digits e.g. 2010 | | |  |
|  |  |  |

**Element** [**Construction**](#id41) **/** [**VesselData**](#id40) **/ UnType**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Object type according to CODES FOR TYPES OF MEANS OF TRANSPORT Revision 2 (UNECE CEFACT Trade Facilitation Recommendation No. 28 edition 2007) | | Diagram |  | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [CodeA](#id43) | required |  | | [CodeB](#id44) | optional |  | | [Mode](#id45) | required |  | | |  |
|  |  |  |

**Element** [**VesselData**](#id40) **/ Identifier**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | (local) Identification of vessel | | Diagram |  | | Children | [**OtherId**](#id59), [**OtherName**](#id62) | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [Callsign](#id65) | optional | Callsign of the target, in accordance with Article 19, Section III of the ITU Radio Regulations (RR) | | [Flag](#id69) | optional | The country flag (ISO 3166-1-alpha2) | | [FormerName](#id68) | optional | Previous name of the target | | [IMO](#id66) | optional | IMO number of the target | | [LRIT](#id72) | optional | LRIT identification | | [MMSI](#id71) | optional | MMSI number of the target | | [Name](#id67) | optional | Name of the target | | [Owner](#id70) | optional | Name of owner the target | | |  |
|  |  |  |

**Element OtherId**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Other Id's for the track than the world wide international standard Identifiers, e.g. regional indentifiers like ENI | | Diagram |  | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Identifier**](#id58) | | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [Id](#id60) | required | Name of the Identifier | | [Value](#id61) | required | Value of the identifier | | |  |
|  |  |  |

**Element OtherName**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Other names for the track than the English name | | Diagram |  | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Identifier**](#id58) | | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [Lang](#id63) | required | Languange (ISO 3166-1-alpha2) | | [Name](#id64) | required | Name in the foreign language | | |  |
|  |  |  |

**Element VoyageData**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | DATA regarding a movement of a vessel servers domain | | Diagram |  | | Used by | |  |  | | --- | --- | | Element | [**ObjectData**](#id16) | | | Children | [**Waypoint**](#id82) | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [ATD](#id98) | optional | Date and time in (subset of ISO 8601) UTC format (YYYY-MM-DDThh:mm:ss.sssZ) of the Actual Time Of Departure of the target | | [AirDraught](#id88) | optional | Actual air draught of the vessel in meters | | [CargoTypeIMO](#id90) | optional | 0 = All ships of this type 1 = Carrying DG, HS, or MP, IMO hazard or pollutant category A 2 = Carrying DG, HS, or MP, IMO hazard or pollutant category B 3 = Carrying DG, HS, or MP, IMO hazard or pollutant category C 4 = Carrying DG, HS, or MP, IMO hazard or pollutant category D 5 = Carrying DG, HS, or MP, IMO hazard or pollutant of unknown category | | [ContactIdentity](#id91) | optional | reference to the identity associated with this objects voyage | | [DepartCode](#id94) | optional | Departure of the target (UN/LOCODE) optionally addended with local location code (e.g. BEANR0170100497 = Antwerp, HANSADOK 497) | | [DepartName](#id95) | optional | Departure name of the target e.g. local code for berth/lock/bridge/terminal | | [DestCode](#id92) | optional | Destination of the target (UN/LOCODE) optionally addended with local location code (e.g. BEANR0170100497 = Antwerp, HANSADOK 497) | | [DestName](#id93) | optional | Destination name of the target e.g. local code for berth/lock/bridge/terminal | | [Draught](#id96) | optional | Actual draught of the vessel in meters | | [ETA](#id97) | optional | Date and time in (subset of ISO 8601) UTC format (YYYY-MM-DDThh:mm:ss.sssZ) of the Expected Time Of Arrival of the target at the destination | | [ISPSLevel](#id99) | optional | The ISPS level of the object (1 = normal, 2 = heightended, 3 = exceptional) | | [Id](#id89) | required | The unique identification of this voyagedata. Valid from first message with TrackStatus!=Terminated to first message with TrackStatus=Terminated | | [OverSizedLength](#id100) | optional | Length of the target in meter as confirmed by NCA, in case of a convoy of barges | | [OverSizedWidth](#id101) | optional | Width of the target in meter as confirmed by the NCA, in case of a convoy of barges | | [PersonsOnBoard](#id102) | optional | The number of persons on board of the object, should equal the sum of crew, passengers and support personel if available | | [Pilots](#id103) | optional | Pilot status 0 = unknown 1 = pilot on board 2 = object under remote pilotage 3 = pilot required | | [RouteBound](#id104) | optional | This object is bound to the route of this voyage | | [SourceId](#id105) | optional | Unique identification of the producer (UN/LOCODE) in case multiple producers exist on the same LOCODE, the local competent authority can optionally addended this with a local code (e.g. BE ANR 01 = Antwerp, 01) | | [SourceName](#id106) | required | Identification of the originator of this data | | [SourceType](#id107) | required | Source/originator type: 0 = Unknown, 1 = Transponder, 2 = Database (VTS Plan Server), 3 = Manual (VTS Officer), 4 = Fused, 5 = External Source | | [TankerStatus](#id108) | optional | Describes the status of the tanker 0 = Non gas free 1 = Gas free 2 = Inert | | [Tugs](#id109) | optional | Object uses tugs | | [UpdateTime](#id110) | required | Date and time in (subset of ISO 8601) UTC format (YYYY-MM-DDThh:mm:ss.sssZ) this data was compiled | | |  |
|  |  |  |

**Element** [**VoyageData**](#id81) **/ Waypoint**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Waypoint belonging to the route of this voyage | | Diagram |  | | Children | [**Pos**](#id18) | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [ATA](#id83) | optional | Date and time in UTC format (YYYY-MM-DDThh:mmZ) (subset of ISO 8601 ) of the Actual Time Of Arrival of the target. | | [ETA](#id84) | optional | Date and time in UTC format (YYYY-MM-DDThh:mmZ) (subset of ISO 8601) of the Expected Time Of Arrival of the target. | | [LoCode](#id86) | optional | Waypoint name in UN/LOCODE optionally addended with local location code (e.g. BEANR0170100497 = Antwerp, HANSADOK 497) | | [Name](#id87) | required | Name of the waypoint | | [RTA](#id85) | optional | Date and time in UTC format (YYYY-MM-DDThh:mmZ) (subset of ISO 8601) of the Requested Time Of Arrival of the target. | | |  |
|  |  |  |

**Element TaggedItem**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Generic key/value pairs, can be used to pass information that is not (yet) in the standard, provided server and user agree upon interface. E.g. Blue sign indication for inland waterways, references to voyage or vesseldata (URL) | | Diagram |  | | Used by | |  |  | | --- | --- | | Element | [**ObjectData**](#id16) | | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [Key](#id112) | required | Key for the tagged item | | [Value](#id113) | required | Value of the tagged item, can be of any type | | |  |
|  |  |  |

**Element Ping**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | DATA alive message | | Diagram |  | | Used by | |  |  | | --- | --- | | Element | [**MSG\_IVEF/Body**](#id5) | | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [TimeStamp](#id115) | required | Date and time in (subset ISO 8601) UTC format (YYYY-MM-DDThh:mm:ss.sssZ) of the time this message is sent. | | |  |
|  |  |  |

**Element Pong**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | DATA alive response | | Diagram |  | | Used by | |  |  | | --- | --- | | Element | [**MSG\_IVEF/Body**](#id5) | | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [ResponseOn](#id117) | required | Corresponds to the original MsgRefId from the Ping.xml message. Must be an Universally Unique Identifier (TU-T Rec. X.667 | ISO/IEC 9834-8.) | | [SourceId](#id118) | required | The identification of the node who created this message | | [TimeStamp](#id119) | required | Date and time in (subset of ISO 8601) UTC format (YYYY-MM-DDThh:mm:ss.sssZ) of the time this message is sent. | | |  |
|  |  |  |

**Element ServerStatus**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | DATA describing the status of the server (full/available) | | Diagram |  | | Used by | |  |  | | --- | --- | | Element | [**MSG\_IVEF/Body**](#id5) | | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [ContactIdentity](#id121) | optional | reference to the identity associated with this service | | [Details](#id122) | optional | Details of status | | [Status](#id123) | required | Status of the server (ok / not ok) | | |  |
|  |  |  |

**Element ServiceRequest**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | DATA describing the service a user requests | | Diagram |  | | Used by | |  |  | | --- | --- | | Element | [**MSG\_IVEF/Body**](#id5) | | | Children | [**Area**](#id125), [**Filter**](#id133), [**Item**](#id130), [**Transmission**](#id127) | |  |
|  |  |  |

**Element Area**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Geographical location based on one or more polygons | | Diagram |  | | Used by | |  |  | | --- | --- | | Element | [**ServiceRequest**](#id124) | | | Children | [**Pos**](#id18) | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [Name](#id126) | optional | Name of the area | | |  |
|  |  |  |

**Element** [**ServiceRequest**](#id124) **/ Transmission**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Diagram |  | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [Period](#id129) | optional | Specifies the time between two periodic updates in seconds | | [Type](#id128) | required | Type of transmission, possible values are: 1 = single occurrence (whole image) 2 = periodic occurence (predicted, whole image) 3 = a-periodic occurence (synchronous, whenever an object is updated) | | |  |
|  |  |  |

**Element** [**ServiceRequest**](#id124) **/ Item**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Diagram |  | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [DataSelector](#id131) | required | Describes requested Object data element, possible values: 1 = TrackData 2 = VesselData 3 = VoyageData | | [FieldSelector](#id132) | required | Selected field. Can be 'all' or one of the items of object data TrackData, VesselData or VoyageData, to be changed into an enumeration of strings once these have been fixed | | |  |
|  |  |  |

**Element** [**ServiceRequest**](#id124) **/ Filter**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Diagram |  | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [Predicate](#id134) | required | Filter expression in XPath 1.0 definition (http://www.w3.org/TR/1999/REC-xpath-19991116) A Filter must start with //ObjectData (Filter always on entire objects) and can not go beyond a single objects parameters (next/previous/last etc.) Examples: All objects: //ObjectData All objects faster then 10 m/s: //ObjectData[TrackData[@SOG > 10]] All objects named ‘Krieken’: //ObjectData[VesselData/Identifier[@Name = ‘Krieken’]] All objects heading for Antwerp, HANSADOK 497 with a max keelheigth of 20m: //ObjectData[VoyageData[@DestCode = BEANR0170100497]] AND //ObjectData[VesselData/Construction[@MaxKeelHeigth > 20]] | | |  |
|  |  |  |

**Element ServiceRequestResponse**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | DATA detailing the supliers response to the users service request | | Diagram |  | | Used by | |  |  | | --- | --- | | Element | [**MSG\_IVEF/Body**](#id5) | | | Attributes | | Name | Use | Annotation | | --- | --- | --- | | [Reason](#id136) | optional | String describing reason for declining, when result is ‘Declined’, or a string describing the restrictions when the result is ‘Accepted with restrictions’ | | [ResponseOn](#id137) | required | Corresponds to the original MsgRefId from the ServiceRequest message. Must be an Universally Unique Identifier (TU-T Rec. X.667 | ISO/IEC 9834-8.) | | [Result](#id138) | required | 1 = Accepted, 2 = Declined, 3 = Accepted with restrictions | | |  |
|  |  |  |

# Attribute Definitions

**Attribute ATA**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Date and time in UTC format (YYYY-MM-DDThh:mmZ) (subset of ISO 8601 ) of the Actual Time Of Arrival of the target. | | Type | **xs:dateTime** | | Used by | |  |  | | --- | --- | | Element | [**VoyageData/Waypoint**](#id82) | | |  |
|  |  |  |

**Attribute ATD**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Date and time in (subset of ISO 8601) UTC format (YYYY-MM-DDThh:mm:ss.sssZ) of the Actual Time Of Departure of the target | | Type | **xs:dateTime** | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute AirDraught**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Actual air draught of the vessel in meters | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | fractionDigits | **2** |  | | minExclusive | **0** |  | | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute Altitude**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | The altitude of the target above the WGS-84 ellipsoid in meters | | Type | **xs:decimal** | | Used by | |  |  | | --- | --- | | Element | [**Pos**](#id18) | | |  |
|  |  |  |

**Attribute BlackListed**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Vessel is blacklisted by a NCA | | Type | **xs:boolean** | | Used by | |  |  | | --- | --- | | Element | [**VesselData**](#id40) | | |  |
|  |  |  |

**Attribute COG**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Course over ground in degrees. (0-360) | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | fractionDigits | **1** |  | | maxInclusive | **360** |  | | minInclusive | **0** |  | | | Used by | |  |  | | --- | --- | | Element | [**TrackData**](#id17) | | |  |
|  |  |  |

**Attribute Callsign**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Callsign of the target, in accordance with Article 19, Section III of the ITU Radio Regulations (RR) | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **0** |  | | maxLength | **9** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Identifier**](#id58) | | |  |
|  |  |  |

**Attribute CargoTypeIMO**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | 0 = All ships of this type 1 = Carrying DG, HS, or MP, IMO hazard or pollutant category A 2 = Carrying DG, HS, or MP, IMO hazard or pollutant category B 3 = Carrying DG, HS, or MP, IMO hazard or pollutant category C 4 = Carrying DG, HS, or MP, IMO hazard or pollutant category D 5 = Carrying DG, HS, or MP, IMO hazard or pollutant of unknown category | | Type | restriction of **xs:integer** | | Facets | |  |  |  | | --- | --- | --- | | enumeration | **0** |  | | enumeration | **1** |  | | enumeration | **2** |  | | enumeration | **3** |  | | enumeration | **4** |  | | enumeration | **5** |  | | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute Class**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | 0 = Unknown 1 = Vessel 2 = Aids to Navigate | | Type | restriction of **xs:integer** | | Facets | |  |  |  | | --- | --- | --- | | enumeration | **0** |  | | enumeration | **1** |  | | enumeration | **2** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData**](#id40) | | |  |
|  |  |  |

**Attribute CodeA**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | pattern | **[0-9A-Z]{2,3}** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Construction/UnType**](#id42) | | |  |
|  |  |  |

**Attribute CodeB**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | pattern | **[1-9A-Z]** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Construction/UnType**](#id42) | | |  |
|  |  |  |

**Attribute ContactIdentity**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | reference to the identity associated with this objects voyage | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **1** |  | | maxLength | **254** |  | | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute ContactIdentity**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | reference to the identity associated with this service | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **1** |  | | maxLength | **254** |  | | | Used by | |  |  | | --- | --- | | Element | [**ServerStatus**](#id120) | | |  |
|  |  |  |

**Attribute DataSelector**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Describes requested Object data element, possible values: 1 = TrackData 2 = VesselData 3 = VoyageData | | Type | restriction of **xs:integer** | | Facets | |  |  |  | | --- | --- | --- | | enumeration | **1** |  | | enumeration | **2** |  | | enumeration | **3** |  | | | Used by | |  |  | | --- | --- | | Element | [**ServiceRequest/Item**](#id130) | | |  |
|  |  |  |

**Attribute DeadWeight**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Dead weight in tons | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | minExclusive | **0** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Construction**](#id41) | | |  |
|  |  |  |

**Attribute DepartCode**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Departure of the target (UN/LOCODE) optionally addended with local location code (e.g. BEANR0170100497 = Antwerp, HANSADOK 497) | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **5** |  | | maxLength | **15** |  | | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute DepartName**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Departure name of the target e.g. local code for berth/lock/bridge/terminal | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **1** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute DestCode**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Destination of the target (UN/LOCODE) optionally addended with local location code (e.g. BEANR0170100497 = Antwerp, HANSADOK 497) | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **5** |  | | maxLength | **15** |  | | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute DestName**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Destination name of the target e.g. local code for berth/lock/bridge/terminal | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **1** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute Details**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Details of status | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | maxLength | **50** |  | | | Used by | |  |  | | --- | --- | | Element | [**ServerStatus**](#id120) | | |  |
|  |  |  |

**Attribute Draught**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Actual draught of the vessel in meters | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | fractionDigits | **2** |  | | minExclusive | **0** |  | | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute ETA**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Date and time in UTC format (YYYY-MM-DDThh:mmZ) (subset of ISO 8601) of the Expected Time Of Arrival of the target. | | Type | **xs:dateTime** | | Used by | |  |  | | --- | --- | | Element | [**VoyageData/Waypoint**](#id82) | | |  |
|  |  |  |

**Attribute ETA**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Date and time in (subset of ISO 8601) UTC format (YYYY-MM-DDThh:mm:ss.sssZ) of the Expected Time Of Arrival of the target at the destination | | Type | **xs:dateTime** | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute Encryption**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | 1 = plain 2 - 6 the 5 most common encryption 0 = custom | | Type | restriction of **xs:integer** | | Facets | |  |  |  | | --- | --- | --- | | enumeration | **1** |  | | enumeration | **2** |  | | | Used by | |  |  | | --- | --- | | Element | [**LoginRequest**](#id6) | | |  |
|  |  |  |

**Attribute EstAccAlt**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Estimated accuracy standard deviation of the calculated position of a target expressed in m | | Type | **xs:decimal** | | Used by | |  |  | | --- | --- | | Element | [**Pos**](#id18) | | |  |
|  |  |  |

**Attribute EstAccCOG**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Estimated accuracy standard deviation of the calculated value expressed in degrees | | Type | **xs:decimal** | | Used by | |  |  | | --- | --- | | Element | [**TrackData**](#id17) | | |  |
|  |  |  |

**Attribute EstAccLat**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Estimated accuracy standard deviation of the calculated position of a target expressed in m | | Type | **xs:decimal** | | Used by | |  |  | | --- | --- | | Element | [**Pos**](#id18) | | |  |
|  |  |  |

**Attribute EstAccLong**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Estimated accuracy standard deviation of the calculated position of a target expressed in m | | Type | **xs:decimal** | | Used by | |  |  | | --- | --- | | Element | [**Pos**](#id18) | | |  |
|  |  |  |

**Attribute EstAccSOG**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Estimated accuracy standard deviation of the calculated value expressed in m/s | | Type | **xs:decimal** | | Used by | |  |  | | --- | --- | | Element | [**TrackData**](#id17) | | |  |
|  |  |  |

**Attribute FieldSelector**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Selected field. Can be 'all' or one of the items of object data TrackData, VesselData or VoyageData, to be changed into an enumeration of strings once these have been fixed | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **1** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**ServiceRequest/Item**](#id130) | | |  |
|  |  |  |

**Attribute Flag**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | The country flag (ISO 3166-1-alpha2) | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **2** |  | | maxLength | **2** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Identifier**](#id58) | | |  |
|  |  |  |

**Attribute FormerName**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Previous name of the target | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **1** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Identifier**](#id58) | | |  |
|  |  |  |

**Attribute GrossWeight**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Gross weight in tons | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | minExclusive | **0** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Construction**](#id41) | | |  |
|  |  |  |

**Attribute Heading**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Heading of the target in degrees | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | maxInclusive | **360.0** |  | | minInclusive | **0.0** |  | | | Used by | |  |  | | --- | --- | | Element | [**TrackData**](#id17) | | |  |
|  |  |  |

**Attribute HullColor**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Color of Hull (in RGB hex) for SAR operations | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **6** |  | | maxLength | **6** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Construction**](#id41) | | |  |
|  |  |  |

**Attribute HullType**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Type of hull (1 = single, 2 = double, 3 = triple) | | Type | restriction of **xs:integer** | | Facets | |  |  |  | | --- | --- | --- | | enumeration | **1** |  | | enumeration | **2** |  | | enumeration | **3** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Construction**](#id41) | | |  |
|  |  |  |

**Attribute IMO**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | IMO number of the target | | Type | **xs:integer** | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Identifier**](#id58) | | |  |
|  |  |  |

**Attribute ISPSLevel**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | The ISPS level of the object (1 = normal, 2 = heightended, 3 = exceptional) | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | enumeration | **1** |  | | enumeration | **2** |  | | enumeration | **3** |  | | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute Id**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | The unique identification of this track. Valid from first message with TrackStatus!=Terminated to first message with TrackStatus=Terminated | | Type | **xs:integer** | | Used by | |  |  | | --- | --- | | Element | [**TrackData**](#id17) | | |  |
|  |  |  |

**Attribute Id**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Name of the Identifier | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **1** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**OtherId**](#id59) | | |  |
|  |  |  |

**Attribute Id**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | The unique identification of this vesseldata. Valid from first message with TrackStatus!=Terminated to first message with TrackStatus=Terminated | | Type | **xs:integer** | | Used by | |  |  | | --- | --- | | Element | [**VesselData**](#id40) | | |  |
|  |  |  |

**Attribute Id**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | The unique identification of this voyagedata. Valid from first message with TrackStatus!=Terminated to first message with TrackStatus=Terminated | | Type | **xs:integer** | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute Key**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Key for the tagged item | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **1** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**TaggedItem**](#id111) | | |  |
|  |  |  |

**Attribute LRIT**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | LRIT identification | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **1** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Identifier**](#id58) | | |  |
|  |  |  |

**Attribute Lang**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Languange (ISO 3166-1-alpha2) | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **2** |  | | maxLength | **2** |  | | | Used by | |  |  | | --- | --- | | Element | [**OtherName**](#id62) | | |  |
|  |  |  |

**Attribute Lat**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Latitude (WGS84) in degrees. (+/- 90 degrees; North = positive; South = negative) Examples: -90deg (south) = -90.0000000 0deg0min1sec (north) = 0.0000016 50deg50min (north) = 50.8333333 | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | fractionDigits | **5** |  | | maxInclusive | **+90.00000** |  | | minInclusive | **-90.00000** |  | | | Used by | |  |  | | --- | --- | | Element | [**Pos**](#id18) | | |  |
|  |  |  |

**Attribute Length**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Measured length of the target in meter | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | minExclusive | **0** |  | | | Used by | |  |  | | --- | --- | | Element | [**TrackData**](#id17) | | |  |
|  |  |  |

**Attribute Length**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | The overall length of the target in meter as confirmed by NCA | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | minExclusive | **0** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Construction**](#id41) | | |  |
|  |  |  |

**Attribute LloydsShipType**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Number indicating type of vessel | | Type | **xs:integer** | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Construction**](#id41) | | |  |
|  |  |  |

**Attribute LoCode**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Waypoint name in UN/LOCODE optionally addended with local location code (e.g. BEANR0170100497 = Antwerp, HANSADOK 497) | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **5** |  | | maxLength | **15** |  | | | Used by | |  |  | | --- | --- | | Element | [**VoyageData/Waypoint**](#id82) | | |  |
|  |  |  |

**Attribute Long**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Longitude (WGS84) in degrees. (+/- 180 degrees; East = positive; West = negative). Examples: -180deg (west) = -180.0000000 0deg0min1sec (east) = 0.0000016 | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | fractionDigits | **5** |  | | maxInclusive | **+180.00000** |  | | minExclusive | **-180.00000** |  | | | Used by | |  |  | | --- | --- | | Element | [**Pos**](#id18) | | |  |
|  |  |  |

**Attribute MMSI**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | MMSI number of the target | | Type | **xs:integer** | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Identifier**](#id58) | | |  |
|  |  |  |

**Attribute MaxAirDraught**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Maximum air draught of the object in meters, to be used if voyage data is not available | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | fractionDigits | **1** |  | | minExclusive | **0** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Construction**](#id41) | | |  |
|  |  |  |

**Attribute MaxDraught**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Maximum draught of the object in meters, to be used if voyage data is not available | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | fractionDigits | **1** |  | | minExclusive | **0** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Construction**](#id41) | | |  |
|  |  |  |

**Attribute MaxPersonsOnBoard**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | The maximum number of persons on board of the object (crew, support, passengers, pilots) | | Type | restriction of **xs:integer** | | Facets | |  |  |  | | --- | --- | --- | | minExclusive | **0** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Construction**](#id41) | | |  |
|  |  |  |

**Attribute MaxSpeed**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | The maximum speed the object is able to sustain with normal draft and load | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | minExclusive | **0** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Construction**](#id41) | | |  |
|  |  |  |

**Attribute Mode**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Type | restriction of **xs:integer** | | Facets | |  |  |  | | --- | --- | --- | | enumeration | **1** |  | | enumeration | **2** |  | | enumeration | **3** |  | | enumeration | **4** |  | | enumeration | **6** |  | | enumeration | **7** |  | | enumeration | **8** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Construction/UnType**](#id42) | | |  |
|  |  |  |

**Attribute MsgRefId**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Must be an Universally Unique Identifier for each message (TU-T Rec. X.667 | ISO/IEC 9834-8.) Reply messages refer to this id to identify the message they are replying to. In its canonical form, a UUID consists of 32 hexadecimal digits, displayed in 5 groups separated by hyphens, in the form 8-4-4-4-12 for a total of 36 characters, enclosed by brackets. For example: {550e8400-e29b-41d4-a716-446655440000} | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **36** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**Header**](#id2) | | |  |
|  |  |  |

**Attribute Name**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Login name | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | maxLength | **256** |  | | | Used by | |  |  | | --- | --- | | Element | [**LoginRequest**](#id6) | | |  |
|  |  |  |

**Attribute Name**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Name in the foreign language | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **1** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**OtherName**](#id62) | | |  |
|  |  |  |

**Attribute Name**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Name of the target | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **1** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Identifier**](#id58) | | |  |
|  |  |  |

**Attribute Name**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Name of the waypoint | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **1** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**VoyageData/Waypoint**](#id82) | | |  |
|  |  |  |

**Attribute Name**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Name of the area | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **1** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**Area**](#id125) | | |  |
|  |  |  |

**Attribute OverSizedLength**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Length of the target in meter as confirmed by NCA, in case of a convoy of barges | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | fractionDigits | **1** |  | | minExclusive | **0** |  | | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute OverSizedWidth**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Width of the target in meter as confirmed by the NCA, in case of a convoy of barges | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | fractionDigits | **1** |  | | minExclusive | **0** |  | | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute Owner**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Name of owner the target | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **1** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Identifier**](#id58) | | |  |
|  |  |  |

**Attribute Password**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Password value | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | maxLength | **256** |  | | | Used by | |  |  | | --- | --- | | Element | [**LoginRequest**](#id6) | | |  |
|  |  |  |

**Attribute Period**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Specifies the time between two periodic updates in seconds | | Type | **xs:decimal** | | Used by | |  |  | | --- | --- | | Element | [**ServiceRequest/Transmission**](#id127) | | |  |
|  |  |  |

**Attribute PersonsOnBoard**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | The number of persons on board of the object, should equal the sum of crew, passengers and support personel if available | | Type | restriction of **xs:integer** | | Facets | |  |  |  | | --- | --- | --- | | minExclusive | **0** |  | | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute Pilots**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Pilot status 0 = unknown 1 = pilot on board 2 = object under remote pilotage 3 = pilot required | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | minExclusive | **0** |  | | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute Predicate**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Filter expression in XPath 1.0 definition (http://www.w3.org/TR/1999/REC-xpath-19991116) A Filter must start with //ObjectData (Filter always on entire objects) and can not go beyond a single objects parameters (next/previous/last etc.) Examples: All objects: //ObjectData All objects faster then 10 m/s: //ObjectData[TrackData[@SOG > 10]] All objects named ‘Krieken’: //ObjectData[VesselData/Identifier[@Name = ‘Krieken’]] All objects heading for Antwerp, HANSADOK 497 with a max keelheigth of 20m: //ObjectData[VoyageData[@DestCode = BEANR0170100497]] AND //ObjectData[VesselData/Construction[@MaxKeelHeigth > 20]] | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **1** |  | | maxLength | **1024** |  | | | Used by | |  |  | | --- | --- | | Element | [**ServiceRequest/Filter**](#id133) | | |  |
|  |  |  |

**Attribute ROT**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Rate of turn in degrees per minute | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | fractionDigits | **1** |  | | maxInclusive | **720** |  | | minExclusive | **-720** |  | | | Used by | |  |  | | --- | --- | | Element | [**TrackData**](#id17) | | |  |
|  |  |  |

**Attribute RTA**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Date and time in UTC format (YYYY-MM-DDThh:mmZ) (subset of ISO 8601) of the Requested Time Of Arrival of the target. | | Type | **xs:dateTime** | | Used by | |  |  | | --- | --- | | Element | [**VoyageData/Waypoint**](#id82) | | |  |
|  |  |  |

**Attribute Reason**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | String describing reason for declining, only used when result is ‘Declined’ | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | maxLength | **256** |  | | | Used by | |  |  | | --- | --- | | Element | [**LoginResponse**](#id10) | | |  |
|  |  |  |

**Attribute Reason**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | String describing reason for declining, when result is ‘Declined’, or a string describing the restrictions when the result is ‘Accepted with restrictions’ | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | maxLength | **256** |  | | | Used by | |  |  | | --- | --- | | Element | [**ServiceRequestResponse**](#id135) | | |  |
|  |  |  |

**Attribute ResponseOn**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Corresponds to the original MsgRefId from the Login.xml message. Must be an Universally Unique Identifier (TU-T Rec. X.667 | ISO/IEC 9834-8.) | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **36** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**LoginResponse**](#id10) | | |  |
|  |  |  |

**Attribute ResponseOn**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Corresponds to the original MsgRefId from the Ping.xml message. Must be an Universally Unique Identifier (TU-T Rec. X.667 | ISO/IEC 9834-8.) | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **36** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**Pong**](#id116) | | |  |
|  |  |  |

**Attribute ResponseOn**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Corresponds to the original MsgRefId from the ServiceRequest message. Must be an Universally Unique Identifier (TU-T Rec. X.667 | ISO/IEC 9834-8.) | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **36** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**ServiceRequestResponse**](#id135) | | |  |
|  |  |  |

**Attribute Result**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | 1 = Accepted 2 = Declined | | Type | restriction of **xs:integer** | | Facets | |  |  |  | | --- | --- | --- | | enumeration | **1** |  | | enumeration | **2** |  | | | Used by | |  |  | | --- | --- | | Element | [**LoginResponse**](#id10) | | |  |
|  |  |  |

**Attribute Result**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | 1 = Accepted, 2 = Declined, 3 = Accepted with restrictions | | Type | restriction of **xs:integer** | | Facets | |  |  |  | | --- | --- | --- | | enumeration | **1** |  | | enumeration | **2** |  | | enumeration | **3** |  | | | Used by | |  |  | | --- | --- | | Element | [**ServiceRequestResponse**](#id135) | | |  |
|  |  |  |

**Attribute RouteBound**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | This object is bound to the route of this voyage | | Type | **xs:boolean** | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute SOG**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Speed over ground in meters per second | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | fractionDigits | **1** |  | | minInclusive | **0** |  | | | Used by | |  |  | | --- | --- | | Element | [**TrackData**](#id17) | | |  |
|  |  |  |

**Attribute SourceId**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Unique identification of the producer (UN/LOCODE) in case multiple producers exist on the same LOCODE, the local competent authority can optionally addended this with a local code (e.g. BE ANR 01 = Antwerp, 01) | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **5** |  | | maxLength | **15** |  | | | Used by | |  |  | | --- | --- | | Element | [**TrackData**](#id17) | | |  |
|  |  |  |

**Attribute SourceId**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Unique identification of the producer (UN/LOCODE) in case multiple producers exist on the same LOCODE, the local competent authority can optionally addended this with a local code (e.g. BE ANR 01 = Antwerp, 01) | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **5** |  | | maxLength | **15** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData**](#id40) | | |  |
|  |  |  |

**Attribute SourceId**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Unique identification of the producer (UN/LOCODE) in case multiple producers exist on the same LOCODE, the local competent authority can optionally addended this with a local code (e.g. BE ANR 01 = Antwerp, 01) | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **5** |  | | maxLength | **15** |  | | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute SourceId**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | The identification of the node who created this message | | Type | **xs:integer** | | Used by | |  |  | | --- | --- | | Element | [**Pong**](#id116) | | |  |
|  |  |  |

**Attribute SourceName**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Identification of the originator of the data | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **1** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**TrackData**](#id17) | | |  |
|  |  |  |

**Attribute SourceName**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Identification of the originator of the data | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **1** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData**](#id40) | | |  |
|  |  |  |

**Attribute SourceName**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Identification of the originator of this data | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **1** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute SourceType**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Source/originator type: 0 = Unknown, 1 = Transponder, 2 = Database (VTS Plan Server), 3 = Manual (VTS Officer), 4 = Fused, 5 = External Source | | Type | restriction of **xs:integer** | | Facets | |  |  |  | | --- | --- | --- | | enumeration | **1** |  | | enumeration | **2** |  | | enumeration | **3** |  | | enumeration | **4** |  | | enumeration | **5** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData**](#id40) | | |  |
|  |  |  |

**Attribute SourceType**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Source/originator type: 0 = Unknown, 1 = Transponder, 2 = Database (VTS Plan Server), 3 = Manual (VTS Officer), 4 = Fused, 5 = External Source | | Type | restriction of **xs:integer** | | Facets | |  |  |  | | --- | --- | --- | | enumeration | **1** |  | | enumeration | **2** |  | | enumeration | **3** |  | | enumeration | **4** |  | | enumeration | **5** |  | | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute SpecialAttention**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Vessel is under special attention of the NCA or fairway authorities | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | maxLength | **20** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData**](#id40) | | |  |
|  |  |  |

**Attribute Status**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Status of the server (ok / not ok) | | Type | **xs:boolean** | | Used by | |  |  | | --- | --- | | Element | [**ServerStatus**](#id120) | | |  |
|  |  |  |

**Attribute TankerStatus**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Describes the status of the tanker 0 = Non gas free 1 = Gas free 2 = Inert | | Type | restriction of **xs:integer** | | Facets | |  |  |  | | --- | --- | --- | | enumeration | **0** |  | | enumeration | **1** |  | | enumeration | **2** |  | | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute TimeStamp**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Date and time in (subset ISO 8601) UTC format (YYYY-MM-DDThh:mm:ss.sssZ) of the time this message is sent. | | Type | **xs:dateTime** | | Used by | |  |  | | --- | --- | | Element | [**Ping**](#id114) | | |  |
|  |  |  |

**Attribute TimeStamp**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Date and time in (subset of ISO 8601) UTC format (YYYY-MM-DDThh:mm:ss.sssZ) of the time this message is sent. | | Type | **xs:dateTime** | | Used by | |  |  | | --- | --- | | Element | [**Pong**](#id116) | | |  |
|  |  |  |

**Attribute TrackStatus**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | 1 = Updated, (sensors are updating the track) 2 = Coasted, (no sensor is updating the track) 3 = Dropped | | Type | restriction of **xs:integer** | | Facets | |  |  |  | | --- | --- | --- | | enumeration | **1** |  | | enumeration | **2** |  | | enumeration | **3** |  | | | Used by | |  |  | | --- | --- | | Element | [**TrackData**](#id17) | | |  |
|  |  |  |

**Attribute Tugs**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Object uses tugs | | Type | **xs:boolean** | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute Type**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Type of transmission, possible values are: 1 = single occurrence (whole image) 2 = periodic occurence (predicted, whole image) 3 = a-periodic occurence (synchronous, whenever an object is updated) | | Type | restriction of **xs:integer** | | Facets | |  |  |  | | --- | --- | --- | | enumeration | **1** |  | | enumeration | **2** |  | | enumeration | **3** |  | | | Used by | |  |  | | --- | --- | | Element | [**ServiceRequest/Transmission**](#id127) | | |  |
|  |  |  |

**Attribute UpdateTime**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Date and time in UTC format (YYYY-MM-DDThh:mm:ss.sssZ) (subset of ISO 8601) this position was measured. | | Type | **xs:dateTime** | | Used by | |  |  | | --- | --- | | Element | [**TrackData**](#id17) | | |  |
|  |  |  |

**Attribute UpdateTime**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Date and time in UTC format (YYYY-MM-DDThh:mm:ss.sssZ) (subset of ISO 8601) this data was compiled | | Type | **xs:dateTime** | | Used by | |  |  | | --- | --- | | Element | [**VesselData**](#id40) | | |  |
|  |  |  |

**Attribute UpdateTime**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Date and time in (subset of ISO 8601) UTC format (YYYY-MM-DDThh:mm:ss.sssZ) this data was compiled | | Type | **xs:dateTime** | | Used by | |  |  | | --- | --- | | Element | [**VoyageData**](#id81) | | |  |
|  |  |  |

**Attribute Value**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Navigation status of the target 0 = under way using engine 1 = at anchor 2 = not under command 3 = restricted manoeuvrability 4 = constrained by her draught 5 = moored 6 = aground 7 = engaged in fishing 8 = under way sailing 9 = engaged in fishing other than trawling   10 = air-cushion vessel in non displacement mode or WIG craft taking off, landing or in flight 11 = power driven vessel towing astern 12 = power driven vessel pushing ahead or towing alongside 13 = in distress or requiring assistance   14 = AIS SART, seeking to attract attention 15 = undefined default | | Type | restriction of **xs:integer** | | Facets | |  |  |  | | --- | --- | --- | | maxInclusive | **15** |  | | minInclusive | **0** |  | | | Used by | |  |  | | --- | --- | | Element | [**TrackData/NavStatus**](#id25) | | |  |
|  |  |  |

**Attribute Value**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Value of the identifier | | Type | restriction of **xs:string** | | Facets | |  |  |  | | --- | --- | --- | | minLength | **1** |  | | maxLength | **42** |  | | | Used by | |  |  | | --- | --- | | Element | [**OtherId**](#id59) | | |  |
|  |  |  |

**Attribute Value**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Value of the tagged item, can be of any type | | Used by | |  |  | | --- | --- | | Element | [**TaggedItem**](#id111) | | |  |
|  |  |  |

**Attribute Version**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Defines the version of the protocol used. Syntax is major.minor.patch patch releases fix only bugs, minor releases may add functionality but are compatible, major releases are not compatible | | Type | **xs:string** | | Used by | |  |  | | --- | --- | | Element | [**Header**](#id2) | | |  |
|  |  |  |

**Attribute Width**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Measured Width of the target in meter | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | minExclusive | **0** |  | | | Used by | |  |  | | --- | --- | | Element | [**TrackData**](#id17) | | |  |
|  |  |  |

**Attribute Width**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | Overall width of the target in meter as confirmed by the NCA | | Type | restriction of **xs:decimal** | | Facets | |  |  |  | | --- | --- | --- | | minExclusive | **0** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Construction**](#id41) | | |  |
|  |  |  |

**Attribute YearOfBuild**

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  | |  |  | | --- | --- | | Annotations | The year the vessel was build in 4 digits e.g. 2010 | | Type | restriction of **xs:integer** | | Facets | |  |  |  | | --- | --- | --- | | totalDigits | **4** |  | | | Used by | |  |  | | --- | --- | | Element | [**VesselData/Construction**](#id41) | | |  |
|  |  |  |

1. Footnotes should be used sparingly. [↑](#footnote-ref-1)
2. Note that *x*, *x1*, *x2* and *x3* shall be specified in Longitude co-ordinates and that *y*, *y1*, *y2* and *y3* shall be specified as Latitude co-ordinates. [↑](#footnote-ref-2)
3. e.g. in an overload situation the server may drop messages, in this situation the Service Status message is sent to the client to make him aware of lost information. [↑](#footnote-ref-3)
4. Depending on the transport layer (e.g. SCTP), and receiver activity, the sender may detect the connection state of the receiver automatically. In this case the Ping message is not required. [↑](#footnote-ref-4)
5. This information may be presented in different ways according to the task at hand. [↑](#footnote-ref-5)