INTERFACE CONTROL DOCUMENT

FOR

Inter VTS Exchange Format

Release 0_1_6

TABLE OF CONTENTS

1 Introduction

1.1 Identification

This Interface Control Document (ICD) describes the requirements and the detailed design of the Inter VTS Data Exchange Format (IVEF).

1.2 Referenced Documents

Refer.	Title	Identification code
[ITU/IEC]	AIS Transponder Definition	ITU-1371-3, IEC-63993-2
[XSD]	XML Schema Definition	IVEF_xmlschema.xsd

2 INTERFACE SPECIFICATION

2.1 Interface diagrams

IVEF Interfaces are simple point-to-point connections (TCP/IP) between the VTS server and the VTS user as depicted in the figure below.

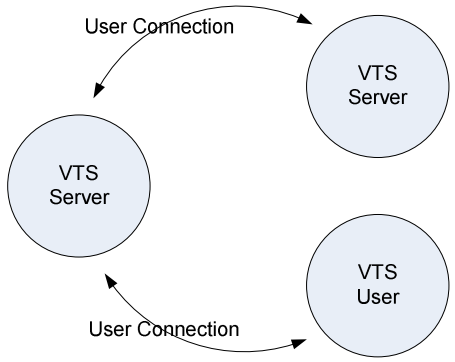


Figure 1 IVEF user connections

The IVEF protocol in itself has no provisions for encryption and data compression. These features are covered by the channel approach. IVEF will send information through standard channels. These channels can convert between physical, electrical and network interfaces, but also add layers of compression and encryption.

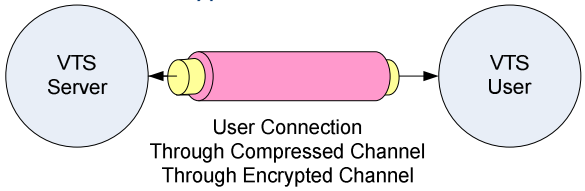


Figure 2 User connection through compressed and encrypted channel

The definition and properties of the channels are not described here, because they are not an integral part of the interface.
TBD may be add a recommendation for a compression format if used, like gzip.

2.2 User Connection

2.2.1 Introduction

Whenever an IVEF user wants to connect to an IVEF server, it has to initiate the connection by sending a Login message. The IVEF server validates the login requests and if correct, it sends a LoginResponse message. The IVEF server then looks up the default services for that user. An example of a service is:

"using an interval of 10 seconds, output all position information and static voyage information about all vessels that are within in the following area (x,y) – (x1,y1) – (x2, y2) – (x3,y3)"

Please note that *x*, *x1*, *x2* and *x3* shall be specified in Longitude coordinates and that *y*, *y1*, *y2* and *y3* shall be specified as Latitude coordinates.

After the IVEF user is logged on, the IVEF server starts outputting the tracks that match the specification in the service.
TBD consider the specification of user profiles, e.g. add allowed services request

2.2.2 Message types and priorities

The IVEF User Connection (IUC) can be divided in a number of message types. It supports a number of transmission characteristics:

- Single occurrence (SO)
- Periodic, with a specified update rate (PER)
- A-periodic, synchronous with the received track update (A-PER)
- On change, updates are sent as fields change (OC)

Two types of messages are distinguished:

Message type **A** - Non-realtime messages,

Message type **B** – Realtime messages.

The table below describes all messages that can be distinguished, what type of message it is (A or B) and the priority that this message type will have. For a description of priorities, see 2.2.3.
TBD Add table with priorities and their description

Message	SO	PER	A-PER	OC
Control Information (CI)	A1	N/A	N/A	N/A
Real Time Position data (RTPD) Vessel Data (Track based)	A3	B2	B2	B2
Real Time Position data (RTPD) Vessel Data (Plan based)		B4	N/A	A3
User Requests (UR)	A1	N/A	N/A	N/A

Table 1 Message types and priorities

2.2.3 Interface requirements

The resulting interface combines many messages which are sent through a single channel. When the capacity of this channel is not sufficient, or when a certain transmission characteristic is to be maintained (e.g. periodic transmission of RTPD), the priorities of the messages shall be as defined in Table 1.
For every message type, A or B, maximum delay can be specified. If the delays increase beyond the maximum, messages will not be sent (given the priority as in 2.2) in order to ensure transmission of the messages with higher priority. Messages, that are not sent due to insufficient bandwidth, will not be resent. Whenever the queue is full and messages are not being sent, because the queue is full, a ServerStatus message is sent from the IVEF server to the IVEF user to inform the IVEF user.
TBD should this specification contain performance requirements, like e.g. minimum response time?

2.2.4 Messages

The IUC supports the following messages; the contents and meaning of the messages mentioned below are covered in chapter 2.3

Message	From	To	Description
Control Information Messages			
Login	User	Server	This message identifies an IVEF user
Login Response	Server	User	OK or NOT
Logout	User	Server	Logout from the server
Ping	Both	Both	Heartbeat message
Pong	Both	Both	Response to a Heartbeat message
Service Request	User	Server	Request a service, this message contains the contents of the new service
Service Request Response	Server	User	OK or NOT OK
Server Status	Server	User	Can come as response or automatically
Real Time Position Data Messages			
Vessel Data Track based	Server	User	The position, static- and voyage related data of a track, this message is used for IVEF users that are mainly interested in position data
Vessel Data Plan based	Server	User	The position, static- and voyage related data of a track, this message is used for IVEF users that are mainly interested in plan data

Table 2 Interface Messages

2.3 XML messages

2.3.1 Introduction

This chapter describes the XML messages that may be sent between IVEF users and a IVEF server and vise versa.

2.3.2 General XML message structure

All XML messages sent and received by an IVEF server shall have the following layout:

- XML version tag
- Main node
- Header node, child node of Main node
- Body node, child node of Main node
- Message specific node(s) , one or more, child node(s) of the Body node

example:

```
<?xml version="1.0" ?>
<IVEF_xxx xmlns="urn:http://www.iala.org/XMLSchema/IVEF/1.0">
      <Header Version="1.0" MsgRefId="DJ45SGFL-B103-4113-A100-DJ45SGFL"/>
<Body>
   Message specific nodes will be placed here
</Body>
</IVEF_xxx>
```

2.3.3 Accuracies

The following accuracies are required to ensure a proper working of the system.
TBD Define minimum resolution of the various attributes.

Attribute	**Resolution**	**belonging to element** (see [XSD])
Altitude	0	PosReport
AntPosDistFromFront	0	StaticData
AntPosDistFromLeft	0	StaticData
ATA	0	Voyage
Breadth	0	PosReport and Vesseldata
COG	1	PosReport
ETA	0	Voyage
Lat	5	Pos
Length	0	PosReport and Vesseldata
Long	5	Pos
MaxDraught	1	StaticData
MaxAirDraught	1	StaticData
Orientation	0	PosReport
Period	0	Transmission
RateOfTurn	0	PosReport
SOG	1	PosReport
TimeStamp	2	Ping and Pong
UpdateTime	2	PosReport
Accuracy	0	PosReport

2.3.4 Control Information Messages

2.3.4.1 LoginRequest

2.3.4.1.1 Introduction

The LoginRequest.xml message is sent by an IVEF user to an IVEF server. The purpose of this message is to identify an IVEF user to the IVEF server.

2.3.4.1.2 Message flow

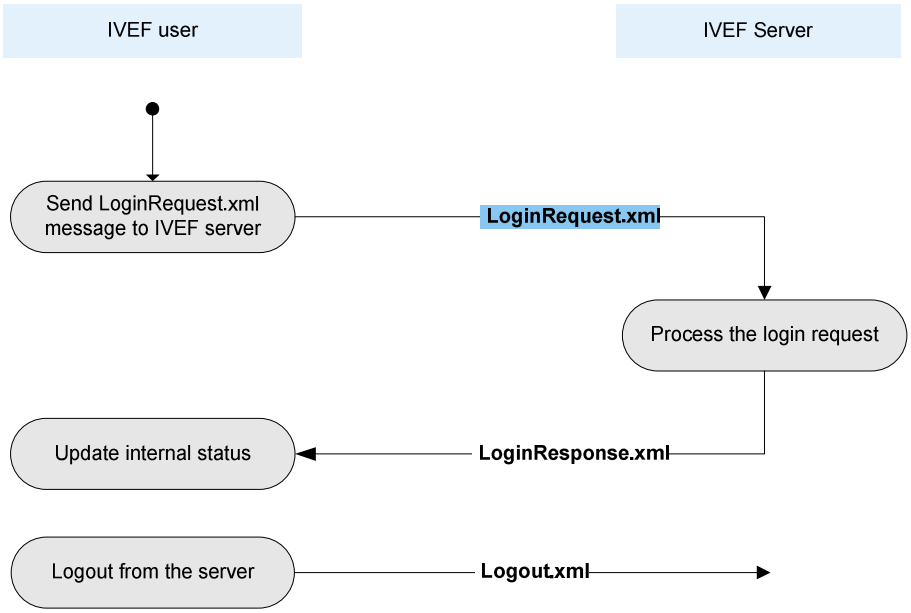


Figure 3 Message flow LoginRequest.xml

2.3.4.1.3 Data elements of LoginRequest.xml message

See [XSD] for all details

2.3.4.2 Login Response

2.3.4.2.1 Introduction

The LoginResponse.xml (see figure 3) message is sent by an IVEF server to an IVEF user in response to a LoginRequest.xml message. The purpose of this message is to indicate whether or not the user is successfully logged in. If the IVEF user is not accepted by the IVEF server, a LoginResponse message is sent with status "Declined", the network connection will be terminated.

2.3.4.3 Logout

2.3.4.3.1 Introduction

The Logout.xml (see figure 3) message is a notification, sent by an IVEF user to the IVEF server, to terminate the connection.

TBD XXX.

The closing of the network connection can be used by the IVEF user as an indication that the logout succeeded.
Also, when the connection between an IVEF server and an IVEF user is closed for whatever reason with no request, the IVEF user will have to initiate the connection and logon again to get the service data requested.

2.3.4.4 Ping

2.3.4.4.1 Introduction

A ping message can be sent by either an IVEF user or an IVEF server as an alive message. A ping message will be answered by the receiver with a pong message.

2.3.4.4.2 Message flow

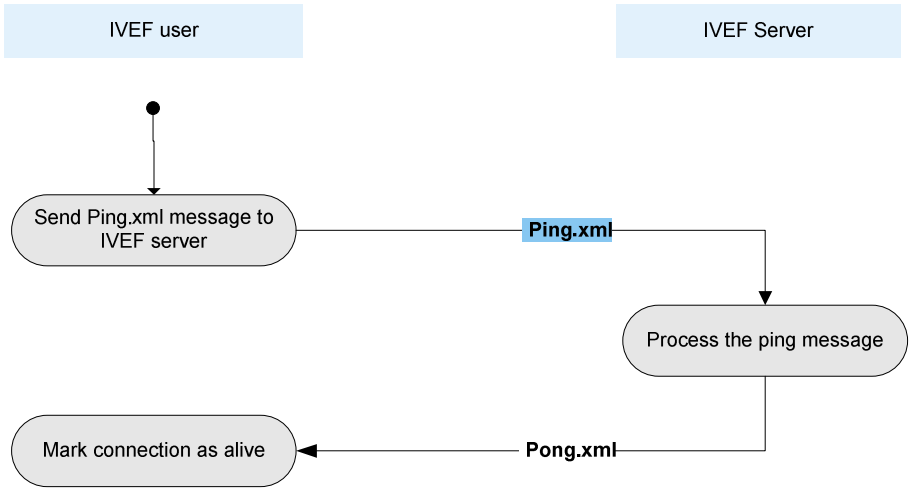


Figure 4 Message flow Ping.xml

2.3.4.4.3 Data elements of Ping.xml message

See [XSD] for all details

2.3.4.5 Pong

2.3.4.5.1 Introduction

A pong message can be sent by either an IVEF user or an IVEF server as a response to a ping message.

2.3.4.5.2 Message flow

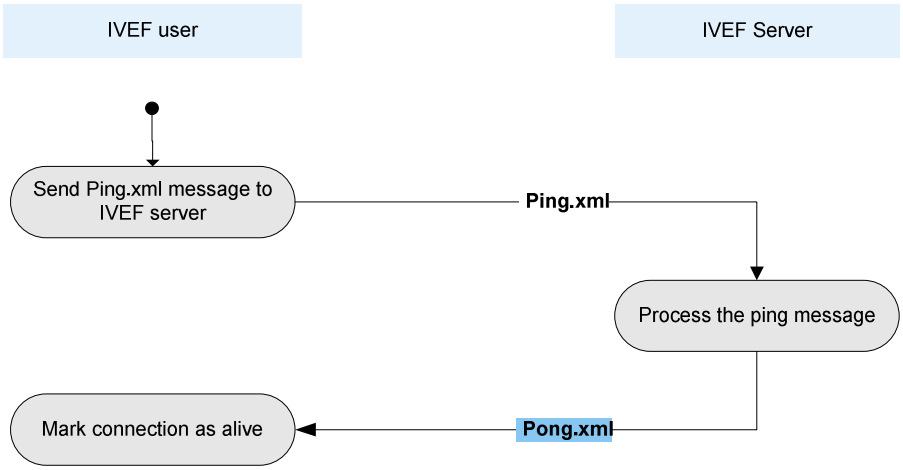


Figure 5 Message flow Pong.xml

2.3.4.5.3 Data elements of Pong.xml message

See [XSD] for all details

2.3.4.6 Service Request

2.3.4.6.1 Introduction

After login the user can sent a service request. The request should be within the defined rights of the user. If the service request is accepted by the server, the previous (default) service is replaced by this.
Service request will not be implemented in the first release. It is described here to illustrate the properties of a service.

2.3.4.6.2 Message flow

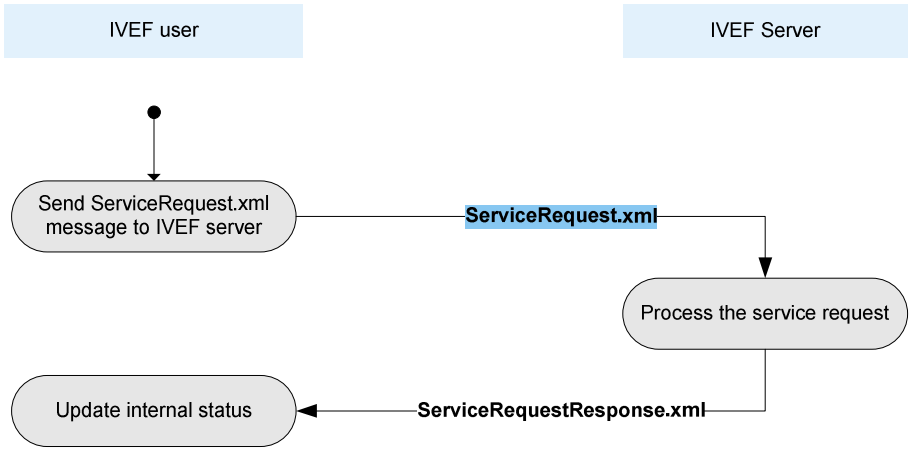


Figure 6 Message flow ServiceRequest.xml

2.3.4.6.3 Data elements of ServiceRequest.xml message

See [XSD] for all details

2.3.4.7 Server Status

2.3.4.7.1 Introduction

A Server Status message can be sent by an IVEF server to indicate the status if the server. These messages will come autonomously.

2.3.4.7.2 Message flow

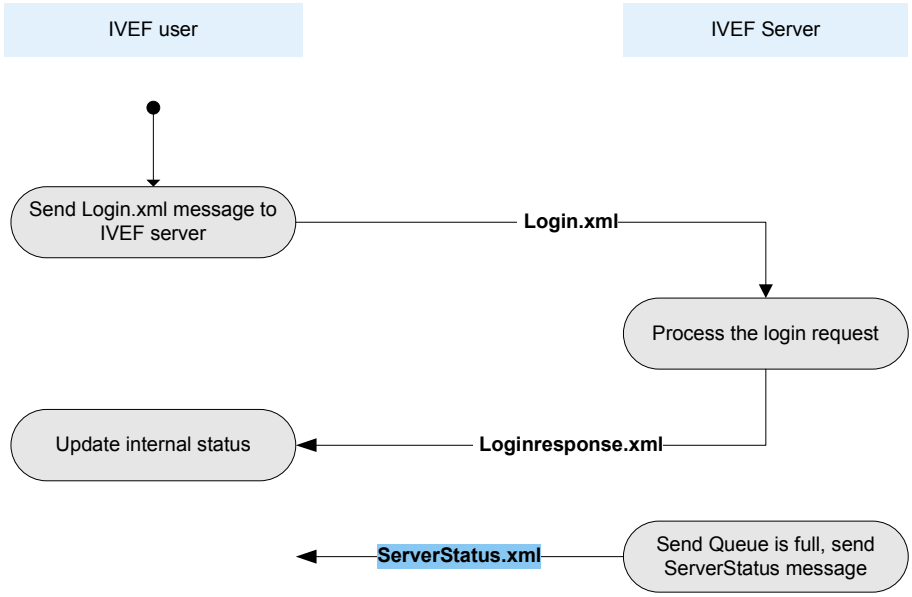


Figure 7 Message flow ServerStatus.xml

2.3.4.7.3 Data elements of ServerStatus.xml message

See [XSD] for all details

2.3.5 Real Time Position Data Messages

2.3.5.1 Vessel Data

2.3.5.1.1 Introduction

A Vessel Data message contains data (position, static and voyage related data) about one or more vessels.
After an IVEF user identified itself using a Login message, the IVEF server starts sending Vessel Data messages if a predefined service is available for the user or the IVEF server sends Vessel Data on an accepted New Service Request message.

2.3.5.1.2 Message flow

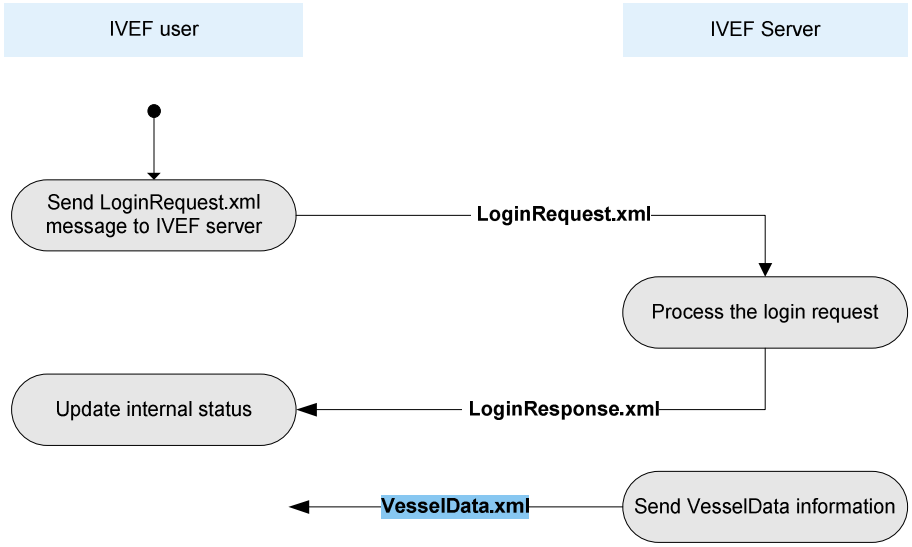


Figure 8 Message flow VesselData.xml

2.3.5.1.3 Data elements of VesselData.xml message

See [XSD] for all details

APPENDIX A LIST OF FIGURES

APPENDIX B List of Tables

APPENDIX C Abbreviations

AIS	Automatic Identification System
ATA	Actual Time of Arrival
COG	Course Over Ground
CSCI	Computer Software Configuration Item
ETA	Estimated Time of Arrival
FS	Functional Specification
ICD	Interface Control Document
IMO	International Maritime Organisation
ITU	International Technical Union
RTPD	Real Time Position Data
SOG	Speed Over Ground
TCP/IP	Transmission Control Protocol / Internet Protocol
UTC	Coordinated Universal Time
WGS-84	World Geodetic System 1984
XML	Extensible Markup Language

APPENDIX D XML Schema

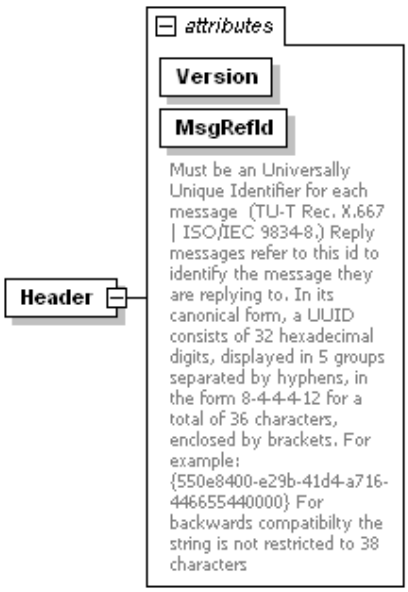
Schema **ivef0_1.xsd**

schema location: U:\Software\ivef-sdk\ivef-def\trunk\specs\ivef0_1.xsd
attribute form default:
element form default: **qualified**
targetNamespace: **urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6**

Elements

element **Header**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6
properties content complex
used by elements MSG_LoginRequest MSG_LoginResponse MSG_Logout MSG_Ping MSG_Pong MSG_ServerStatus MSG_ServiceRequest MSG_VesselData

Reference: http://code.google.com/p/ivef-sdk/source/browse/ivef-def/tags/IVEF_0_1_6/specs/ivef0_1.doc

attributes

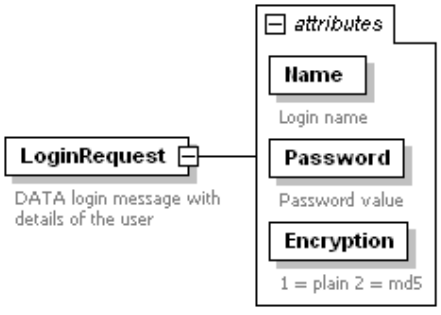
Name	Type	Use	Default	Fixed	Annotation
Version	**xs:string**	required		0.1.6	
MsgRefId	**derived by: xs:string**	required			documentation: Must be an Universally Unique Identifier for each message (TU-T Rec. X.667 | ISO/IEC 9834-8.) Reply messages refer to this id to identify the message they are replying 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} For backwards compatibilty the string is not restricted to 38 characters

source

```
<xs:element name="Header">
  <xs:complexType>
    <xs:attribute name="Version" type="xs:string" use="required" fixed="0.1.6"/>
    <xs:attribute name="MsgRefId" use="required">
      <xs:annotation>
        <xs:documentation>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} For backwards compatibilty the string is not restricted to 38 characters</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
        <xs:restriction base="xs:string"/>
      </xs:simpleType>
    </xs:attribute>
  </xs:complexType>
</xs:element>
```

element **LoginRequest**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties content complex

used by element MSG_LoginRequest/Body

attributes

Name	Type		Use	Default	Fixed	Annotation
Name	**derived xs:string**	**by:**	required			documentation Login name
Password	**derived xs:string**	**by:**	required			documentation Password value
Encryption	**derived xs:integer**	**by:**	required			documentation 1 = plain 2 = md5

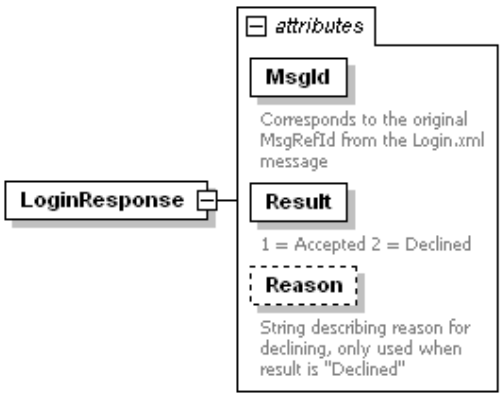
annotation documentation
DATA login message with details of the user

source

```
<xs:element name="LoginRequest">
 <xs:annotation>
  <xs:documentation>DATA login message with details of the user</xs:documentation>
 </xs:annotation>
 <xs:complexType>
  <xs:attribute name="Name" use="required">
   <xs:annotation>
    <xs:documentation>Login name</xs:documentation>
   </xs:annotation>
   <xs:simpleType>
    <xs:restriction base="xs:string">
     <xs:maxLength value="256"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:attribute>
  <xs:attribute name="Password" use="required">
   <xs:annotation>
    <xs:documentation>Password value</xs:documentation>
   </xs:annotation>
   <xs:simpleType>
    <xs:restriction base="xs:string">
     <xs:maxLength value="256"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:attribute>
  <xs:attribute name="Encryption" use="required">
   <xs:annotation>
    <xs:documentation>1 = plain 2 = md5</xs:documentation>
   </xs:annotation>
   <xs:simpleType>
    <xs:restriction base="xs:integer">
     <xs:enumeration value="1"/>
     <xs:enumeration value="2"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:attribute>
 </xs:complexType>
</xs:element>
```

element **LoginResponse**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties content complex

used by element MSG_LoginResponse/Body

attributes

Name	Type		Use	Default	Fixed	Annotation
MsgId	**derived xs:string**	**by:**	required			documentation Corresponds to the original MsgRefId from the Login.xml message
Result	**derived xs:integer**	**by:**	required			documentation 1 = Accepted 2 = Declined
Reason	**derived xs:string**	**by:**	optional			documentation String describing reason for declining, only used when result is "Declined"

source

```
<xs:element name="LoginResponse">
 <xs:complexType>
  <xs:attribute name="MsgId" use="required">
   <xs:annotation>
    <xs:documentation>Corresponds to the original MsgRefId from the Login.xml message</xs:documentation>
   </xs:annotation>
   <xs:simpleType>
    <xs:restriction base="xs:string">
     <xs:maxLength value="36"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:attribute>
  <xs:attribute name="Result" use="required">
   <xs:annotation>
    <xs:documentation>1 = Accepted 2 = Declined</xs:documentation>
   </xs:annotation>
   <xs:simpleType>
    <xs:restriction base="xs:integer">
     <xs:enumeration value="1"/>
     <xs:enumeration value="2"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:attribute>
  <xs:attribute name="Reason" use="optional">
   <xs:annotation>
    <xs:documentation>String describing reason for declining, only used when result is "Declined"</xs:documentation>
   </xs:annotation>
   <xs:simpleType>
    <xs:restriction base="xs:string">
     <xs:maxLength value="256"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:attribute>
 </xs:complexType>
</xs:element>
```

element **Logout**

diagram

namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

annotation documentation
DATA logout message, the server will drop the connection if logout is successfull

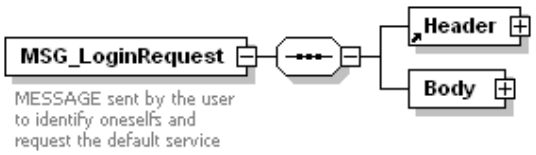
source

```
<xs:element name="Logout">
 <xs:annotation>
  <xs:documentation>DATA logout message, the server will drop the connection if logout is successfull</xs:documentation>
 </xs:annotation>
```

```
</xs:element>
```

element **MSG_LoginRequest**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties content complex

children Header Body

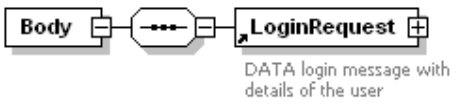
annotation documentation
MESSAGE sent by the user to identify oneselfs and request the default service

source

```
<xs:element name="MSG_LoginRequest">
 <xs:annotation>
  <xs:documentation>MESSAGE sent by the user to identify oneselfs and request the default service</xs:documentation>
 </xs:annotation>
 <xs:complexType>
  <xs:sequence>
   <xs:element ref="Header"/>
   <xs:element name="Body">
    <xs:complexType>
     <xs:sequence>
      <xs:element ref="LoginRequest"/>
     </xs:sequence>
    </xs:complexType>
   </xs:element>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

element **MSG_LoginRequest/Body**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties isRef 0
content complex

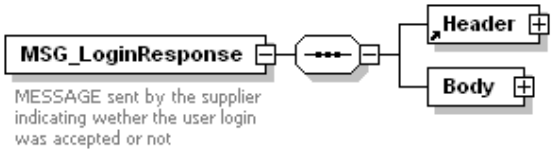
children LoginRequest

source

```
<xs:element name="Body">
 <xs:complexType>
  <xs:sequence>
   <xs:element ref="LoginRequest"/>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

element **MSG_LoginResponse**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties content complex

children Header Body

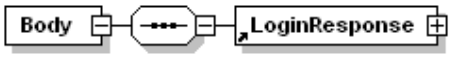
annotation
documentation
MESSAGE sent by the supplier indicating wether the user login was accepted or not

source

```
<xs:element name="MSG_LoginResponse">
 <xs:annotation>
  <xs:documentation>MESSAGE sent by the supplier indicating wether the user login was accepted or not</xs:documentation>
 </xs:annotation>
 <xs:complexType>
  <xs:sequence>
   <xs:element ref="Header"/>
   <xs:element name="Body">
    <xs:complexType>
     <xs:sequence>
      <xs:element ref="LoginResponse"/>
     </xs:sequence>
    </xs:complexType>
   </xs:element>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

element **MSG_LoginResponse/Body**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties
isRef 0
content complex

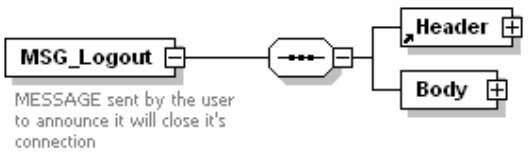
children LoginResponse

source

```
<xs:element name="Body">
 <xs:complexType>
  <xs:sequence>
   <xs:element ref="LoginResponse"/>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

element **MSG_Logout**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties
content complex

children Header Body

annotation
documentation
MESSAGE sent by the user to announce it will close it's connection

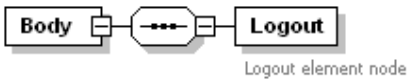
source

```
<xs:element name="MSG_Logout">
 <xs:annotation>
  <xs:documentation>MESSAGE sent by the user to announce it will close it's connection</xs:documentation>
 </xs:annotation>
 <xs:complexType>
  <xs:sequence>
   <xs:element ref="Header"/>
   <xs:element name="Body">
    <xs:complexType>
     <xs:sequence>
      <xs:element name="Logout">
       <xs:annotation>
        <xs:documentation>Logout element node</xs:documentation>
       </xs:annotation>
      </xs:element>
     </xs:sequence>
    </xs:complexType>
   </xs:element>
```

```
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

element **MSG_Logout/Body**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties
- isRef 0
- content complex

children Logout

source

```
<xs:element name="Body">
  <xs:complexType>
    <xs:sequence>
      <xs:element name="Logout">
        <xs:annotation>
          <xs:documentation>Logout element node</xs:documentation>
        </xs:annotation>
      </xs:element>
    </xs:sequence>
  </xs:complexType>
</xs:element>
```

element **MSG_Logout/Body/Logout**

diagram

namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties
- isRef 0

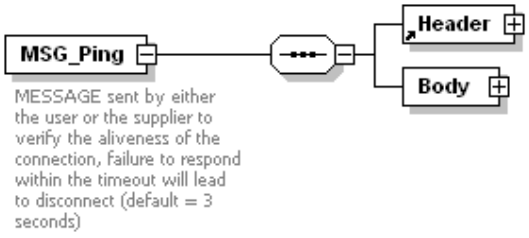
annotation
documentation
Logout element node

source

```
<xs:element name="Logout">
  <xs:annotation>
    <xs:documentation>Logout element node</xs:documentation>
  </xs:annotation>
</xs:element>
```

element **MSG_Ping**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties
- content complex

children Header Body

annotation
documentation
MESSAGE sent by either the user or the supplier to verify the aliveness of the connection, failure to respond within the timeout will lead to disconnect (default = 3 seconds)

source

```
<xs:element name="MSG_Ping">
  <xs:annotation>
    <xs:documentation>MESSAGE sent by either the user or the supplier to verify the aliveness of the connection, failure to respond within the timeout will lead to disconnect (default = 3 seconds)</xs:documentation>
  </xs:annotation>
```

```
<xs:complexType>
 <xs:sequence>
  <xs:element ref="Header"/>
  <xs:element name="Body">
   <xs:complexType>
    <xs:sequence>
     <xs:element ref="Ping"/>
    </xs:sequence>
   </xs:complexType>
  </xs:element>
 </xs:sequence>
</xs:complexType>
</xs:element>
```

element **MSG_Ping/Body**

diagram

namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties
isRef 0
content complex

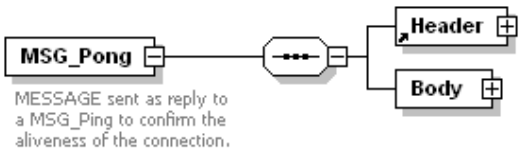
children Ping

source

```
<xs:element name="Body">
 <xs:complexType>
  <xs:sequence>
   <xs:element ref="Ping"/>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

element **MSG_Pong**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties
content complex

children Header Body

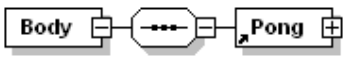
annotation
documentation
MESSAGE sent as reply to a MSG_Ping to confirm the aliveness of the connection.

source

```
<xs:element name="MSG_Pong">
 <xs:annotation>
  <xs:documentation>MESSAGE sent as reply to a MSG_Ping to confirm the aliveness of the connection.</xs:documentation>
 </xs:annotation>
 <xs:complexType>
  <xs:sequence>
   <xs:element ref="Header"/>
   <xs:element name="Body">
    <xs:complexType>
     <xs:sequence>
      <xs:element ref="Pong"/>
     </xs:sequence>
    </xs:complexType>
   </xs:element>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

element **MSG_Pong/Body**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

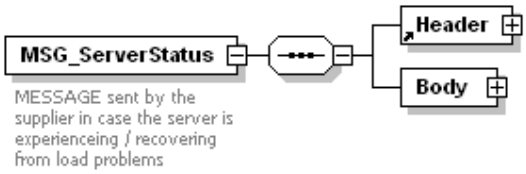
properties
isRef 0
content complex

children Pong

source
```
<xs:element name="Body">
 <xs:complexType>
  <xs:sequence>
   <xs:element ref="Pong"/>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

element **MSG_ServerStatus**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties
content complex

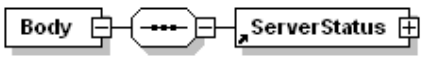
children Header Body

annotation
documentation
MESSAGE sent by the supplier in case the server is experienceing / recovering from load problems

source
```
<xs:element name="MSG_ServerStatus">
 <xs:annotation>
  <xs:documentation>MESSAGE sent by the supplier in case the server is experienceing / recovering from load problems</xs:documentation>
 </xs:annotation>
 <xs:complexType>
  <xs:sequence>
   <xs:element ref="Header"/>
   <xs:element name="Body">
    <xs:complexType>
     <xs:sequence>
      <xs:element ref="ServerStatus"/>
     </xs:sequence>
    </xs:complexType>
   </xs:element>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

element **MSG_ServerStatus/Body**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

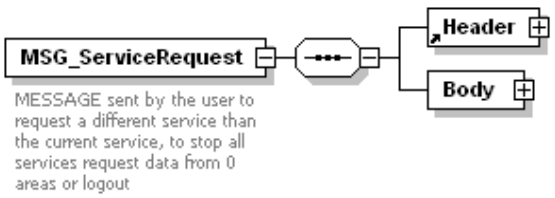
properties
isRef 0
content complex

children ServerStatus

source
```
<xs:element name="Body">
 <xs:complexType>
  <xs:sequence>
   <xs:element ref="ServerStatus"/>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

element **MSG_ServiceRequest**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties
content complex

children Header Body

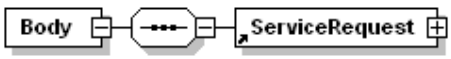
annotation
documentation
MESSAGE sent by the user to request a different service than the current service, to stop all services request data from 0 areas or logout

source

```
<xs:element name="MSG_ServiceRequest">
 <xs:annotation>
  <xs:documentation>MESSAGE sent by the user to request a different service than the current service, to stop all services request data from 0 areas or logout</xs:documentation>
 </xs:annotation>
 <xs:complexType>
  <xs:sequence>
   <xs:element ref="Header"/>
   <xs:element name="Body">
    <xs:complexType>
     <xs:sequence>
      <xs:element ref="ServiceRequest"/>
     </xs:sequence>
    </xs:complexType>
   </xs:element>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

element **MSG_ServiceRequest/Body**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties
isRef 0
content complex

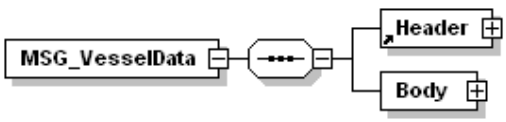
children ServiceRequest

source

```
<xs:element name="Body">
 <xs:complexType>
  <xs:sequence>
   <xs:element ref="ServiceRequest"/>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

element **MSG_VesselData**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties
content complex

children Header Body

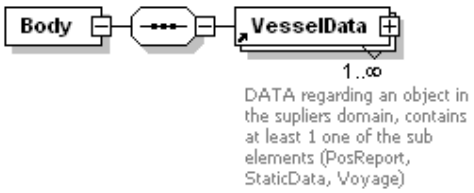
source

```
<xs:element name="MSG_VesselData">
```

```
<xs:complexType>
 <xs:sequence>
  <xs:element ref="Header"/>
  <xs:element name="Body">
   <xs:complexType>
    <xs:sequence>
     <xs:element ref="VesselData" maxOccurs="unbounded"/>
    </xs:sequence>
   </xs:complexType>
  </xs:element>
 </xs:sequence>
</xs:complexType>
</xs:element>
```

element **MSG_VesselData/Body**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties
- isRef 0
- content complex

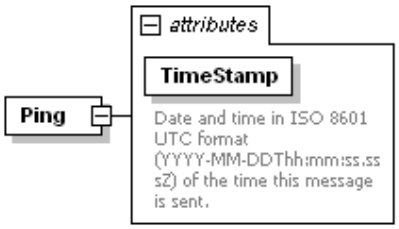
children VesselData

source

```
<xs:element name="Body">
 <xs:complexType>
  <xs:sequence>
   <xs:element ref="VesselData" maxOccurs="unbounded"/>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

element **Ping**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties
- content complex

used by
- element MSG_Ping/Body

attributes

Name	Type	Use	Default	Fixed	Annotation
TimeStamp	**xs:dateTime**	required			documentation Date and time in ISO 8601 UTC format (YYYY-MM-DDThh:mm:ss.sssZ) of the time this message is sent.

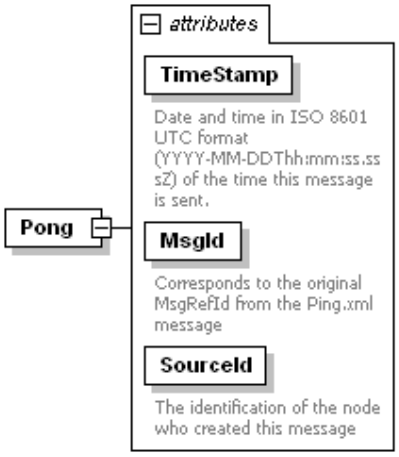
source

```
<xs:element name="Ping">
 <xs:complexType>
  <xs:attribute name="TimeStamp" type="xs:dateTime" use="required">
   <xs:annotation>
    <xs:documentation>Date and time in ISO 8601 UTC format (YYYY-MM-DDThh:mm:ss.sssZ) of the time this message is sent.</xs:documentation>
   </xs:annotation>
```

```
    </xs:attribute>
  </xs:complexType>
</xs:element>
```

element **Pong**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties content complex

used by element MSG_Pong/Body

attributes

Name	Type	Use	Default	Fixed	Annotation
TimeStamp	**xs:dateTime**	required			documentation Date and time in ISO 8601 UTC format (YYYY-MM-DDThh:mm:ss.sssZ) of the time this message is sent.
MsgId	**derived by: xs:string**	required			documentation Corresponds to the original MsgRefId from the Ping.xml message
SourceId	**xs:integer**	required			documentation The identification of the node who created this message

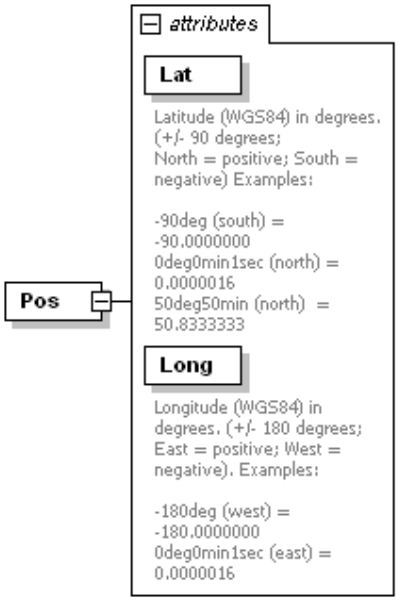
source

```
<xs:element name="Pong">
  <xs:complexType>
    <xs:attribute name="TimeStamp" type="xs:dateTime" use="required">
      <xs:annotation>
        <xs:documentation>Date and time in ISO 8601 UTC format (YYYY-MM-DDThh:mm:ss.sssZ) of the time this message is
sent.</xs:documentation>
      </xs:annotation>
    </xs:attribute>
    <xs:attribute name="MsgId" use="required">
      <xs:annotation>
        <xs:documentation>Corresponds to the original MsgRefId from the Ping.xml message</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
        <xs:restriction base="xs:string">
          <xs:maxLength value="36"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:attribute>
    <xs:attribute name="SourceId" type="xs:integer" use="required">
      <xs:annotation>
        <xs:documentation>The identification of the node who created this message</xs:documentation>
      </xs:annotation>
```

```
    </xs:attribute>
  </xs:complexType>
</xs:element>
```

element **Pos**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties content complex

used by elements ServiceRequest/Area PosReport

attributes

Name	Type	Use	Default	Fixed	Annotation
Lat	**derived by: xs:decimal**	required			documentation: Latitude (WGS84) in degrees. (+/- 90 degrees; North = positive; South = negative) Examples: -90deg (south) = -90.0000000 0deg0min1sec (north) = 0.0000016 50deg50min (north) = 50.8333333
Long	**derived by: xs:decimal**	required			documentation: Longitude (WGS84) in degrees. (+/- 180 degrees; East = positive; West = negative). Examples: -180deg (west) = -180.0000000 0deg0min1sec (east) = 0.0000016

source

```
<xs:element name="Pos">
  <xs:complexType>
```

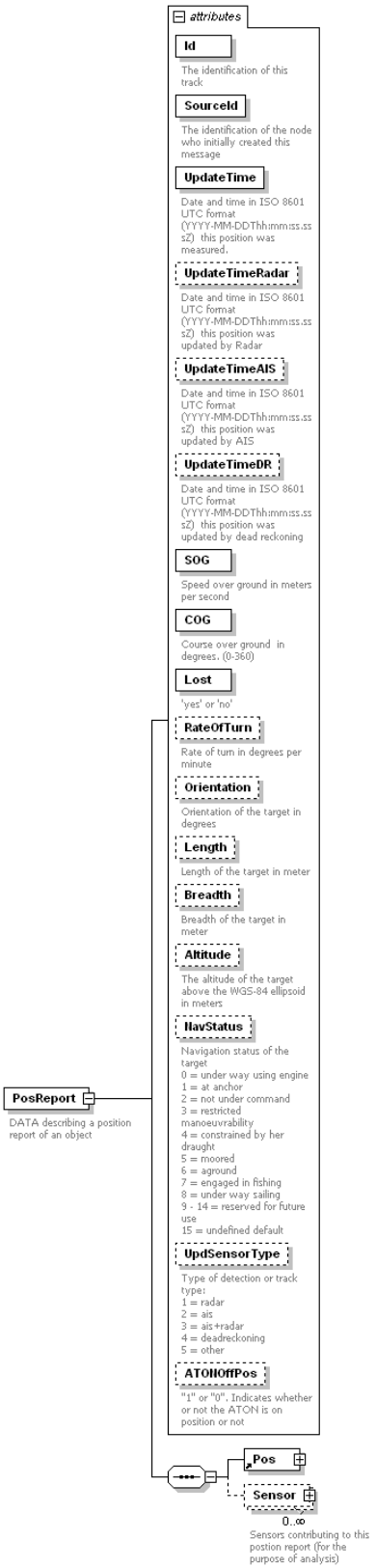
```
    <xs:attribute name="Lat" use="required">
      <xs:annotation>
        <xs:documentation>Latitude (WGS84) in degrees. (+/- 90 degrees;
North = positive; South = negative) Examples:

-90deg (south) =   -90.0000000
0deg0min1sec (north) =    0.0000016
50deg50min (north)  = 50.8333333</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
        <xs:restriction base="xs:decimal">
          <xs:minInclusive value="-90.00000"/>
          <xs:maxInclusive value="+90.00000"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:attribute>
    <xs:attribute name="Long" use="required">
      <xs:annotation>
        <xs:documentation>Longitude (WGS84) in degrees. (+/- 180 degrees; East = positive; West = negative). Examples:

-180deg (west) =   -180.0000000
0deg0min1sec (east) =       0.0000016</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
        <xs:restriction base="xs:decimal">
          <xs:maxInclusive value="+180.00000"/>
          <xs:minExclusive value="-180.00000"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:attribute>
  </xs:complexType>
</xs:element>
```

element **PosReport**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties content complex

children Pos Sensor

used by element VesselData

attributes	Name	Type	Use	Default	Fixed	Annotation
	Id	**xs:integer**	required			documentation The identification of this track
	SourceId	**xs:integer**	required			documentation The identification of the node who initially created this message
	UpdateTime	**xs:dateTime**	required			documentation Date and time in ISO 8601 UTC format (YYYY-MM-DDThh:mm:ss.sssZ) this position was measured.
	UpdateTimeRadar	**xs:dateTime**	optional			documentation Date and time in ISO 8601 UTC format (YYYY-MM-DDThh:mm:ss.sssZ) this position was updated by Radar
	UpdateTimeAIS	**xs:dateTime**	optional			documentation Date and time in ISO 8601 UTC format (YYYY-MM-DDThh:mm:ss.sssZ) this position was updated by AIS
	UpdateTimeDR	**xs:dateTime**	optional			documentation Date and time in ISO 8601 UTC format (YYYY-MM-DDThh:mm:ss.sssZ) this position was updated by dead reckoning
	SOG	**derived by: xs:decimal**	required			documentation Speed over ground in meters per second
	COG	**derived by: xs:decimal**	required			documentation Course over ground in degrees. (0-360)
	Lost	**derived by: xs:string**	required			documentation 'yes' or 'no'
	RateOfTurn	**xs:decimal**	optional			documentation Rate of turn in degrees per minute
	Orientation	**derived by: xs:decimal**	optional			documentation Orientation of the target in degrees
	Length	**derived by: xs:decimal**	optional			documentation Length of the target in meter
	Breadth	**derived by: xs:decimal**	optional			documentation Breadth of the target in meter
	Altitude	**xs:decimal**	optional			documentation The altitude of the target

				above the WGS-84 ellipsoid in meters
	NavStatus	**derived by: xs:integer**	optional	documentation 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 - 14 = reserved for future use 15 = undefined default
	UpdSensorType	**derived by: xs:integer**	optional	documentation Type of detection or track type: 1 = radar 2 = ais 3 = ais+radar 4 = deadreckoning 5 = other
	ATONOffPos	**xs:boolean**	optional	documentation "1" or "0". Indicates whether or not the ATON is on position or not

annotation
documentation
DATA describing a position report of an object

source

```
<xs:element name="PosReport">
 <xs:annotation>
  <xs:documentation>DATA describing a position report of an object</xs:documentation>
 </xs:annotation>
 <xs:complexType>
  <xs:sequence>
   <xs:element ref="Pos"/>
   <xs:element name="Sensor" minOccurs="0" maxOccurs="unbounded">
    <xs:annotation>
     <xs:documentation>Sensors contributing to this postion report (for the purpose of analysis)</xs:documentation>
    </xs:annotation>
    <xs:complexType>
     <xs:attribute name="SenId" use="required">
      <xs:annotation>
       <xs:documentation>Identifier of local sensor contributing to position report</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
       <xs:restriction base="xs:integer">
        <xs:maxInclusive value="65536"/>
        <xs:minInclusive value="0"/>
       </xs:restriction>
      </xs:simpleType>
     </xs:attribute>
     <xs:attribute name="TrkId" use="required">
      <xs:annotation>
       <xs:documentation>local Identifier of track from sensor contributing to position report</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
       <xs:restriction base="xs:integer">
        <xs:maxInclusive value="65536"/>
        <xs:minInclusive value="0"/>
       </xs:restriction>
```

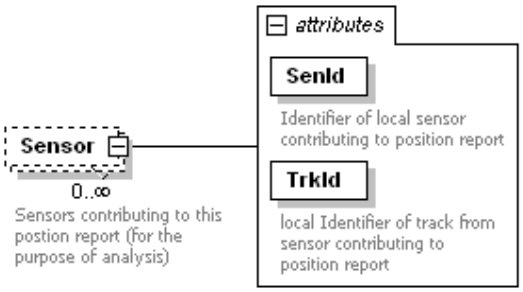
```
          </xs:simpleType>
        </xs:attribute>
      </xs:complexType>
    </xs:element>
  </xs:sequence>
  <xs:attribute name="Id" type="xs:integer" use="required">
    <xs:annotation>
      <xs:documentation>The identification of this track</xs:documentation>
    </xs:annotation>
  </xs:attribute>
  <xs:attribute name="SourceId" type="xs:integer" use="required">
    <xs:annotation>
      <xs:documentation>The identification of the node who initially created this message</xs:documentation>
    </xs:annotation>
  </xs:attribute>
  <xs:attribute name="UpdateTime" type="xs:dateTime" use="required">
    <xs:annotation>
      <xs:documentation>Date and time in ISO 8601 UTC format (YYYY-MM-DDThh:mm:ss.sssZ)  this position was
measured.</xs:documentation>
    </xs:annotation>
  </xs:attribute>
  <xs:attribute name="UpdateTimeRadar" type="xs:dateTime" use="optional">
    <xs:annotation>
      <xs:documentation>Date and time in ISO 8601 UTC format (YYYY-MM-DDThh:mm:ss.sssZ)  this position was updated by
Radar</xs:documentation>
    </xs:annotation>
  </xs:attribute>
  <xs:attribute name="UpdateTimeAIS" type="xs:dateTime" use="optional">
    <xs:annotation>
      <xs:documentation>Date and time in ISO 8601 UTC format (YYYY-MM-DDThh:mm:ss.sssZ)  this position was updated by
AIS</xs:documentation>
    </xs:annotation>
  </xs:attribute>
  <xs:attribute name="UpdateTimeDR" type="xs:dateTime" use="optional">
    <xs:annotation>
      <xs:documentation>Date and time in ISO 8601 UTC format (YYYY-MM-DDThh:mm:ss.sssZ)  this position was updated by
dead reckoning</xs:documentation>
    </xs:annotation>
  </xs:attribute>
  <xs:attribute name="SOG" use="required">
    <xs:annotation>
      <xs:documentation>Speed over ground in meters per second</xs:documentation>
    </xs:annotation>
    <xs:simpleType>
      <xs:restriction base="xs:decimal">
        <xs:minInclusive value="0"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:attribute>
  <xs:attribute name="COG" use="required">
    <xs:annotation>
      <xs:documentation>Course over ground  in degrees. (0-360) </xs:documentation>
    </xs:annotation>
    <xs:simpleType>
      <xs:restriction base="xs:decimal">
        <xs:fractionDigits value="1"/>
        <xs:minInclusive value="0"/>
        <xs:maxInclusive value="360"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:attribute>
  <xs:attribute name="Lost" use="required">
    <xs:annotation>
      <xs:documentation>'yes' or 'no'</xs:documentation>
    </xs:annotation>
    <xs:simpleType>
      <xs:restriction base="xs:string">
        <xs:enumeration value="no"/>
        <xs:enumeration value="yes"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:attribute>
  <xs:attribute name="RateOfTurn" type="xs:decimal" use="optional">
    <xs:annotation>
      <xs:documentation>Rate of turn in degrees per minute</xs:documentation>
    </xs:annotation>
  </xs:attribute>
  <xs:attribute name="Orientation" use="optional">
```

```
      <xs:annotation>
        <xs:documentation>Orientation of the target in degrees</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
        <xs:restriction base="xs:decimal">
          <xs:minInclusive value="0.0"/>
          <xs:maxInclusive value="360.0"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:attribute>
    <xs:attribute name="Length" use="optional">
      <xs:annotation>
        <xs:documentation>Length of the target in meter</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
        <xs:restriction base="xs:decimal">
          <xs:minInclusive value="0"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:attribute>
    <xs:attribute name="Breadth" use="optional">
      <xs:annotation>
        <xs:documentation>Breadth of the target in  meter</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
        <xs:restriction base="xs:decimal">
          <xs:minInclusive value="0"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:attribute>
    <xs:attribute name="Altitude" type="xs:decimal" use="optional">
      <xs:annotation>
        <xs:documentation>The altitude of the target above the WGS-84 ellipsoid in meters</xs:documentation>
      </xs:annotation>
    </xs:attribute>
    <xs:attribute name="NavStatus" use="optional">
      <xs:annotation>
        <xs:documentation>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 - 14 = reserved for future use
15 = undefined default</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
        <xs:restriction base="xs:integer">
          <xs:enumeration value="0"/>
          <xs:enumeration value="1"/>
          <xs:enumeration value="2"/>
          <xs:enumeration value="3"/>
          <xs:enumeration value="4"/>
          <xs:enumeration value="5"/>
          <xs:enumeration value="6"/>
          <xs:enumeration value="7"/>
          <xs:enumeration value="8"/>
          <xs:enumeration value="9"/>
          <xs:enumeration value="10"/>
          <xs:enumeration value="11"/>
          <xs:enumeration value="12"/>
          <xs:enumeration value="13"/>
          <xs:enumeration value="14"/>
          <xs:enumeration value="15"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:attribute>
    <xs:attribute name="UpdSensorType" use="optional">
      <xs:annotation>
        <xs:documentation>Type of detection or track type:
1 = radar
2 = ais
3 = ais+radar
4 = deadreckoning
```

```
5 = other</xs:documentation>
    </xs:annotation>
    <xs:simpleType>
     <xs:restriction base="xs:integer">
      <xs:enumeration value="1"/>
      <xs:enumeration value="2"/>
      <xs:enumeration value="3"/>
      <xs:enumeration value="4"/>
      <xs:enumeration value="5"/>
     </xs:restriction>
    </xs:simpleType>
   </xs:attribute>
   <xs:attribute name="ATONOffPos" type="xs:boolean" use="optional">
    <xs:annotation>
     <xs:documentation>"1" or "0". Indicates whether or not the ATON is on position or not</xs:documentation>
    </xs:annotation>
   </xs:attribute>
  </xs:complexType>
</xs:element>
```

element **PosReport/Sensor**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties

isRef	0
minOcc	0
maxOcc	unbounded
content	complex

attributes

Name	Type	Use	Default	Fixed	Annotation
SenId	**derived by: xs:integer**	required			documentation Identifier of local sensor contributing to position report
TrkId	**derived by: xs:integer**	required			documentation local Identifier of track from sensor contributing to position report

annotation

documentation
Sensors contributing to this postion report (for the purpose of analysis)

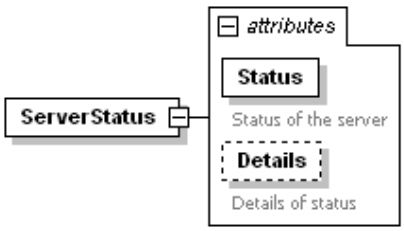
source

```
<xs:element name="Sensor" minOccurs="0" maxOccurs="unbounded">
 <xs:annotation>
  <xs:documentation>Sensors contributing to this postion report (for the purpose of analysis)</xs:documentation>
 </xs:annotation>
 <xs:complexType>
  <xs:attribute name="SenId" use="required">
   <xs:annotation>
    <xs:documentation>Identifier of local sensor contributing to position report</xs:documentation>
   </xs:annotation>
   <xs:simpleType>
    <xs:restriction base="xs:integer">
     <xs:maxInclusive value="65536"/>
     <xs:minInclusive value="0"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:attribute>
  <xs:attribute name="TrkId" use="required">
   <xs:annotation>
    <xs:documentation>local Identifier of track from sensor contributing to position report</xs:documentation>
   </xs:annotation>
   <xs:simpleType>
```

```
      <xs:restriction base="xs:integer">
        <xs:maxInclusive value="65536"/>
        <xs:minInclusive value="0"/>
      </xs:restriction>
    </xs:simpleType>
  </xs:attribute>
 </xs:complexType>
</xs:element>
```

element **ServerStatus**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties content complex

used by element MSG_ServerStatus/Body

attributes

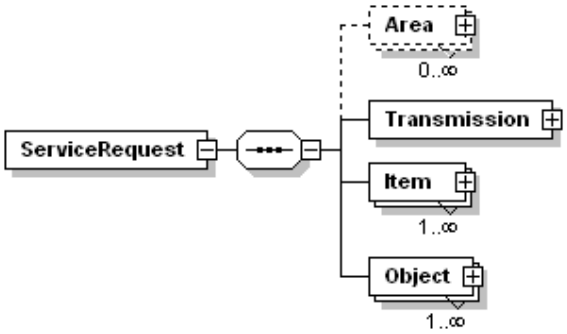
Name	Type		Use	Default	Fixed	Annotation
Status	**derived xs:string**	**by:**	required			documentation Status of the server
Details	**derived xs:string**	**by:**	optional			documentation Details of status

source

```
<xs:element name="ServerStatus">
 <xs:complexType>
  <xs:attribute name="Status" use="required">
   <xs:annotation>
    <xs:documentation>Status of the server</xs:documentation>
   </xs:annotation>
   <xs:simpleType>
    <xs:restriction base="xs:string">
     <xs:enumeration value="queuefull"/>
     <xs:enumeration value="ok"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:attribute>
  <xs:attribute name="Details" use="optional">
   <xs:annotation>
    <xs:documentation>Details of status</xs:documentation>
   </xs:annotation>
   <xs:simpleType>
    <xs:restriction base="xs:string">
     <xs:maxLength value="50"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:attribute>
 </xs:complexType>
</xs:element>
```

element **ServiceRequest**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties content complex

children Area Transmission Item Object

used by element MSG_ServiceRequest/Body

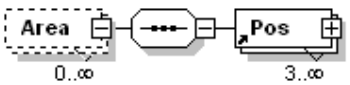
source

```
<xs:element name="ServiceRequest">
 <xs:complexType>
  <xs:sequence>
   <xs:element name="Area" minOccurs="0" maxOccurs="unbounded">
    <xs:complexType>
     <xs:sequence>
      <xs:element ref="Pos" minOccurs="3" maxOccurs="unbounded"/>
     </xs:sequence>
    </xs:complexType>
   </xs:element>
   <xs:element name="Transmission">
    <xs:complexType>
     <xs:attribute name="Type" use="required">
      <xs:annotation>
       <xs:documentation>Type of transmission, possible values are:
1 = single occurrence
2 = periodic
3 = synchronic
4 = on change</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
       <xs:restriction base="xs:integer">
        <xs:enumeration value="1"/>
        <xs:enumeration value="2"/>
        <xs:enumeration value="3"/>
        <xs:enumeration value="4"/>
       </xs:restriction>
      </xs:simpleType>
     </xs:attribute>
     <xs:attribute name="Period" type="xs:decimal" use="optional">
      <xs:annotation>
       <xs:documentation> Specifies he time between two periodic updates in seconds</xs:documentation>
      </xs:annotation>
     </xs:attribute>
    </xs:complexType>
   </xs:element>
   <xs:element name="Item" maxOccurs="unbounded">
    <xs:complexType>
     <xs:attribute name="Element" use="required">
      <xs:annotation>
       <xs:documentation>Describes requested Vessel data element, possible values:
1 = position
2 = static data
3 = voyage</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
       <xs:restriction base="xs:integer">
        <xs:enumeration value="1"/>
        <xs:enumeration value="2"/>
        <xs:enumeration value="3"/>
       </xs:restriction>
      </xs:simpleType>
```

```
        </xs:attribute>
        <xs:attribute name="Field" type="xs:string" use="required">
          <xs:annotation>
            <xs:documentation>Selected field. Can be 'all' or one of the items of vessel data PositionReport, Static Data or Voyage</xs:documentation>
          </xs:annotation>
        </xs:attribute>
      </xs:complexType>
    </xs:element>
    <xs:element name="Object" maxOccurs="unbounded">
      <xs:complexType>
        <xs:attribute name="FileName" use="required">
          <xs:annotation>
            <xs:documentation>Name of the filter. The filter can be a predefined selector or can be defined here in the future. One of the predefined selectors will be 'all'</xs:documentation>
          </xs:annotation>
        </xs:attribute>
      </xs:complexType>
    </xs:element>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

element **ServiceRequest/Area**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties

isRef	0
minOcc	0
maxOcc	unbounded
content	complex

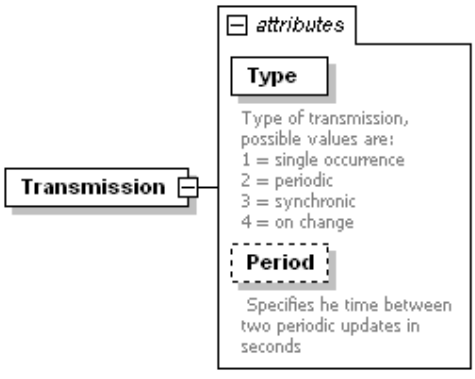
children **Pos**

source

```
<xs:element name="Area" minOccurs="0" maxOccurs="unbounded">
 <xs:complexType>
  <xs:sequence>
   <xs:element ref="Pos" minOccurs="3" maxOccurs="unbounded"/>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

element **ServiceRequest/Transmission**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties

isRef	0
content	complex

attributes

Name	Type	Use	Default	Fixed	Annotation
Type	**derived by: xs:integer**	required			documentation Type of transmission, possible values are: 1 = single

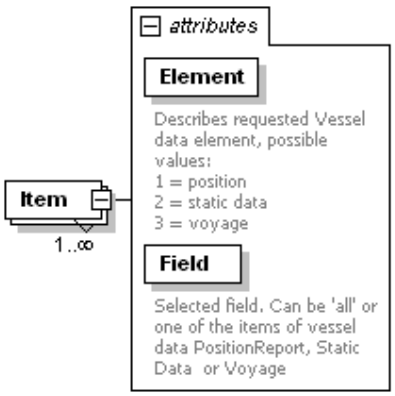
	Period	**xs:decimal**	optional	occurrence 2 = periodic 3 = synchronic 4 = on change documentation Specifies he time between two periodic updates in seconds

source

```
<xs:element name="Transmission">
 <xs:complexType>
  <xs:attribute name="Type" use="required">
   <xs:annotation>
    <xs:documentation>Type of transmission, possible values are:
1 = single occurrence
2 = periodic
3 = synchronic
4 = on change</xs:documentation>
   </xs:annotation>
   <xs:simpleType>
    <xs:restriction base="xs:integer">
     <xs:enumeration value="1"/>
     <xs:enumeration value="2"/>
     <xs:enumeration value="3"/>
     <xs:enumeration value="4"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:attribute>
  <xs:attribute name="Period" type="xs:decimal" use="optional">
   <xs:annotation>
    <xs:documentation> Specifies he time between two periodic updates in seconds</xs:documentation>
   </xs:annotation>
  </xs:attribute>
 </xs:complexType>
</xs:element>
```

element **ServiceRequest/Item**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties

isRef	0
minOcc	1
maxOcc	unbounded
content	complex

attributes

Name	Type	Use	Default	Fixed	Annotation
Element	**derived by: xs:integer**	required			documentation Describes requested Vessel data element, possible values: 1 = position 2 = static data 3 = voyage
Field	**xs:string**	required			documentation Selected field. Can be 'all' or

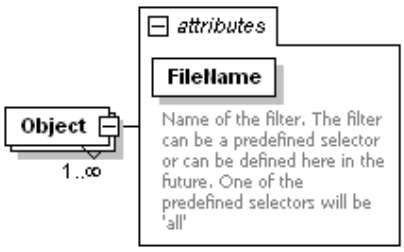
						one of the items of vessel data PositionReport, Static Data or Voyage

source

```
<xs:element name="Item" maxOccurs="unbounded">
 <xs:complexType>
  <xs:attribute name="Element" use="required">
   <xs:annotation>
    <xs:documentation>Describes requested Vessel data element, possible values:
1 = position
2 = static data
3 = voyage</xs:documentation>
   </xs:annotation>
   <xs:simpleType>
    <xs:restriction base="xs:integer">
     <xs:enumeration value="1"/>
     <xs:enumeration value="2"/>
     <xs:enumeration value="3"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:attribute>
  <xs:attribute name="Field" type="xs:string" use="required">
   <xs:annotation>
    <xs:documentation>Selected field. Can be 'all' or one of the items of vessel data PositionReport, Static Data or
Voyage</xs:documentation>
   </xs:annotation>
  </xs:attribute>
 </xs:complexType>
</xs:element>
```

element **ServiceRequest/Object**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties

isRef	0
minOcc	1
maxOcc	unbounded
content	complex

attributes

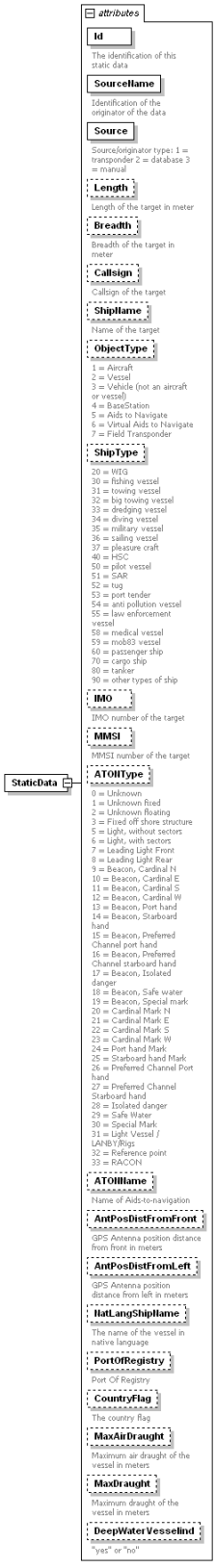
Name	Type	Use	Default	Fixed	Annotation
FileName		required			documentation Name of the filter. The filter can be a predefined selector or can be defined here in the future. One of the predefined selectors will be 'all'

source

```
<xs:element name="Object" maxOccurs="unbounded">
 <xs:complexType>
  <xs:attribute name="FileName" use="required">
   <xs:annotation>
    <xs:documentation>Name of the filter. The filter can be a predefined selector or can be defined here in the future. One of
the predefined selectors will be 'all'</xs:documentation>
   </xs:annotation>
  </xs:attribute>
 </xs:complexType>
</xs:element>
```

element **StaticData**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties content complex

used by element **VesselData**

attributes

Name	Type		Use	Default	Fixed	Annotation
Id	**derived xs:string**	**by:**	required			documentation The identification of this static data
SourceName	**xs:string**		required			documentation Identification of the originator of the data
Source	**derived xs:integer**	**by:**	required			documentation Source/originator type: 1 = transponder 2 = database 3 = manual
Length	**derived xs:decimal**	**by:**	optional			documentation Length of the target in meter
Breadth	**derived xs:decimal**	**by:**	optional			documentation Breadth of the target in meter
Callsign	**xs:string**		optional			documentation Callsign of the target
ShipName	**derived xs:string**	**by:**	optional			documentation Name of the target
ObjectType	**derived xs:integer**	**by:**	optional			documentation 1 = Aircraft 2 = Vessel 3 = Vehicle (not an aircraft or vessel) 4 = BaseStation 5 = Aids to Navigate 6 = Virtual Aids to Navigate 7 = Field Transponder
ShipType	**derived xs:integer**	**by:**	optional			documentation 20 = WIG 30 = fishing vessel 31 = towing vessel 32 = big towing vessel 33 = dredging vessel 34 = diving vessel 35 = military vessel 36 = sailing vessel 37 = pleasure craft 40 = HSC 50 = pilot vessel 51 = SAR 52 = tug 53 = port tender 54 = anti pollution vessel 55 = law enforcement vessel 58 = medical vessel 59 = mob83 vessel 60 = passenger ship

			70 = cargo ship 80 = tanker 90 = other types of ship documentation
IMO	**xs:integer**	optional	IMO number of the target documentation
MMSI	**xs:integer**	optional	MMSI number of the target documentation
ATONType	**derived by: xs:integer**	optional	0 = Unknown 1 = Unknown fixed 2 = Unknown floating 3 = Fixed off shore structure 5 = Light, without sectors 6 = Light, with sectors 7 = Leading Light Front 8 = Leading Light Rear 9 = Beacon, Cardinal N 10 = Beacon, Cardinal E 11 = Beacon, Cardinal S 12 = Beacon, Cardinal W 13 = Beacon, Port hand 14 = Beacon, Starboard hand 15 = Beacon, Preferred Channel port hand 16 = Beacon, Preferred Channel starboard hand 17 = Beacon, Isolated danger 18 = Beacon, Safe water 19 = Beacon, Special mark 20 = Cardinal Mark N 21 = Cardinal Mark E 22 = Cardinal Mark S 23 = Cardinal Mark W 24 = Port hand Mark 25 = Starboard hand Mark 26 = Preferred Channel Port hand 27 = Preferred Channel Starboard hand 28 = Isolated danger 29 = Safe Water 30 = Special Mark 31 = Light Vessel /

				LANBY/Rigs 32 = Reference point 33 = RACON
	ATONName	**xs:string**	optional	documentation Name of Aids-to-navigation
	AntPosDistFromFront	**xs:decimal**	optional	documentation GPS Antenna position distance from front in meters
	AntPosDistFromLeft	**xs:decimal**	optional	documentation GPS Antenna position distance from left in meters
	NatLangShipName	**xs:string**	optional	documentation The name of the vessel in native language
	PortOfRegistry	**xs:string**	optional	documentation Port Of Registry
	CountryFlag	**xs:string**	optional	documentation The country flag
	MaxAirDraught	**derived by: xs:decimal**	optional	documentation Maximum air draught of the vessel in meters
	MaxDraught	**derived by: xs:decimal**	optional	documentation Maximum draught of the vessel in meters
	DeepWaterVesselind	**derived by: xs:string**	optional	documentation "yes" or "no"

source

```
<xs:element name="StaticData">
 <xs:complexType>
  <xs:attribute name="Id" use="required">
   <xs:annotation>
    <xs:documentation>The identification of this static data</xs:documentation>
   </xs:annotation>
   <xs:simpleType>
    <xs:restriction base="xs:string">
     <xs:maxLength value="40"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:attribute>
  <xs:attribute name="SourceName" type="xs:string" use="required">
   <xs:annotation>
    <xs:documentation>Identification of the originator of the data</xs:documentation>
   </xs:annotation>
  </xs:attribute>
  <xs:attribute name="Source" use="required">
   <xs:annotation>
    <xs:documentation>Source/originator type: 1 = transponder 2 = database 3 = manual</xs:documentation>
   </xs:annotation>
   <xs:simpleType>
    <xs:restriction base="xs:integer">
     <xs:enumeration value="1"/>
     <xs:enumeration value="2"/>
     <xs:enumeration value="3"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:attribute>
  <xs:attribute name="Length" use="optional">
   <xs:annotation>
    <xs:documentation>Length of the target in meter</xs:documentation>
   </xs:annotation>
   <xs:simpleType>
    <xs:restriction base="xs:decimal">
     <xs:minExclusive value="0"/>
    </xs:restriction>
   </xs:simpleType>
```

```
    </xs:attribute>
    <xs:attribute name="Breadth" use="optional">
      <xs:annotation>
        <xs:documentation>Breadth of the target in meter</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
        <xs:restriction base="xs:decimal">
          <xs:minExclusive value="0"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:attribute>
    <xs:attribute name="Callsign" type="xs:string" use="optional">
      <xs:annotation>
        <xs:documentation>Callsign of the target</xs:documentation>
      </xs:annotation>
    </xs:attribute>
    <xs:attribute name="ShipName" use="optional">
      <xs:annotation>
        <xs:documentation>Name of the target</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
        <xs:restriction base="xs:string"/>
      </xs:simpleType>
    </xs:attribute>
    <xs:attribute name="ObjectType" use="optional">
      <xs:annotation>
        <xs:documentation>1 = Aircraft
2 = Vessel
3 = Vehicle (not an aircraft or vessel)
4 = BaseStation
5 = Aids to Navigate
6 = Virtual Aids to Navigate
7 = Field Transponder</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
        <xs:restriction base="xs:integer">
          <xs:enumeration value="1"/>
          <xs:enumeration value="2"/>
          <xs:enumeration value="3"/>
          <xs:enumeration value="4"/>
          <xs:enumeration value="5"/>
          <xs:enumeration value="6"/>
          <xs:enumeration value="7"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:attribute>
    <xs:attribute name="ShipType" use="optional">
      <xs:annotation>
        <xs:documentation>20 = WIG
30 = fishing vessel
31 = towing vessel
32 = big towing vessel
33 = dredging vessel
34 = diving vessel
35 = military vessel
36 = sailing vessel
37 = pleasure craft
40 = HSC
50 = pilot vessel
51 = SAR
52 = tug
53 = port tender
54 = anti pollution vessel
55 = law enforcement vessel
58 = medical vessel
59 = mob83 vessel
60 = passenger ship
70 = cargo ship
80 = tanker
90 = other types of ship</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
        <xs:restriction base="xs:integer">
          <xs:enumeration value="20"/>
          <xs:enumeration value="30"/>
          <xs:enumeration value="31"/>
          <xs:enumeration value="32"/>
          <xs:enumeration value="33"/>
```

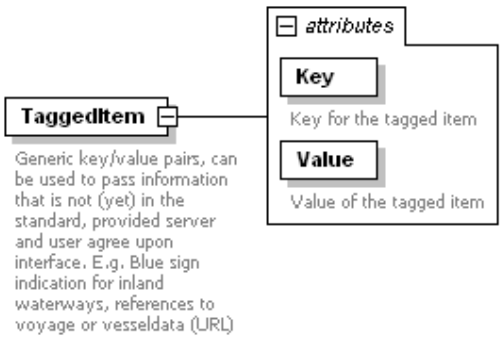
```
            <xs:enumeration value="34"/>
            <xs:enumeration value="35"/>
            <xs:enumeration value="36"/>
            <xs:enumeration value="37"/>
            <xs:enumeration value="40"/>
            <xs:enumeration value="50"/>
            <xs:enumeration value="51"/>
            <xs:enumeration value="52"/>
            <xs:enumeration value="53"/>
            <xs:enumeration value="54"/>
            <xs:enumeration value="55"/>
            <xs:enumeration value="58"/>
            <xs:enumeration value="59"/>
            <xs:enumeration value="60"/>
            <xs:enumeration value="70"/>
            <xs:enumeration value="80"/>
            <xs:enumeration value="90"/>
          </xs:restriction>
        </xs:simpleType>
      </xs:attribute>
      <xs:attribute name="IMO" type="xs:integer" use="optional">
        <xs:annotation>
          <xs:documentation>IMO number of the target</xs:documentation>
        </xs:annotation>
      </xs:attribute>
      <xs:attribute name="MMSI" type="xs:integer" use="optional">
        <xs:annotation>
          <xs:documentation>MMSI number of the target</xs:documentation>
        </xs:annotation>
      </xs:attribute>
      <xs:attribute name="ATONType" use="optional">
        <xs:annotation>
          <xs:documentation>0 = Unknown
1 = Unknown fixed
2 = Unknown floating
3 = Fixed off shore structure
5 = Light, without sectors
6 = Light, with sectors
7 = Leading Light Front
8 = Leading Light Rear
9 = Beacon, Cardinal N
10 = Beacon, Cardinal E
11 = Beacon, Cardinal S
12 = Beacon, Cardinal W
13 = Beacon, Port hand
14 = Beacon, Starboard hand
15 = Beacon, Preferred Channel port hand
16 = Beacon, Preferred Channel starboard hand
17 = Beacon, Isolated danger
18 = Beacon, Safe water
19 = Beacon, Special mark
20 = Cardinal Mark N
21 = Cardinal Mark E
22 = Cardinal Mark S
23 = Cardinal Mark W
24 = Port hand Mark
25 = Starboard hand Mark
26 = Preferred Channel Port hand
27 = Preferred Channel Starboard hand
28 = Isolated danger
29 = Safe Water
30 = Special Mark
31 = Light Vessel / LANBY/Rigs
32 = Reference point
33 = RACON</xs:documentation>
        </xs:annotation>
        <xs:simpleType>
          <xs:restriction base="xs:integer">
            <xs:enumeration value="0"/>
            <xs:enumeration value="1"/>
            <xs:enumeration value="2"/>
            <xs:enumeration value="3"/>
            <xs:enumeration value="5"/>
            <xs:enumeration value="6"/>
            <xs:enumeration value="7"/>
            <xs:enumeration value="8"/>
            <xs:enumeration value="9"/>
            <xs:enumeration value="10"/>
```

```
      <xs:enumeration value="11"/>
      <xs:enumeration value="12"/>
      <xs:enumeration value="13"/>
      <xs:enumeration value="14"/>
      <xs:enumeration value="15"/>
      <xs:enumeration value="16"/>
      <xs:enumeration value="17"/>
      <xs:enumeration value="18"/>
      <xs:enumeration value="19"/>
      <xs:enumeration value="20"/>
      <xs:enumeration value="21"/>
      <xs:enumeration value="22"/>
      <xs:enumeration value="23"/>
      <xs:enumeration value="24"/>
      <xs:enumeration value="25"/>
      <xs:enumeration value="26"/>
      <xs:enumeration value="27"/>
      <xs:enumeration value="28"/>
      <xs:enumeration value="29"/>
      <xs:enumeration value="30"/>
      <xs:enumeration value="31"/>
      <xs:enumeration value="32"/>
      <xs:enumeration value="33"/>
    </xs:restriction>
  </xs:simpleType>
</xs:attribute>
<xs:attribute name="ATONName" type="xs:string" use="optional">
  <xs:annotation>
    <xs:documentation>Name of Aids-to-navigation</xs:documentation>
  </xs:annotation>
</xs:attribute>
<xs:attribute name="AntPosDistFromFront" type="xs:decimal" use="optional">
  <xs:annotation>
    <xs:documentation>GPS Antenna position distance from front in meters</xs:documentation>
  </xs:annotation>
</xs:attribute>
<xs:attribute name="AntPosDistFromLeft" type="xs:decimal" use="optional">
  <xs:annotation>
    <xs:documentation>GPS Antenna position distance from left in meters</xs:documentation>
  </xs:annotation>
</xs:attribute>
<xs:attribute name="NatLangShipName" type="xs:string" use="optional">
  <xs:annotation>
    <xs:documentation>The name of the vessel in native language</xs:documentation>
  </xs:annotation>
</xs:attribute>
<xs:attribute name="PortOfRegistry" type="xs:string" use="optional">
  <xs:annotation>
    <xs:documentation>Port Of Registry</xs:documentation>
  </xs:annotation>
</xs:attribute>
<xs:attribute name="CountryFlag" type="xs:string" use="optional">
  <xs:annotation>
    <xs:documentation>The country flag</xs:documentation>
  </xs:annotation>
</xs:attribute>
<xs:attribute name="MaxAirDraught" use="optional">
  <xs:annotation>
    <xs:documentation>Maximum air draught of the vessel in meters</xs:documentation>
  </xs:annotation>
  <xs:simpleType>
    <xs:restriction base="xs:decimal">
      <xs:minExclusive value="0"/>
    </xs:restriction>
  </xs:simpleType>
</xs:attribute>
<xs:attribute name="MaxDraught" use="optional">
  <xs:annotation>
    <xs:documentation>Maximum draught of the vessel in meters</xs:documentation>
  </xs:annotation>
  <xs:simpleType>
    <xs:restriction base="xs:decimal">
      <xs:minExclusive value="0"/>
    </xs:restriction>
  </xs:simpleType>
</xs:attribute>
<xs:attribute name="DeepWaterVesselind" use="optional">
  <xs:annotation>
```

```
      <xs:documentation>"yes" or "no"</xs:documentation>
     </xs:annotation>
     <xs:simpleType>
      <xs:restriction base="xs:string">
       <xs:enumeration value="yes"/>
       <xs:enumeration value="no"/>
      </xs:restriction>
     </xs:simpleType>
    </xs:attribute>
   </xs:complexType>
  </xs:element>
```

element **TaggedItem**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties content complex

used by element **VesselData**

attributes

Name	Type	Use	Default	Fixed	Annotation
Key	**derived by: xs:string**	required			documentation Key for the tagged item
Value	**derived by: xs:string**	required			documentation Value of the tagged item

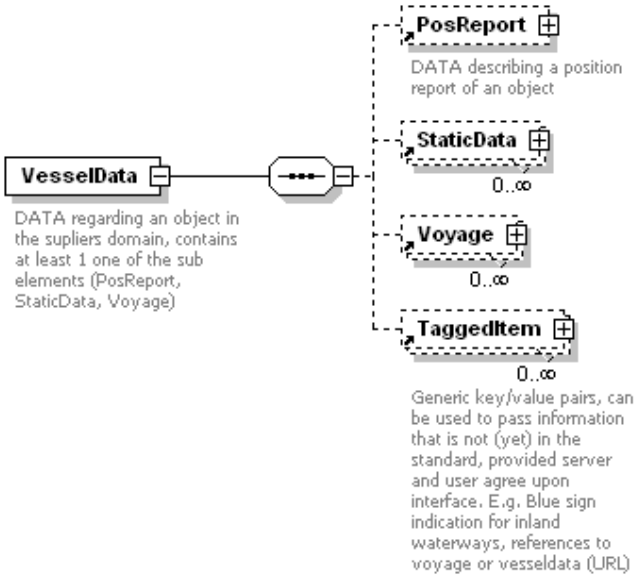
annotation documentation
Generic key/value pairs, can be used to pass information that is not (yet) in the standard, provided server and user agree upon interface. E.g. Blue sign indication for inland waterways, references to voyage or vesseldata (URL)

source

```
<xs:element name="TaggedItem">
 <xs:annotation>
  <xs:documentation>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)</xs:documentation>
 </xs:annotation>
 <xs:complexType>
  <xs:attribute name="Key" use="required">
   <xs:annotation>
    <xs:documentation>Key for the tagged item</xs:documentation>
   </xs:annotation>
   <xs:simpleType>
    <xs:restriction base="xs:string">
     <xs:minLength value="1"/>
     <xs:maxLength value="42"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:attribute>
  <xs:attribute name="Value" use="required">
   <xs:annotation>
    <xs:documentation>Value of the tagged item</xs:documentation>
   </xs:annotation>
   <xs:simpleType>
    <xs:restriction base="xs:string">
     <xs:minLength value="1"/>
     <xs:maxLength value="42"/>
    </xs:restriction>
   </xs:simpleType>
  </xs:attribute>
 </xs:complexType>
</xs:element>
```

element **VesselData**

diagram



namespace urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6

properties content complex

children PosReport StaticData Voyage TaggedItem

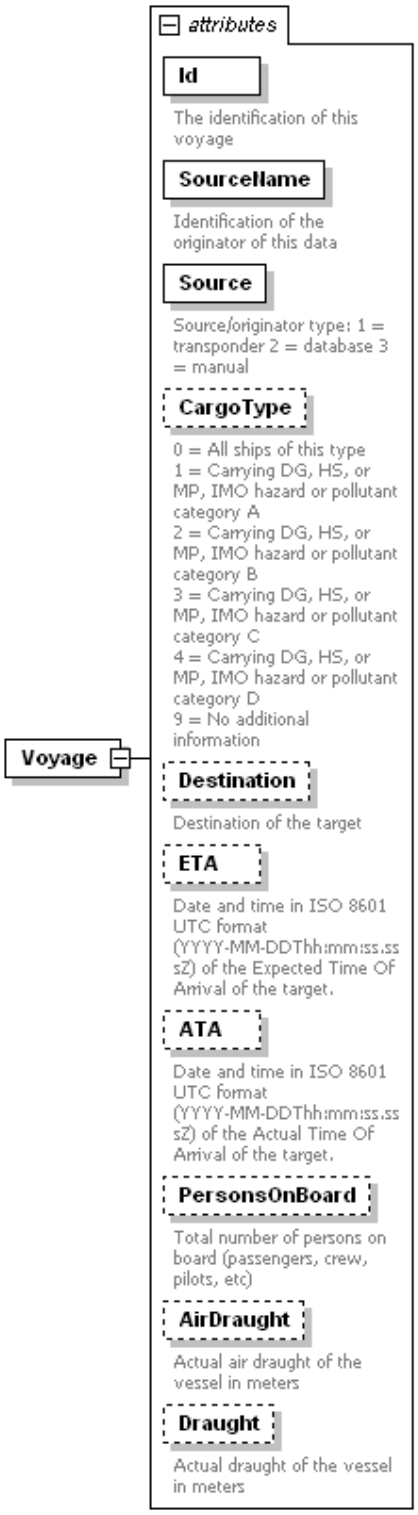
used by element MSG_VesselData/Body

annotation documentation
DATA regarding an object in the supliers domain, contains at least 1 one of the sub elements (PosReport, StaticData, Voyage)

source
```
<xs:element name="VesselData">
 <xs:annotation>
  <xs:documentation>DATA regarding an object in the supliers domain, contains at least 1 one of the sub elements (PosReport, StaticData, Voyage)</xs:documentation>
 </xs:annotation>
 <xs:complexType>
  <xs:sequence>
   <xs:element ref="PosReport" minOccurs="0"/>
   <xs:element ref="StaticData" minOccurs="0" maxOccurs="unbounded"/>
   <xs:element ref="Voyage" minOccurs="0" maxOccurs="unbounded"/>
   <xs:element ref="TaggedItem" minOccurs="0" maxOccurs="unbounded"/>
  </xs:sequence>
 </xs:complexType>
</xs:element>
```

element **Voyage**

diagram



namespace	urn:http://www.ivef.org/XMLSchema/IVEF/0.1.6						
properties	content	complex					
used by	element	VesselData					
attributes	Name	Type		Use	Default	Fixed	Annotation
	Id	**derived by: xs:string**		required			documentation The

				identification of this voyage
SourceName	**xs:string**		required	documentation Identification of the originator of this data
Source	**derived xs:integer**	**by:**	required	documentation Source/originator type: 1 = transponder 2 = database 3 = manual
CargoType	**derived xs:integer**	**by:**	optional	documentation 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 9 = No additional information
Destination	**xs:string**		optional	documentation Destination of the target
ETA	**xs:dateTime**		optional	documentation Date and time in ISO 8601 UTC format (YYYY-MM-DDThh:mm:ss.sssZ) of the Expected Time Of Arrival of the target.
ATA	**xs:dateTime**		optional	documentation Date and time in ISO 8601 UTC format (YYYY-MM-DDThh:mm:ss.sssZ) of the Actual Time Of Arrival of the target.
PersonsOnBoard	**derived xs:integer**	**by:**	optional	documentation Total number of persons on board (passengers, crew, pilots, etc)
AirDraught	**derived xs:decimal**	**by:**	optional	documentation Actual air draught of the vessel in meters
Draught	**derived xs:decimal**	**by:**	optional	documentation Actual draught of the vessel in meters

source <xs:element name="Voyage">

```
  <xs:complexType>
    <xs:attribute name="Id" use="required">
      <xs:annotation>
        <xs:documentation>The identification of this voyage</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
        <xs:restriction base="xs:string">
          <xs:maxLength value="40"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:attribute>
    <xs:attribute name="SourceName" type="xs:string" use="required">
      <xs:annotation>
        <xs:documentation>Identification of the originator of this data</xs:documentation>
      </xs:annotation>
    </xs:attribute>
    <xs:attribute name="Source" use="required">
      <xs:annotation>
        <xs:documentation>Source/originator type: 1 = transponder 2 = database 3 = manual</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
        <xs:restriction base="xs:integer">
          <xs:enumeration value="1"/>
          <xs:enumeration value="2"/>
          <xs:enumeration value="3"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:attribute>
    <xs:attribute name="CargoType" use="optional">
      <xs:annotation>
        <xs:documentation>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
9 = No additional information</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
        <xs:restriction base="xs:integer">
          <xs:enumeration value="0"/>
          <xs:enumeration value="1"/>
          <xs:enumeration value="2"/>
          <xs:enumeration value="3"/>
          <xs:enumeration value="4"/>
          <xs:enumeration value="9"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:attribute>
    <xs:attribute name="Destination" type="xs:string" use="optional">
      <xs:annotation>
        <xs:documentation>Destination of the target</xs:documentation>
      </xs:annotation>
    </xs:attribute>
    <xs:attribute name="ETA" type="xs:dateTime" use="optional">
      <xs:annotation>
        <xs:documentation>Date and time in ISO 8601 UTC format (YYYY-MM-DDThh:mm:ss.sssZ) of the Expected Time Of
Arrival of the target.</xs:documentation>
      </xs:annotation>
    </xs:attribute>
    <xs:attribute name="ATA" type="xs:dateTime" use="optional">
      <xs:annotation>
        <xs:documentation>Date and time in ISO 8601 UTC format (YYYY-MM-DDThh:mm:ss.sssZ) of the Actual Time Of Arrival
of the target.</xs:documentation>
      </xs:annotation>
    </xs:attribute>
    <xs:attribute name="PersonsOnBoard" use="optional">
      <xs:annotation>
        <xs:documentation>Total number of persons on board (passengers, crew, pilots, etc)</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
        <xs:restriction base="xs:integer">
          <xs:minExclusive value="0"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:attribute>
    <xs:attribute name="AirDraught" use="optional">
      <xs:annotation>
        <xs:documentation>Actual air draught of the vessel in meters</xs:documentation>
```

```
      </xs:annotation>
      <xs:simpleType>
        <xs:restriction base="xs:decimal">
          <xs:minExclusive value="0"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:attribute>
    <xs:attribute name="Draught" use="optional">
      <xs:annotation>
        <xs:documentation>Actual draught of the vessel in meters</xs:documentation>
      </xs:annotation>
      <xs:simpleType>
        <xs:restriction base="xs:decimal">
          <xs:minExclusive value="0"/>
        </xs:restriction>
      </xs:simpleType>
    </xs:attribute>
  </xs:complexType>
</xs:element>
```