UN/CEFACT

SIMPLE, TRANSPARENT AND EFFECTIVE PROCESSES

FOR GLOBAL BUSINESS

BUSINESS REQUIREMENTS SPECIFICATION (BRS)

Vessel domain

Business domain: Fisheries

Business process: Electronic data exchange for fisheries control and management

Document identification: P1000 – 2; Vessel Domain

Title: Fisheries Language for Universal eXchange

UN/CEFACT International Trade and Business Processes Group:

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18/12/2013	0.0.3	6.4	Remarks from TR	DBC
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04/12/2014	2.0.2		TR: Changes of cardinality in Name element & Add new link to Structured Address.	EHO
05/12/2014	2.0.3		TR: Change of General Principles entities.	EHO
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13/02/2015	2.1.2		Editorial & Diagrams for publication.	EHO
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NOV2015	3.1.0		Editorial & Diagrams for publication after harmonization.	EHO

Business Requirements Specification

Table of contents

1 **Preamble**

This Business Requirements Specification (BRS) document builds upon the general principles set out in the P1000 – 1; General Principles BRS document and details the "Vessel" business domain identified in P1000 – 1 as P1000 – 2.

This BRS aims to standardise the exchange of fishing fleet data, more specifically the information directly related to fishing vessels and vessels supporting fishing operations.

The structure of this document is based on the structure of the UN/CEFACT Business Requirements Specification (BRS) document reference CEFACT/ICG/005, and makes use of the UN/CEFACT Modelling Methodology (UMM) approach and Unified Modelling Language (UML).

2 **References**

UN/CEFACT Modelling Methodology User Guide (CEFACT/TMG/N093)

UN/CEFACT Business Requirement Specification Document Template (CEFACT/ICG/005)

UN/CEFACT FLUX General Principles Business Requirement Specification Document (v2.x)

3 **Objective**

The objective of this document is to propose a standard for the communication of information of vessel characteristics, and optionally the history of changes applied on the vessel characteristics, between interested parties, such as the vessels' Flag States, International Institutions, Regional Fishery Bodies (RFBs), Regional Fishery Management Organisations (RFMOs) and many others.

4 Scope

4.1 General Context

The following diagram illustrates the general context of the business:
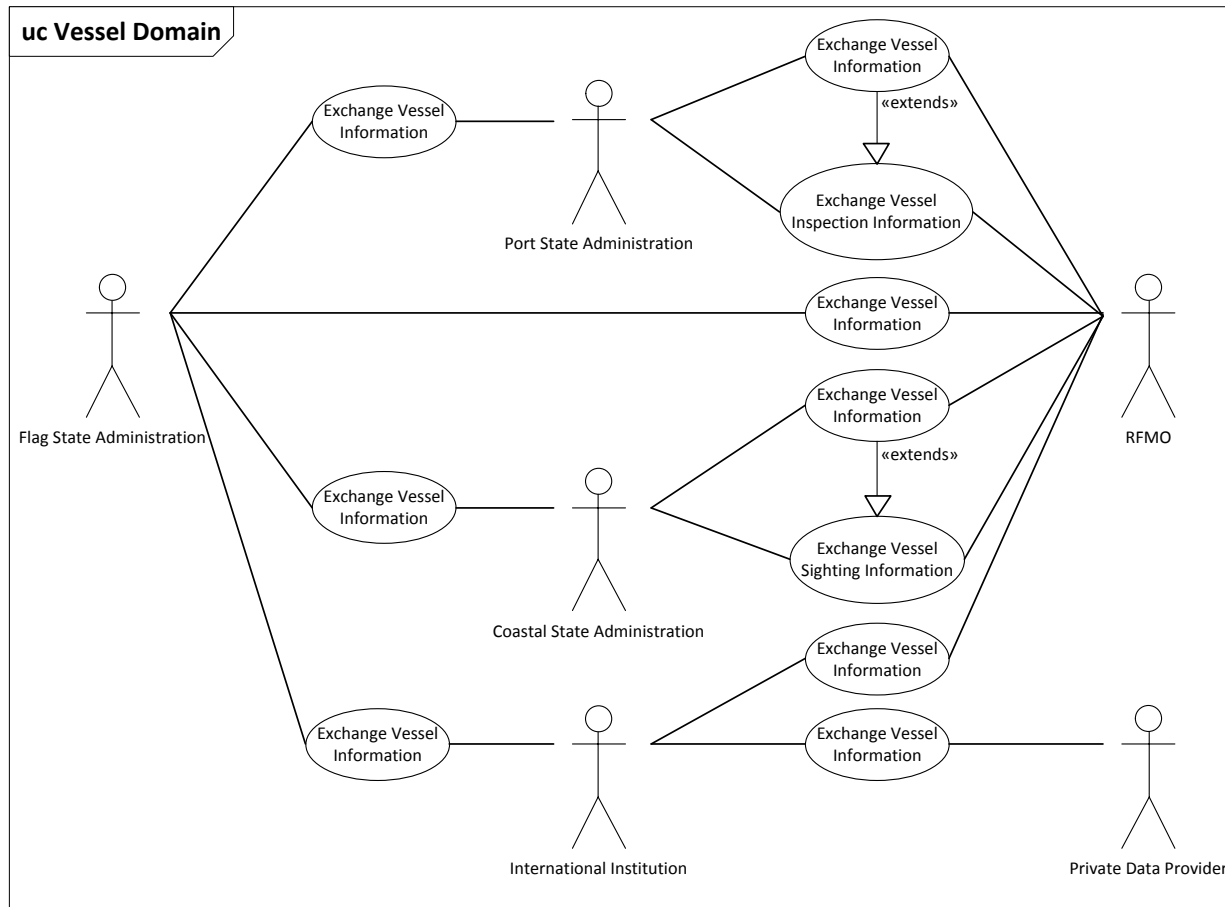
Figure 1: Use Case diagram for general context of Vessel domain

The worldwide context considers a number of parties which exchange vessel data, for internal use within the receiving party; for the receiving party to update, extend and return it or, possibly, for the receiving party to disseminate publicly. Each party may possibly act as both a sender and a receiver of data, and may perform data management operations on all or part of the data at any time. In each case, data may be requested by the receiver or reported by the sender according to the particular scenario at hand. The above diagram illustrates the most common parties and expected uses, but should not be considered to be exhaustive.

4.2 Vessel Domain Scope
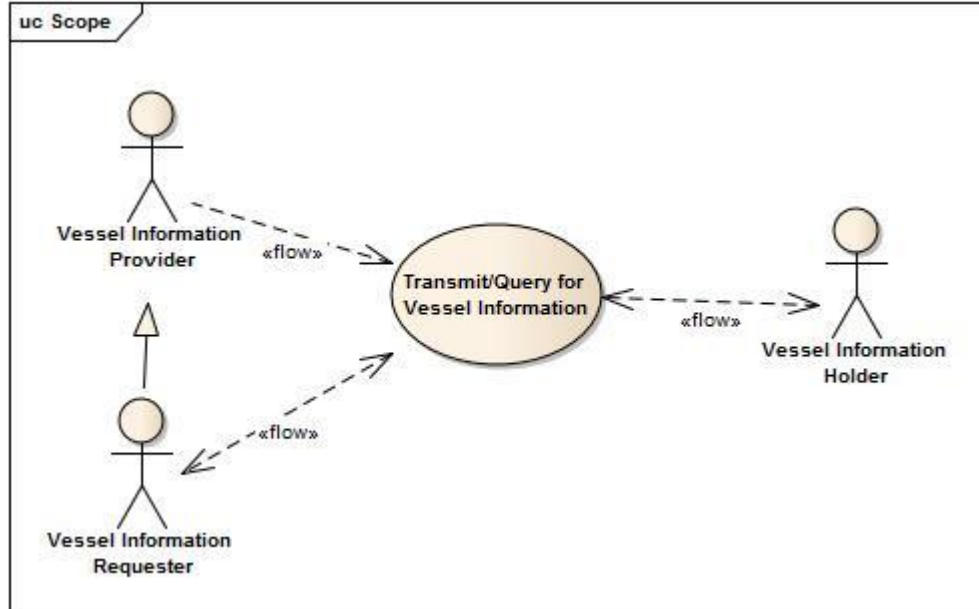
Figure 2: Scope of Vessel Domain

The scope of this project is limited to the exchange of information between two parties at a time, in a single direction. Examples include the Vessel Information data transmission between a Flag State Administration and an RFMO, or a Port State Administration and an International Institution, or a Private Data Provider and International Administration, and so forth.

The scope of the project includes also the possibility for a requester, who might be a vessel information provider too, to retrieve some information from one of the involved parties holding this information.

Categories	Description and Values
Business Process	General Message Exchange – Vessel information
Product Classification	Vessel data
Industry Classification	Fisheries sector
Geopolitical	Global
Official Constraints	National regulations Regional regulations (including EC regulations) Locally applicable regulations International agreements
Business Process Role	User of vessel information
Supporting Role	None
System Capabilities	Agreed level of security to protect data integrity

5 Stakeholders

Each actor as described in scope of this document can be one of the following stakeholders:

Flag State Administration	The administration of the Flag State of the vessel is considered, in general, to be the primary source of certified vessel information, and is therefore one of the providers of vessel data.
Coastal State Administration	The administration of the Coastal State where a vessel may be fishing generally requires vessel information and may be considered one of the receivers of vessel data. They could also be responsible for updating the data and sending it as part of vessel sightings information.
Port State Administration	The administration of the Port State where a vessel lands after a fishing trip to sell the catch, or to transport supplies into the harbour, definitely requires information on the vessels entering the port, but would also be ideal providers of updated data, given that they usually carry out inspections on the vessels.
International Institutions	International Institutions are often given the mandate to collect data from their members and disseminate data on their behalf, and may therefore be considered both holder and provider of the data, as the case may be.
RFBs and RFMOs	Regional Fishery Bodies (RFBs) and Regional Fishery Management Organisations (RFMOs) often require vessel information to issue authorisations, enforce control or simply manage the areas under their regulatory area, and should be considered consumers of vessel information.
Private Data Providers	Private data companies often obtain vessel information in order to carry out commercial activities, and may be considered to be providers of vessel information.
Other	It should not be excluded that other parties may require or be able to provide vessel information, or that any of the above mentioned parties may be considered both as provider or requester of vessel information.

6 Business Requirements

6.1 Business Requirements View

In the context of management of fishing vessels, and other vessels supporting fishing activity, parties need to have information on vessel identification numbers, physical characteristics, registration information, ownership and so forth. Data for individual vessels may be available at different sources, but it is often necessary to collect and put together the relevant data for a number of vessels, or to exchange individual vessel information with other parties.

6.2 Business process elaboration

Report Vessel Information

Principles

One party must report vessel information to another party, possibly at regular intervals or when a particular event occurs.
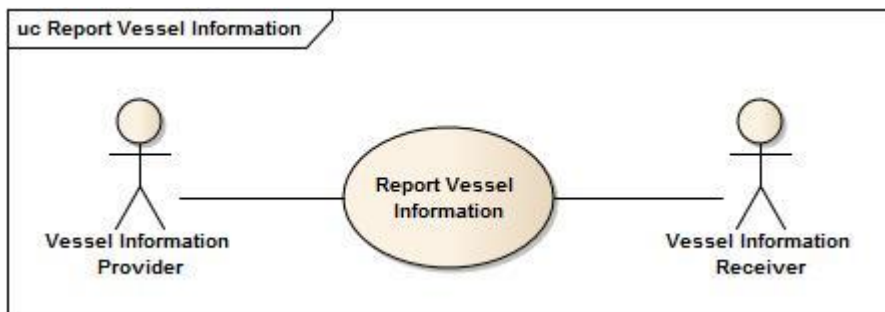
Use Case

Figure 3: Use Case diagram for Report Vessel Information message transmission

Business process name	Report Vessel Information
Identifier	RVI
Actors	Vessel Information Provider, Vessel Information Receiver
Description	Vessel Information Provider reports the vessel information to a partner who needs to receive it.
Pre-condition	Underlying framework to exchange FLUX business messages
Post-conditions	None
Scenarios	None
Remarks	None

Query for Vessel Information

Principles

One party requests vessel information to another party who holds this information, possibly in a Fleet Register, at regular intervals or when a particular event occurs.
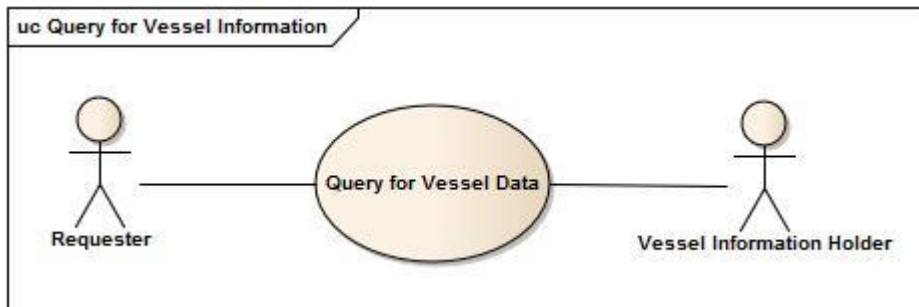
Use Case

Figure 4: Use Case diagram for Query for Vessel Information message transmission

Business process name	Query for Vessel information
Identifier	QVI
Actors	Vessel Information Requester, Vessel Information Holder
Description	A requester queries a partner holding vessel information and retrieves it.
Pre-condition	Underlying framework to exchange FLUX business messages
Post-conditions	None
Scenarios	None
Remarks	None

6.3 Information Flow Definition

Report Vessel Information Message Transmission

Activity Diagram

The following activity diagram defines the significant information flows between the vessel information provider and vessel register receiving the message.
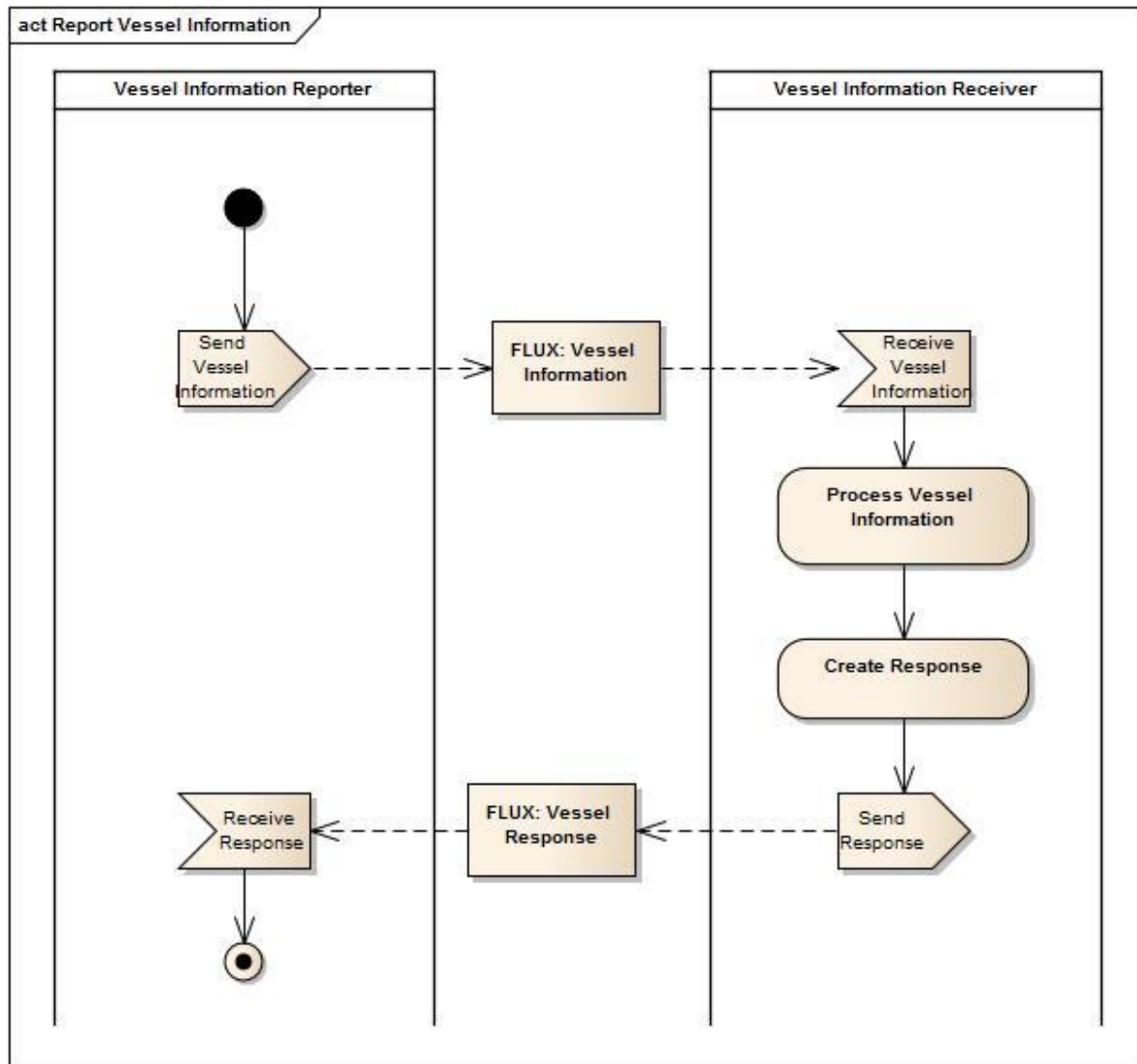
Figure 5: Activity Diagram for Report Vessel Information message transmission

In accordance with the FLUX general principles, all transmissions will end in a response from message receiver to message sender, indicating whether the message has been processed successfully or otherwise.

Query for Vessel Information Message Transmission

Activity Diagram

The following activity diagram defines the significant information flows between the requester for vessel information and the holder of this information.
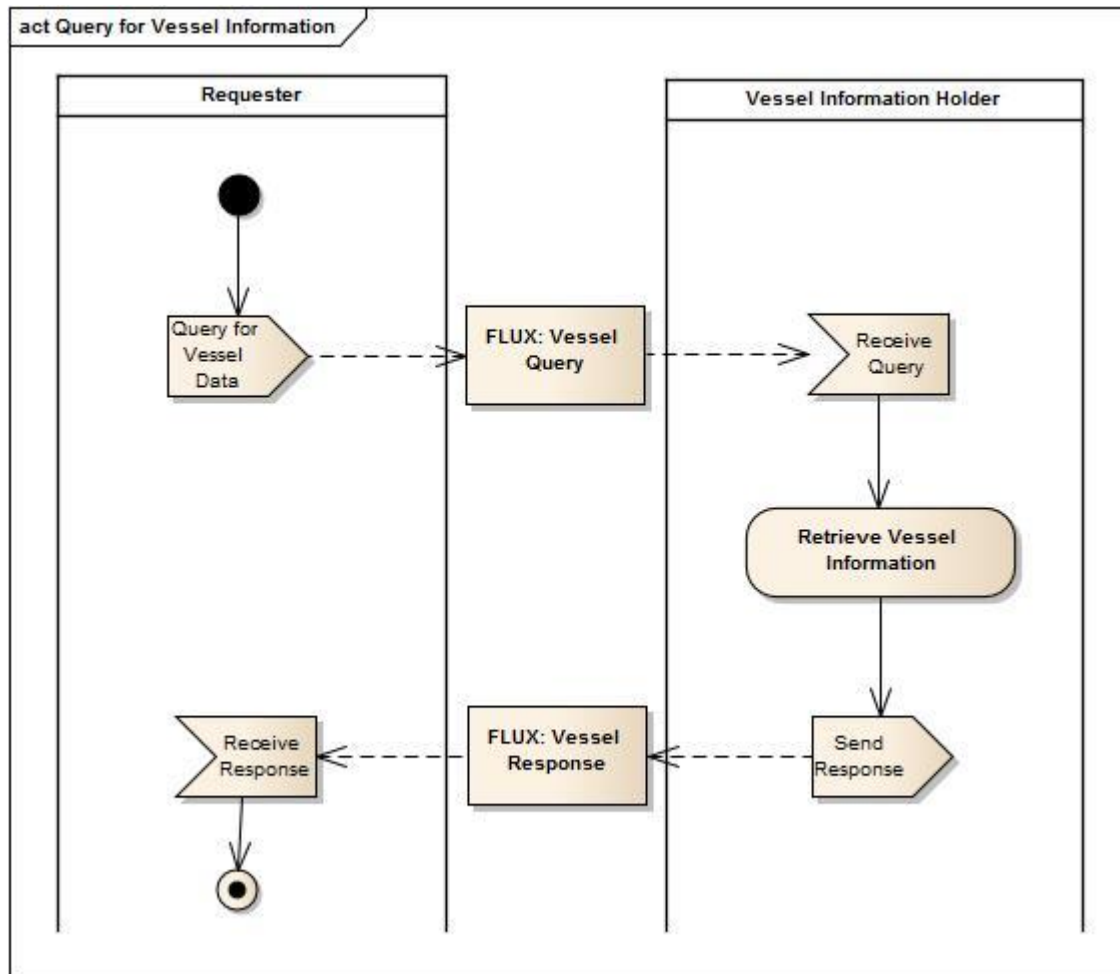
Figure 6: Activity Diagram for Query for Vessel Information message transmission

In accordance with the FLUX general principles, all transmissions will end in a response from message receiver to message sender, indicating whether the message has been processed successfully or otherwise.

6.4 Information model definition

The Class Diagram below describes all the necessary classes of information for a flow of information exchange in the context of Vessel domain message transmission.

FLUX Report Vessel Information Declaration:

Description: The type of message which is used when reporting for vessel information[1].

Figure 7: Class Diagram for Report Vessel Information message.

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[1] General Principles entities, such as *FLUX Result_ Document*, *FLUX Report Party*, *Validation Result_ Document, Validation_ Quality Analysis* are defined in FLUX P1000-1; General Principles BRS.

Vessel_ Event Entity

Description: Entity containing information of a significant occurrence or happening related to a vessel.

Mult.	Business term	Rel.	Type	Description
0..1	Vessel_ Identification	Att	Identifier	The vessel identifier for this vessel event.
0..1	Type	Att	Code	The code specifying the type for this vessel event.
0..n	Description	Att	Text	A textual description of this vessel event.
0..1	Occurrence	Att	Date Time	The date, time, date time, or other date time value of an occurrence of this vessel event.
0..1	Discrete	Ass	Delimited_ Period	The discrete delimited period for this vessel event.
0..n	Related	Ass	Vessel Historical_ Characteristic	A vessel historical characteristic related to this vessel event.
0..1	Related	Ass	Vessel_ Transport Means	The vessel transport means related to this vessel event.
0..n	Related	Ass	Validation Result_ Document	A validation result document related to this vessel event.

Delimited_ Period Entity

Description: Entity use to provide information of a period of time from a start date time onwards up to an end date time.

Mult.	Business term	Rel.	Type	Description
0..1	Start	Att	Date Time	The date, time, date time or other date time value for the start of this delimited period.
0..1	End	Att	Date Time	The date, time, date time or other date time value for the end of this delimited period.
0..1	Duration	Att	Measure	The measure of the length of time for this delimited period such as hours, days, weeks, months or years.

Vessel Historical_ Characteristic Entity

Description: A prominent attribute or aspect of the history related to a particular vessel.

Mult.	Business term	Rel.	Type	Description

1	Type	Att	Code	The code specifying a type of historical characteristic of a vessel.
0..n	Description	Att	Text	A textual description of this historical characteristic of a vessel.
0..1	Value	Att	Text	The value, expressed as text, of this historical characteristic of a vessel.
0..1	Value	Att	Indicator	The value, expressed as an indicator, for this historical characteristic of a vessel.
0..1	Value	Att	Code	The code specifying a value of this historical characteristic of a vessel.
0..1	Value	Att	Date Time	The value, expressed as a date, time, date time, or other date time value, of this historical characteristic of a vessel.
0..1	Value	Att	Measure	The measure of the value for this historical characteristic of a vessel.
0..1	Value	Att	Quantity	The value, expressed as a quantity, for this this historical characteristic of a vessel.

Vessel_ Transport Means Entity

Description: Entity containing the identification and characteristic information of a ship or boat.

Mult.	Business term	Rel.	Type	Description
0..n	Identification	Att	Identifier	An identifier for this transport means vessel, such as an identifier defined by the Food and Agriculture Organisation (FAO), the radio call sign, or an external marking.
0..n	Name	Att	Text	A name, expressed as text, of this transport means vessel.
0..n	Type	Att	Code	A code specifying a type of this vessel transport means.
0..1	Commissioning	Att	Date Time	The date, time, date time or other date time value of the commissioning of this vessel transport means, such as the date of issue of the first safety certificate, the date of first entry in official register of fishing vessels.
0..1	Operational Status	Att	Code	The code indicating the operational status for this vessel transport means, such as in service/commission, broken up, total loss, continued existence in doubt, laid-up.
0..1	Hull Material	Att	Code	The code indicating the material of the hull for this vessel transport means.
0..1	Draught	Att	Measure	The measure of the draught for this transport means vessel.
0..1	Speed	Att	Measure	The speed measured for this transport means vessel.
0..1	Trawling_ Speed	Att	Measure	The trawling speed measured for this transport means vessel.
0..1	Role	Att	Code	The code specifying the role of this vessel transport means.

0..n	Specified	Ass	Registration_ Event	A registration event specified for this vessel transport means.
0..1	Specified	Ass	Construction_ Event	The construction event specified for this vessel transport means.
0..n	Attached	Ass	Vessel_ Engine	A vessel engine attached to this transport means vessel.
0..n	Specified	Ass	Vessel_ Dimension	A dimension specified for this transport means vessel.
0..n	Illustrate	Ass	FLUX_ Picture	A FLUX picture illustrating this transport means vessel.
0..n	On Board	Ass	Fishing_ Gear	Fishing gear which is on board this transport means vessel.
0..n	Specified	Ass	Contact_ Party	A contact party specified for this transport means vessel.
0..1	Specified	Ass	Vessel_ Crew	The vessel crew specified for this transport means vessel.
0..n	Applicable	Ass	Vessel Storage_ Characteristic	A vessel storage characteristic applicable to this transport means vessel.
0..n	Applicable	Ass	Vessel Technical_ Characteristic	A technical characteristic of a vessel applicable to this transport means vessel.
0..n	Applicable	Ass	Vessel Equipment_ Characteristic	A vessel equipment characteristic applicable to this transport means vessel.
0..n	Applicable	Ass	Vessel Administrative_ Characteristic	A vessel administrative characteristic applicable to this transport means vessel.

Registration_ Event Entity

Description: Entity used to provide information on a significant occurrence related to a registration of person, animal, object or process.

Mult.	Business term	Rel.	Type	Description
0..n	Description	Att	Text	A textual description of this registration event.
0..1	Occurence	Att	Date Time	The date date, time, date time, or other date time value, of the occurrence of this registration event.
0..1	Related	Ass	Registration_ Location	The location related to this registration event.

Registration_ Location Entity

Description: Entity used to provide information on a physical location or place of registration, such as a country or a port.

Mult.	Business term	Rel.	Type	Description

0..1	Country	Att	Identifier	The identifier of a country for this registration location.
0..n	Description	Att	Text	A textual description of this registration location.
0..1	Geopolitical Region	Att	Code	The code specifying the geopolitical region for this registration location.
0..n	Identification	Att	Identifier	An identifier for this registration location, such as a United Nations Location Code (UNLOCODE) or GS1 Global Location Number (GLN).
0..n	Name	Att	Text	A name, expressed as text, of this registration location.
0..1	Type	Att	Code	The code specifying the type of registration location.
0..1	Physical	Ass	Structured_ Address	The physical structured address of this registration location.

Construction   Event Entity

Description: Entity used to provide information on a significant occurrence related to a construction of an object.

Mult.	Business term	Rel.	Type	Description
0..n	Description	Att	Text	A textual description of this construction event.
0..1	Occurrence	Att	Date Time	The date date, time, date time, or other date time value, of the occurrence of this construction event.
0..1	Related	Ass	Construction_ Location	The location related to this construction event.

Construction   Location Entity

Description: Entity used to provide information on a physical location or place of construction.

Mult.	Business term	Rel.	Type	Description
0..1	Country	Att	Identifier	The identifier of a country for this construction location.
0..n	Description	Att	Text	A textual description of this construction location.
0..1	Geopolitical Region	Att	Code	The code specifying the geopolitical region for this construction location.
0..n	Identification	Att	Identifier	An identifier for this construction location, such as a United Nations Location Code (UNLOCODE) or GS1 Global Location Number (GLN).
0..n	Name	Att	Text	A name, expressed as text, of this construction location.
0..1	Type	Att	Code	The code specifying the type of construction location.

0..n	Specified	Ass	Contact_ Party	A contact party specified for this construction location.
0..1	Physical	Ass	Structured_ Address	The physical structured address of this construction location.

Vessel_ Engine Entity

Description: Entity used to provide information of an engine which is used to move a ship or boat.

Mult.	Business term	Rel.	Type	Description
0..1	Serial Number	Att	Identifier	The serial number identifier of this vessel engine.
0..1	Type	Att	Code	The code specifying the type of vessel engine.
0..1	Role	Att	Code	The code specifying the role of this vessel engine, such as main or secondary.
0..1	Propulsion_ Type	Att	Code	The code specifying the type of propulsion for this vessel engine.
0..n	Power	Att	Measure	A measure of the power produced by this vessel engine, expressed in a unit such as horsepower.
0..1	Power Measurement Method	Att	Code	The code specifying the measurement method used for measuring the power of this vessel engine.
0..1	Manufacturer	Att	Code	The code specifying the manufacturer of this vessel engine.
0..1	Manufacturer	Att	Text	The manufacturer, expressed as a text, of this vessel engine.
0..1	Model	Att	Text	The model, expressed as a text, of this vessel engine.
0..n	Illustrate	Ass	FLUX_ Picture	A FLUX picture illustrating this vessel engine.

Vessel_ Dimension Entity

Description: A measure of length, tonnage, depth or breadth, expressed as type and value, for this vessel.

Mult.	Business term	Rel.	Type	Description
1	Type	Att	Code	The code specifying a type of dimension of this vessel.
1	Value	Att	Measure	The measure of the value for this vessel dimension.

Fishing_ Gear Entity

Description: Entity used to provide information on the apparatus which is used for fishing.

Mult.	Business term	Rel.	Type	Description
0..1	Type	Att	Code	The code specifying the type of fishing gear.
0..n	Role	Att	Code	The code specifying the role of this fishing gear, such as main gear, subsidiary gear.
0..n	Illustrate	Ass	FLUX_ Picture	A FLUX picture illustrating this fishing gear.
0..n	Applicable	Ass	Gear_ Characteristic	A characteristic applicable to this fishing gear.

Vessel Equipment Characteristic Entity

Description: A prominent attribute or aspect of equipment related to a particular vessel.

Mult.	Business term	Rel.	Type	Description
1	Type	Att	Code	The code specifying a type of vessel equipment characteristic, such as Vessel Monitoring System (VMS), Automatic Identification System (AIS),
0..n	Description	Att	Text	A textual description of this vessel equipment characteristic.
0..1	Value	Att	Measure	The value, expressed as value, for this vessel equipment characteristic.
0..n	Value	Att	Text	A value, expressed as text, of this vessel equipment characteristic.
0..n	Value	Att	Code	A code specifying a value of this vessel equipment characteristic.
0..1	Value	Att	Date Time	The value, expressed as a date, time, date time, or other date time value, of this vessel equipment characteristic.
0..1	Value	Att	Indicator	The value, expressed as an indicator, for this vessel equipment characteristic.
0..1	Value	Att	Quantity	The value, expressed as a quantity, for this vessel equipment characteristic.
0..1	Value	Ass	FLUX_ Binary File	The value for this vessel equipment characteristic, such as radio certificate, expressed in a FLUX binary file.

Vessel Administrative Characteristic Entity

Description: A prominent attribute or aspect of an administrative decision related to a vessel.

Mult.	Business term	Rel.	Type	Description

1	Type	Att	Code	The code specifying a type of administrative characteristic of a vessel, such as mainland fleet, aquaculture, public aid code, administrative decision code.
0..n	Description	Att	Text	A textual description of this vessel administrative characteristic.
0..1	Value	Att	Measure	The value, expressed as a measure, for this vessel administrative characteristic.
0..1	Value	Att	Text	The value, expressed as text, of this vessel administrative characteristic.
0..1	Value	Att	Code	The code specifying a value of this vessel administrative characteristic.
0..1	Value	Att	Date Time	The value, expressed as a date, time, date time, or other date time value, of this vessel administrative characteristic.
0..1	Value	Att	Indicator	The value, expressed as an indicator, for this vessel administrative characteristic.
0..1	Value	Att	Quantity	The value, expressed as a quantity, for this vessel administrative characteristic.
0..1	Value	Ass	FLUX_ Binary File	The value for this vessel administrative characteristic, such as registration certificate, expressed in a FLUX binary file.

FLUX_ Picture Entity

Description: Entity used to provide information about a picture, such as a digital photograph, used in the context of Fisheries Languages for Universal eXchange (FLUX).

Mult.	Business term	Rel.	Type	Description
0..1	Identification	Att	Identifier	The identifier of this FLUX picture.
0..1	Type	Att	Code	The code specifying a type of FLUX picture.
0..1	Taken	Att	Date Time	The date, time, date time, or other date value of when this FLUX picture was created.
0..1	Area Included	Att	Identifier	The area or location, expressed as an identifier, that is included in this FLUX picture.
0..1	Description	Att	Text	The textual description of this FLUX picture.
0..1	Digital Image	Att	Binary Object	Binary object data that is the actual digital image for this FLUX picture.

Contact_ Party Entity

Description: An individual, a group, or a body having a role as a contact.

Mult.	Business term	Rel.	Type	Description
0..n	Identification	Att	Identifier	A unique identifier of the contact party.
0..1	Name	Att	Text	The name, expressed as text, for this contact party.
0..n	Description	Att	Text	A textual description of this contact party.
0..n	Nationality_ Country	Att	Identifier	A unique country of nationality identifier for this contact party.
0..n	Language	Att	Code	A code specifying a language for this specific contact party.
0..1	Residence Country	Att	Identifier	The unique identifier of the residence country of this contact party.
0..n	Role	Att	Code	A code specifying the role of this contact party.
0..n	Specified	Ass	Structured_ Address	A structured address specified for this contact party.
0..n	Specified	Ass	Contact_ Person	A specified person for this contact party.
0..n	Telephone	Ass	Telecommunication_ Communication	Telephone communication information for this contact party.
0..n	Fax	Ass	Telecommunication_ Communication	A facsimile communication information for this contact party.
0..n	URI	Ass	Email_ Communication	An email URI communication for this contact party.

Contact_ Person Entity

Description: Entity used to provide information about an individual human being in a position to give assistance or information.

Mult.	Business term	Rel.	Type	Description
0..1	Title	Att	Text	The textual expression of the title associated with this contact person, such as Doctor.
0..1	Given Name	Att	Text	The name, expressed as text, given to this contact person, usually by parents at birth.
0..1	Middle Name	Att	Text	The middle name, expressed as text, of this contact person, usually given by parents at birth.
0..1	Family Name Prefix	Att	Text	The prefix, expressed as text, that precedes this contact person's family name, such as Van, Von.

0..1	Family Name	Att	Text	The name, expressed as text, that this contact person shares with members of his/her family.
0..1	Name Suffix	Att	Text	The suffix, expressed as text, that follows this contact person's name, such as Junior, Third.
0..1	Gender	Att	Code	The code specifying the gender of this contact person.
0..1	Alias	Att	Text	An alias, expressed as text, reflecting a shortened form of the name of this person or any other name such as a nickname by which this contact person may be known.
0..1	Telephone	Ass	Telecommunication_ Communication	Telephone communication information for this contact person.
0..1	Fax	Ass	Telecommunication_ Communication	Facsimile communication information for this contact person.
0..1	Email_ URI	Ass	Email_ Communication	The email Uniform Resource Identifier (URI) communication for this contact person.
0..1	Website_ URI	Ass	Website_ Communication	The website Uniform Resource Identifier (URI) communication for this contact person.

Vessel Technical Characteristic Entity

Description: Entity used to provide information on a prominent technical attribute or aspect related to a particular vessel, such as the speed or hull material.

Mult.	Business term	Rel.	Type	Description
1	Type	Att	Code	The code specifying a type of vessel technical characteristic, such as maximum speed, trawling speed or hull material.
0..n	Description	Att	Text	A description, expressed as text, of this vessel technical characteristic.
0..1	Value	Att	Measure	The value, expressed as value, for this vessel technical characteristic.
0..1	Value	Att	Text	The value, expressed as text, of this vessel technical characteristic.
0..1	Value	Att	Code	The code specifying a value of this vessel technical characteristic.
0..1	Value	Att	Date Time	The value, expressed as a date, time, date time, or other date time value, of this vessel technical characteristic.
0..1	Value	Att	Indicator	The value, expressed as an indicator, for this vessel technical characteristic.
0..1	Value	Att	Quantity	The value, expressed as an quantity, for this vessel technical characteristic.
0..1	Value	Ass	FLUX_ Binary File	The value for this vessel technical characteristic, such as or tonnage certificate, expressed in a FLUX binary file.

FLUX   Binary File Entity

Description: Entity used to provide information on a computer file stored in a binary format used in the Fisheries Language for Universal eXchange (FLUX).

Mult.	Business term	Rel.	Type	Description
0..1	Title	Att	Text	The title, expressed as text, for this FLUX binary file.
0..1	MIME	Att	Code	The code specifying the Multipurpose Internet Mail Extensions (MIME) type for this FLUX binary file.
0..1	Encoding	Att	Code	The code specifying the encoding of this FLUX binary file.
0..1	Character Set	Att	Code	The code specifying the character set of this FLUX binary file.
0..1	Included	Att	Binary Object	The included binary object for this FLUX binary file.
0..1	Description	Att	Text	The textual description of this FLUX binary file.
0..1	Size	Att	Measure	The measure of the size of this FLUX binary file.
0..1	Type	Att	Code	The code specifying the type of FLUX binary file, such as photo, spreadsheet.
0..1	Name	Att	Text	The name, expressed as text, of FLUX binary file.

Vessel Storage_ Characteristic Entity

Description: Entity used to provide information on a prominent attribute or aspect related to the storage of a particular vessel.

Mult.	Business term	Rel.	Type	Description
0..n	Type	Att	Code	A code specifying the type of this vessel storage characteristic.
0..1	Method_ Type	Att	Code	The code specifying a method type of this vessel storage characteristic.
0..n	Capacity_ Value	Att	Measure	A capacity value, expressed as measure, for this vessel storage characteristic.
0..n	Temperature_ Value	Att	Measure	A value of temperature, expressed as measure, for this vessel storage characteristic.
0..1	Unit_ Value	Att	Quantity	The unit value, expressed as a quantity, for this vessel storage characteristic.
0..1	Identification	Att	Identifier	The identifier for this vessel storage characteristic.

Vessel Crew Entity

Description: Entity used to provide information on a group of people who work on or operate a vessel.

Mult.	Business term	Rel.	Type	Description
0..1	Member	Att	Quantity	The number of members in this vessel crew.
0..1	Minimum_ Size	Att	Quantity	The minimum size, expressed as a quantity, of this vessel crew.
0..1	Maximum_ Size	Att	Quantity	The maximum size, expressed as a quantity, of this vessel crew.
0..1	On deck_ Size	Att	Quantity	The size, expressed as a quantity, of this vessel crew working on the deck.
0..1	Above deck_ Size	Att	Quantity	The size, expressed as a quantity, of this vessel crew working above the deck.

Gear_ Characteristic Entity

Description: Entity used to provide information on a prominent attribute or aspect related to a gear.

Mult.	Business term	Rel.	Type	Description
0..1	Type	Att	Code	The code specifying a type of gear characteristic.
0..n	Description	Att	Text	A description, expressed as text, of this gear characteristic.
0..1	Value	Att	Measure	The value, expressed as a measure, for this gear characteristic.
0..1	Value	Att	Date Time	The value, expressed as a date, time, date time, or other date time value, of this gear characteristic.
0..1	Value	Att	Indicator	The value, expressed as an indicator, for this gear characteristic.
0..1	Value	Att	Code	The code specifying a value of this gear characteristic.
0..1	Value	Att	Text	The value, expressed as text, of this gear characteristic.
0..1	Value	Att	Quantity	The value, expressed as a quantity, of this gear characteristic.

FLUX Vessel Query Declaration:

Description: The type of message which is used for querying for vessel information[2].
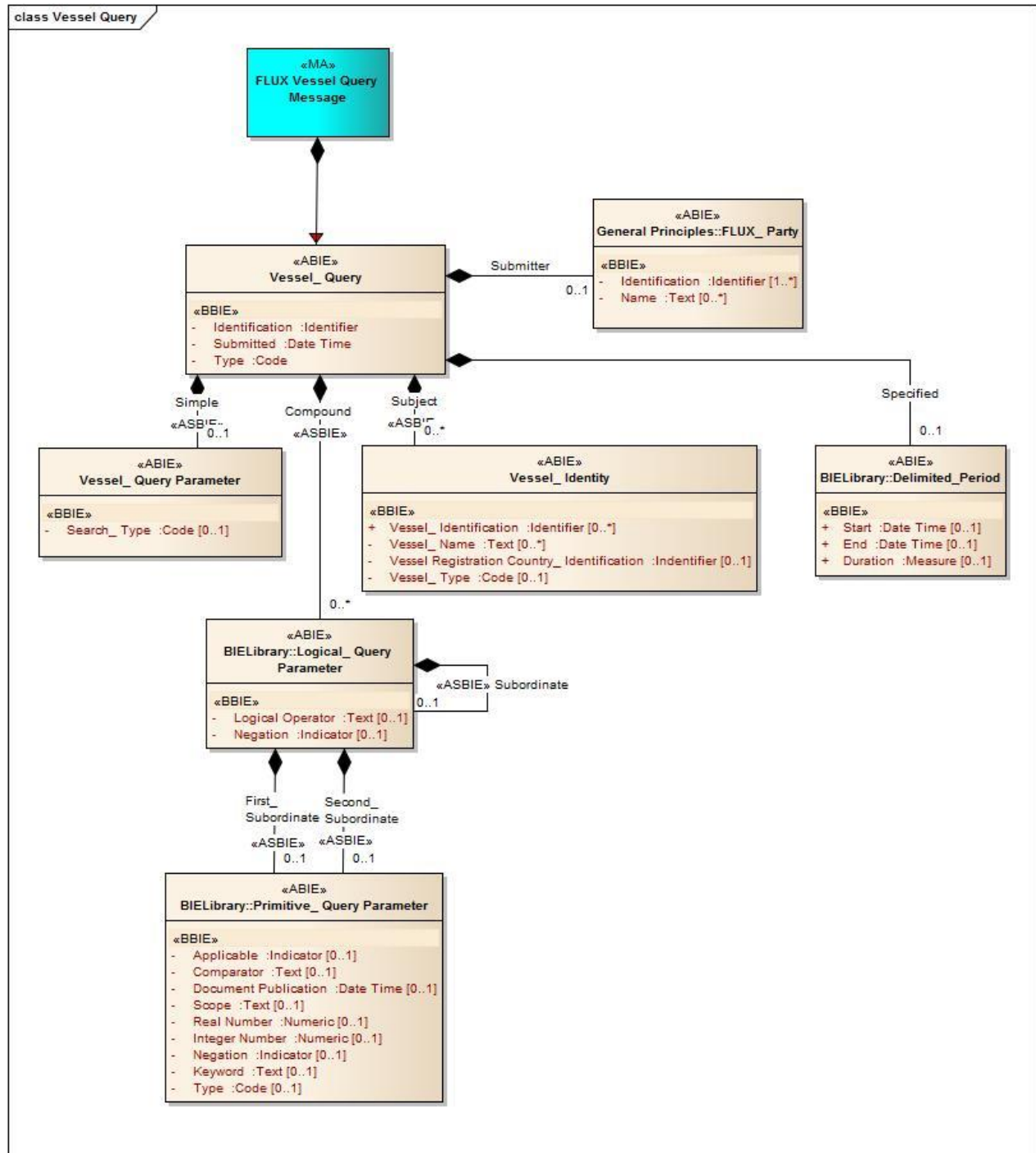

Figure 8: Class Diagram for FLUX Vessel Query message.

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[2] General Principles entities, such as FLUX_ Party, are defined in FLUX P1000-1; general principles BRS.

Vessel_ Query Entity

Description: Entity containing a formally raised question or request for information for vessel.

Mult.	Business term	Rel.	Type	Description
1	Identification	Att	Identifier	The identifier for this vessel query.
1	Submitted	Att	Date Time	The date, time, date time, or other date time value when this vessel query was submitted.
1	Type	Att	Code	The code specifying the type of vessel query.
0..1	Submitter	Ass	FLUX_ Party	The FLUX party that submits this vessel query.
0..1	Simple	Ass	Vessel_ Query Parameter	The simple vessel query parameter for this vessel query.
0..n	Compound	Ass	Logical_ Query Parameter	A compound logical query parameter for this vessel query.
0..1	Subject	Ass	Vessel_ Identity	The identity of a subject of this vessel query.
0..1	Specified	Ass	Delimited_ Period	The delimited period of time specified for this vessel query.

Vessel_ Query Parameter Entity

Description: Entity containing information that limits or restricts the scope of a vessel query.

Mult.	Business term	Rel.	Type	Description
0..1	Search_ Type	Att	Code	The code specifying the type of search parameter for this vessel query, such as full or partial.

Vessel_ Identity Entity

Description: Entity containing information which uniquely identifies a vessel.

Mult.	Business term	Rel.	Type	Description
0..n	Vessel_ Identification	Att	Identifier	A vessel identifier for this vessel identity, such as an identifier defined by the Food and Agriculture Organisation (FAO), the radio call sign, or an external marking.
0..n	Vessel_ Name	Att	Text	A vessel name, expressed as a text, for this vessel query identity.
0..1	Vessel Registration Country_ Identification	Att	Identifier	The identifier of the registration country for this vessel identity.
0..1	Vessel_ Type	Att	Code	The code specifying the type of vessel for this vessel identity.

Logical_ Query Parameter Entity

Description: Entity containing parameter information on logical operations of a query.

Mult.	Business term	Rel.	Type	Description
0..1	Logical Operator	Att	Text	The logical operator, expressed as text, for this logical query parameter.
0..1	Negation	Att	Indicator	The indication of whether or not this logical query parameter is a negation.
0..1	Subordinate	Ass	Logical_ Query Parameter	The subordinate logical query parameter for this logical query parameter.
0..1	First_ Subordinate	Ass	Primitive_ Query Parameter	The first subordinate primitive query parameter for this logical query parameter.
0..1	Second_ Subordinate	Ass	Primitive _ Query Parameter	The second subordinate primitive query parameter for this logical query parameter.

Primitive_ Query Parameter Entity

Description: Entity containing a query parameter that details a component of a query at the lowest level, typically identifying a comparison to a single value.

Mult.	Business term	Rel.	Type	Description
0..1	Applicable	Att	Indicator	The indication of whether or not this primitive query parameter is applicable.
0..1	Comparator	Att	Text	The comparator, expressed as text, for this primitive query parameter.
0..1	Document Publication	Att	Date Time	The date, time, date time, or other date time value for a document publication of this primitive query parameter.
0..1	Scope	Att	Text	The scope, expressed as text, for this primitive query parameter.
0..1	Real Number	Att	Numeric	The value of the real number for this primitive query parameter.
0..1	Integer Number	Att	Numeric	The value of the integer number for this primitive query parameter.
0..1	Negation	Att	Indicator	The indication of whether or not this primitive query parameter is a negation.
0..1	Keyword	Att	Text	The keyword, expressed as text, for this primitive query parameter.
0..1	Type	Att	Code	The code specifying the type of primitive query parameter.

FLUX Vessel Response Declaration:

Description: The type of message which is used for responding to a report or query for vessel information[3]. All entities included in this data model are identical to the ones defined above.
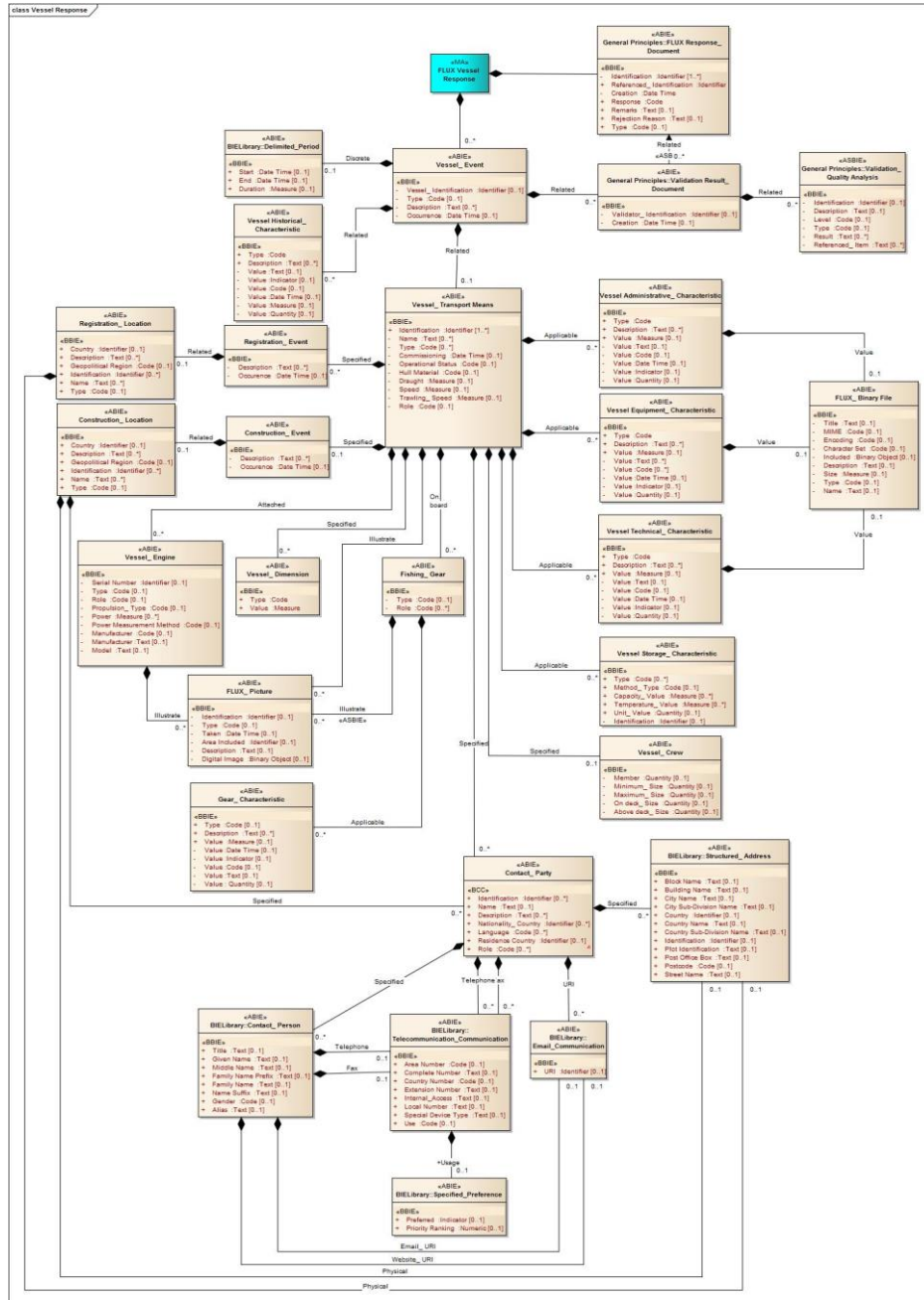

Figure 9: Class Diagram for Vessel Response message

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[3] General Principles entities, such as *FLUX_ Response*, are defined in FLUX P1000-1; general principles BRS.