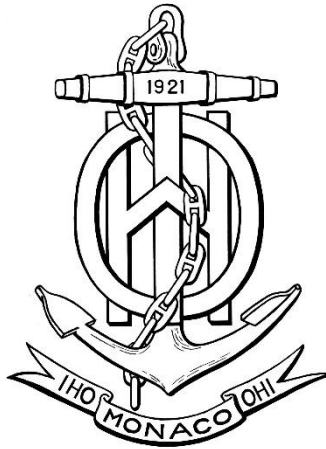# INTERNATIONAL HYDROGRAPHIC ORGANIZATION

MARINE RADIO SERVICES PRODUCT SPECIFICATION

IHO Publication S-123

Appendix D-2
GML Data Format Documentation

Edition 1.0.0 – January 2019

Schema **S123.xsd**

Elements	Complex types	Simple types
Applicability	**AbstractRXNType**	**actionOrActivityType**
Authority	**ApplicabilityType**	**cardinalDirectionType**
Building	**AuthorityType**	**categoryOfAuthorityType**
CoastguardStation	**bearingInformationType**	**categoryOfBroadcastCommunicationType**
ContactDetails	**BuildingType**	**categoryOfCargoType**
DataCoverage	**CoastguardStationType**	**categoryOfCommPrefType**
DataQuality	**contactAddressType**	**categoryOfDangerousOrHazardousCargoType**
Dataset	**ContactDetailsType**	**categoryOfFrcstAndWarningAreaType**
FeatureType	**CurveOrSurface**	**categoryOfGMDSSAreaType**
ForecastAreaAggregate	**DataCoverageType**	**categoryOfLandmarkType**
FuzzyAreaAggregate	**DataQualityType**	**categoryOfMaritimeBroadcastType**
GMDSSArea	**DatasetType**	**categoryOfRadioMethodsType**
InclusionType	**facsimileDrumSpeedType**	**categoryOfRadioStationType**
IndeterminateZone	**featureNameType**	**categoryOfRelationshipType**
InformationType	**FeatureType**	**categoryOfRxNType**
InmarsatOceanRegionArea	**fixedDateRangeType**	**categoryOfScheduleType**
Landmark	**ForecastAreaAggregateType**	**categoryOfTemporalVariationType**
MetaFeatureType	**frequencyPairType**	**categoryOfTextType**
NauticalInformation	**FuzzyAreaAggregateType**	**categoryOfVesselRegistryType**
NavigationalMeteorologicalArea	**GM_Curve**	**categoryOfVesselType**
NavtexStationArea	**GM_Point**	**comparisonOperatorType**
NonStandardWorkingDay	**GM_Surface**	**dataAssessmentType**
PermissionType	**GMDSSAreaType**	**dayOfWeekType**
QualityOfNonBathymetricData	**graphicType**	**Decimal0.0To360.0**
QualityOfTemporalVariationType	**horizontalPositionalUncertainty**	**functionType**
RadioServiceArea	**IMemberType**	**informationConfidenceType**
RadioServiceAreaAggregate	**InclusionType**	**ISO3166-alpha2**
RadioStation	**IndeterminateZoneType**	**ISO639-2**
Recommendations	**informationType**	**ISO639-3**
Regulations	**InformationTypeType**	**jurisdictionType**
Restrictions	**InmarsatOceanRegionAreaType**	**logicalConnectivesType**
ServiceHours	**LandmarkType**	**membershipType**
SpatialQuality	**MemberType**	**minutesOfHourType**
SpatialQualityPoints	**MetaFeatureType**	**multiplicityOfLightsType**
TextPlacement	**NauticalInformationType**	**NonNegativeDecimal**
WeatherForecastWarningArea	**NavigationalMeteorologicalAreaType**	**NonNegativeDecimal.1**
	NavtexStationAreaType	**onlineFunctionType**
	NonStandardWorkingDayType	**operationType**
	onlineResourceType	**QUAPOSType**
	orientationType	**sourceTypeType**
	periodicDateRangeType	**statusType**
	PermissionType	**telecommunicationServiceType**

4   Data Classification and Encoding Guide

PointCurveSurface

PointOrCurve

PointOrSurface

QualityOfNonBathymetricDataType

QualityOfTemporalVariationType

radiocommunicationsType

RadioServiceAreaAggregateType

RadioServiceAreaType

radioStationCommunicationDescriptionType

RadioStationType

RecommendationsType

RegulationsType

RestrictionsType

rxnCodeType

S100_TruncatedDate

scheduleByDoWType

ServiceHoursType

sourceIndicationType

SpatialQuality

SpatialQualityPoints

surveyDateRangeType

telecommunicationsType

textContentType

TextPlacement

timeOfObservationType

timesOfTransmissionType

tmIntervalsByDoW

vesselsMeasurementsType

WeatherForecastWarningAreaType

textJustificationType

textTypeType

timeReferenceType

transmissionRegularityType

txIdentCharType

vesselsCharacteristicsType

vesselsCharacteristicsUnitType

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element **Applicability**
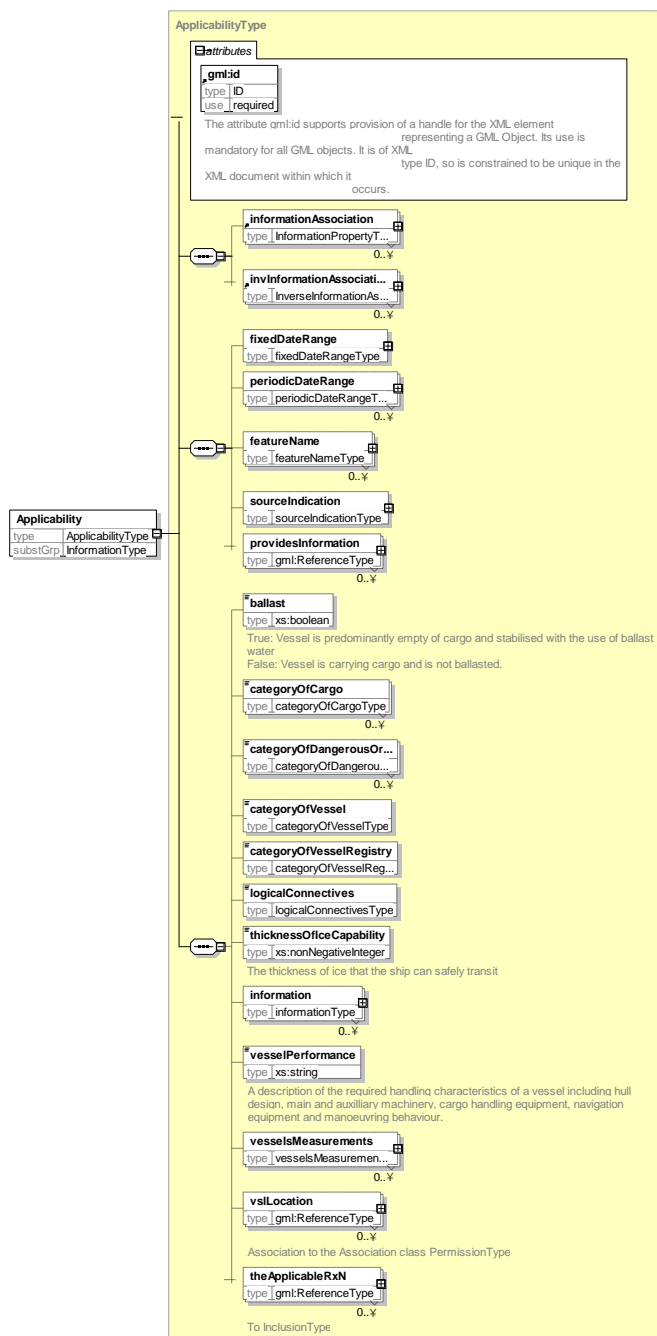
diagram	
type	**ApplicabilityType**
substitution group	**InformationType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation ballast categoryOfCargo categoryOfDangerousOrHazardousCargo categoryOfVessel categoryOfVesselRegistry logicalConnectives thicknessOfIceCapability information vesselPerformance vesselsMeasurements vslLocation theApplicableRxN**

element **Authority**

diagram	
type	**AuthorityType**
substitution group	**InformationType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation categoryOfAuthority textContent theContactDetails theServiceHours theInformation**

element **Building**
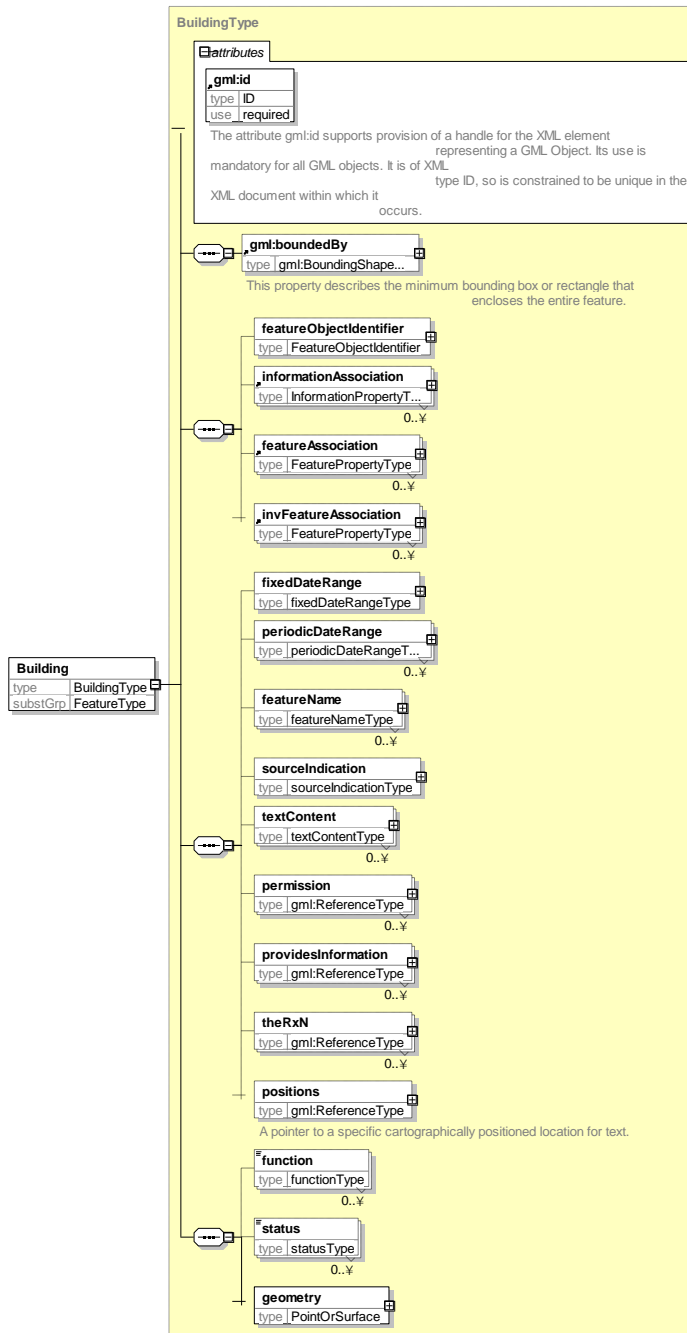
diagram	
type	**BuildingType**
substitution group	**FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions function status geometry**

element **CoastguardStation**
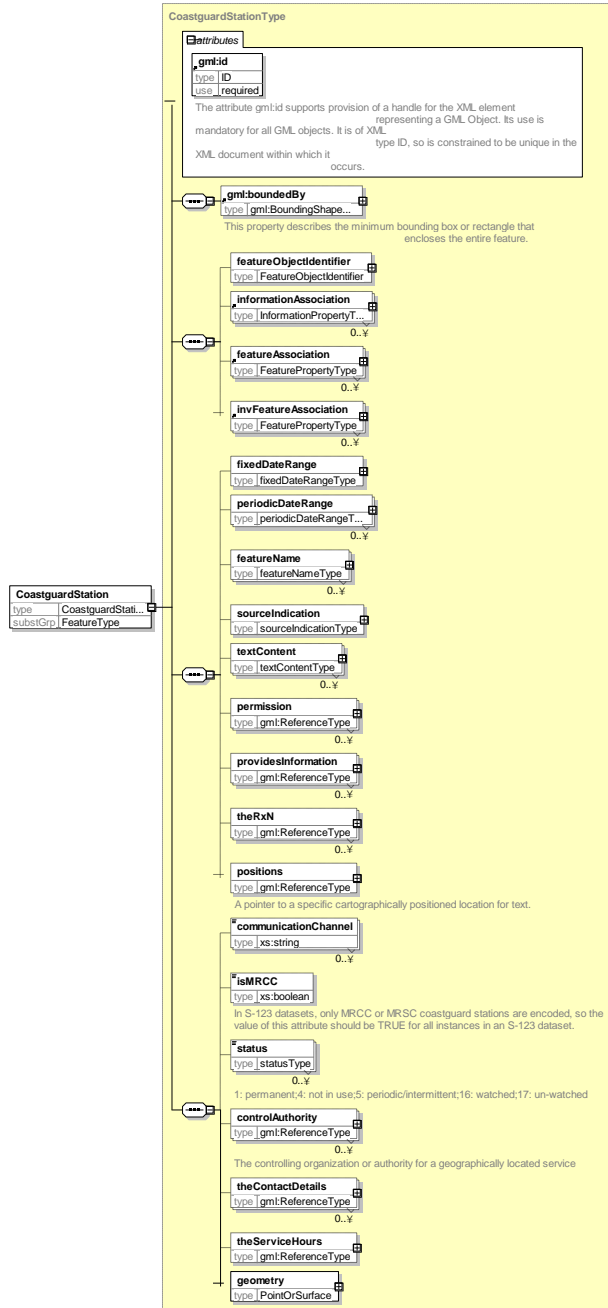
diagram	
type	**CoastguardStationType**
substitution group	**FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions communicationChannel isMRCC status controlAuthority theContactDetails theServiceHours geometry**

element **ContactDetails**

diagram	
	ContactDetailsType **attributes** **gml:id** type ID use required The attribute gml:id supports provision of a handle for the XML element representing a GML Object. Its use is mandatory for all GML objects. It is of XML type ID, so is constrained to be unique in the XML document within which it occurs. **informationAssociation** type InformationPropertyT... 0..∞ **invInformationAssociati...** type InverseInformationAs... 0..∞ **fixedDateRange** type fixedDateRangeType **periodicDateRange** type periodicDateRangeT... 0..∞ **featureName** type featureNameType 0..∞ **sourceIndication** type sourceIndicationType **providesInformation** type gml:ReferenceType 0..∞ **ContactDetails** type ContactDetailsT... substGrp InformationType **callName** type xs:string The designated call name of a station, e.g. radio station, radar station, pilot. This is the name used when calling a radio station by radio i.e. "Singapore Pilots". **callSign** type xs:string The designated call-sign of a radio station. **communicationChannel** type xs:string 0..∞ **contactAddress** type contactAddressType 0..∞ **frequencyPair** type frequencyPairType 0..∞ **contactInstructions** type xs:string supplemental instructions on how or when to contact the individual, organisation, or service **information** type informationType 0..∞ **mMSICode** type xs:int The Maritime Mobile Service Identity (MMSI) Code is formed of a series of nine digits which are transmitted over the radio path in order to uniquely identify ship stations, ship earth stations, coast stations, coast earth stations, and group calls. These identities are formed in such a way that the identity or part thereof can be used by telephone and telex subscribers connected to the general telecommunications network principally to call ships automatically. **onlineResource** type onlineResourceType 0..∞ Information about online sources from which a resource or data can be obtained (ISO 19115, adapted) **telecommunications** type telecommunications... 0..∞ information for contact by means of a telecommunications service. Distinctions: emailAddress, internetAddress, callName, callSign, COMCHA **radiocommunications** type radiocommunication... 0..∞ When bound to ContactDetails, only the listed sub-attributes may be used: communicationChannel contactInstructions frequencypair categoryOfChannelOrFrequencyPreference categoryOfRadioMethods tmIntervalsByDoW **theAuthority** type gml:ReferenceType 0..∞ Implements reverse association from ContactDetails to Authority from the April 2017 model. To be added to feature catalogue.
type	**ContactDetailsType**
substitution group	**InformationType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation callName callSign communicationChannel contactAddress frequencyPair contactInstructions information mMSICode onlineResource telecommunications radiocommunications theAuthority**

element **DataCoverage**

diagram	
type	**DataCoverageType**
substitution group	**MetaFeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation maximumDisplayScale minimumDisplayScale geometry**

element **DataQuality**

diagram	
	DataQualityType **attributes** **gml:id** type ID use required The attribute gml:id supports provision of a handle for the XML element representing a GML Object. Its use is mandatory for all GML objects. It is of XML type ID, so is constrained to be unique in the XML document within which it occurs. **gml:boundedBy** type gml:BoundingShape... This property describes the minimum bounding box or rectangle that encloses the entire feature. **DataQuality** type DataQualityType substGrp MetaFeatureType **featureObjectIdentifier** type FeatureObjectIdentifier **informationAssociation** type InformationPropertyT... 0..¥ **featureAssociation** type FeaturePropertyType 0..¥ **invFeatureAssociation** type FeaturePropertyType 0..¥ **information** type informationType 0..¥ Use of attribute information is discouraged for nautical publications data quality meta-features.

type	**DataQualityType**
substitution group	**MetaFeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation information**

element **Dataset**
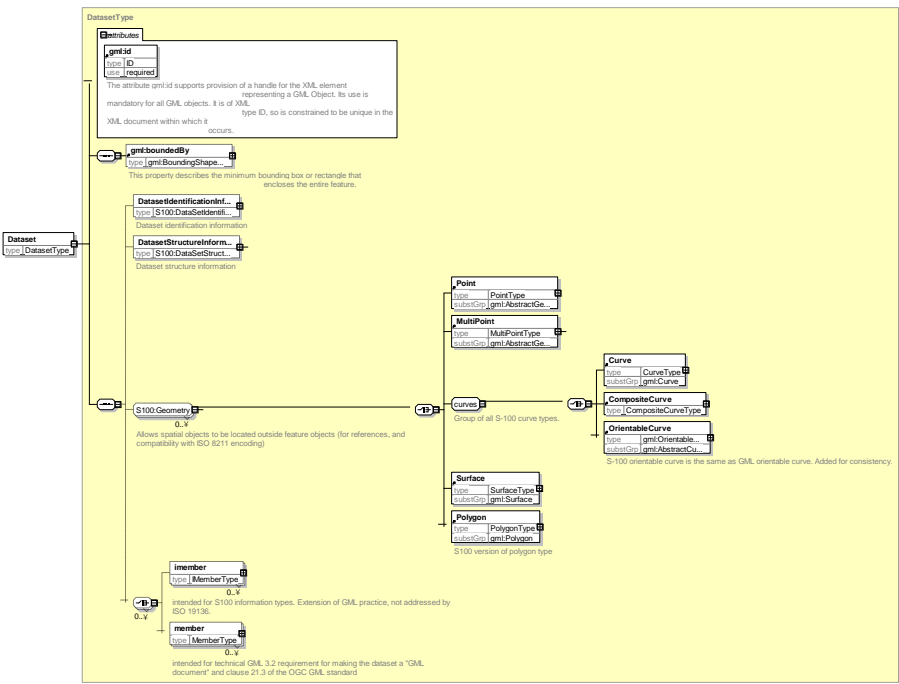
diagram	
type	**DatasetType**
children	**gml:boundedBy DatasetIdentificationInformation DatasetStructureInformation Point MultiPoint Curve CompositeCurve OrientableCurve Surface Polygon imember member**

element **FeatureType**
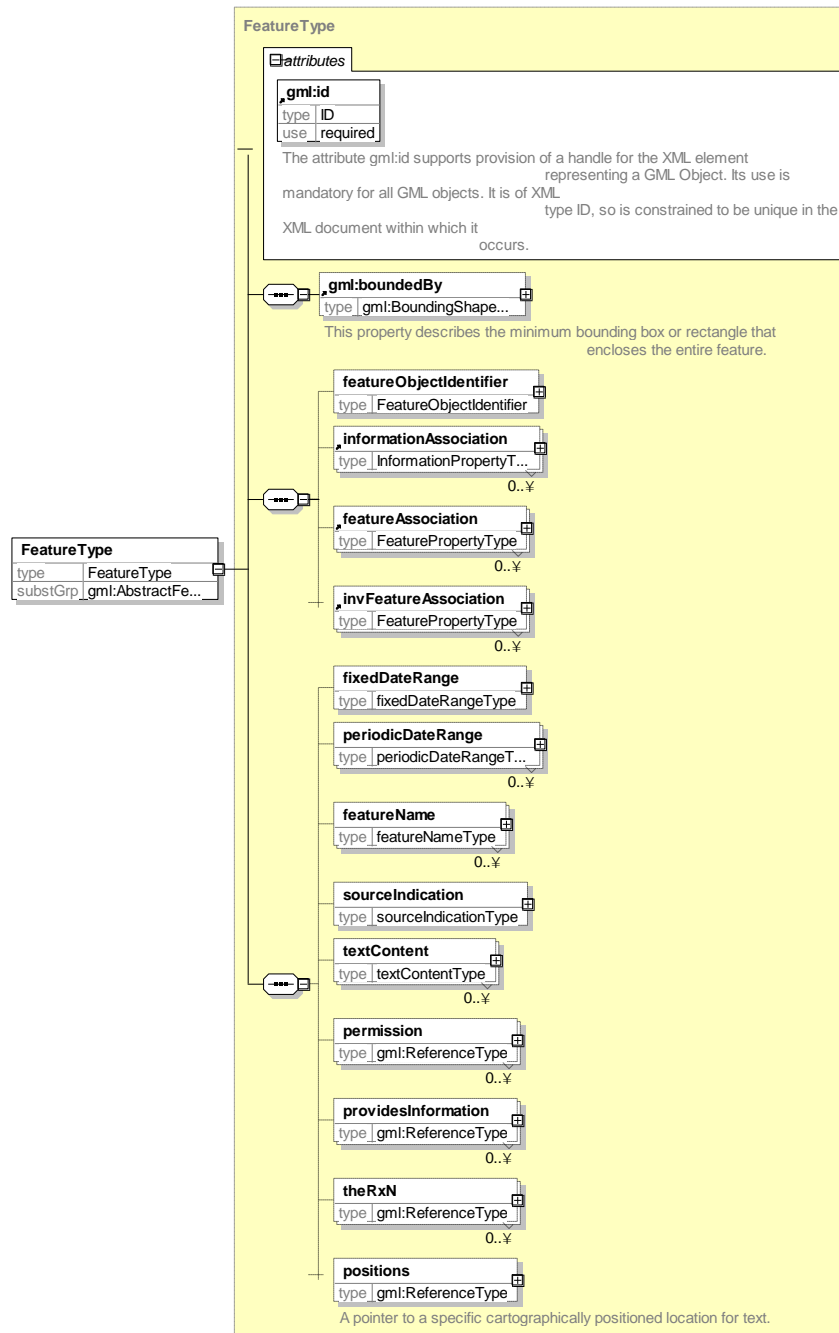
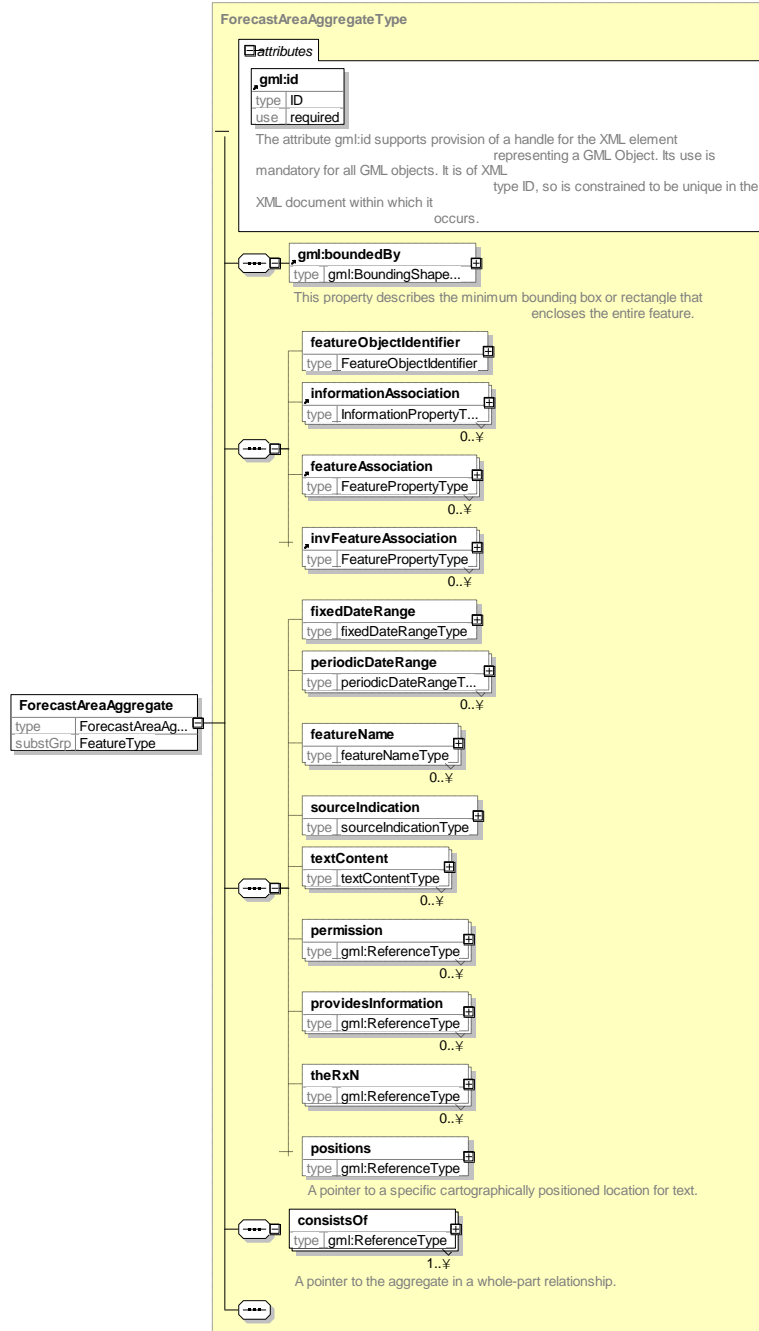|	
diagram	
type	**FeatureType**
substitution group	**gml:AbstractFeature**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions**

element **ForecastAreaAggregate**

diagram	 ForecastAreaAggregateType attributes **gml:id** type ID use required The attribute gml:id supports provision of a handle for the XML element representing a GML Object. Its use is mandatory for all GML objects. It is of XML type ID, so is constrained to be unique in the XML document within which it occurs. **gml:boundedBy** type gml:BoundingShape... This property describes the minimum bounding box or rectangle that encloses the entire feature. **featureObjectIdentifier** type FeatureObjectIdentifier **informationAssociation** type InformationPropertyT... 0..¥ **featureAssociation** type FeaturePropertyType 0..¥ **invFeatureAssociation** type FeaturePropertyType 0..¥ **fixedDateRange** type fixedDateRangeType **periodicDateRange** type periodicDateRangeT... 0..¥ **ForecastAreaAggregate** type ForecastAreaAg... substGrp FeatureType **featureName** type featureNameType 0..¥ **sourceIndication** type sourceIndicationType **textContent** type textContentType 0..¥ **permission** type gml:ReferenceType 0..¥ **providesInformation** type gml:ReferenceType 0..¥ **theRxN** type gml:ReferenceType 0..¥ **positions** type gml:ReferenceType A pointer to a specific cartographically positioned location for text. **consistsOf** type gml:ReferenceType 1..¥ A pointer to the aggregate in a whole-part relationship.
type	**ForecastAreaAggregateType**
substitution group	**FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions consistsOf**

element **FuzzyAreaAggregate**

diagram	
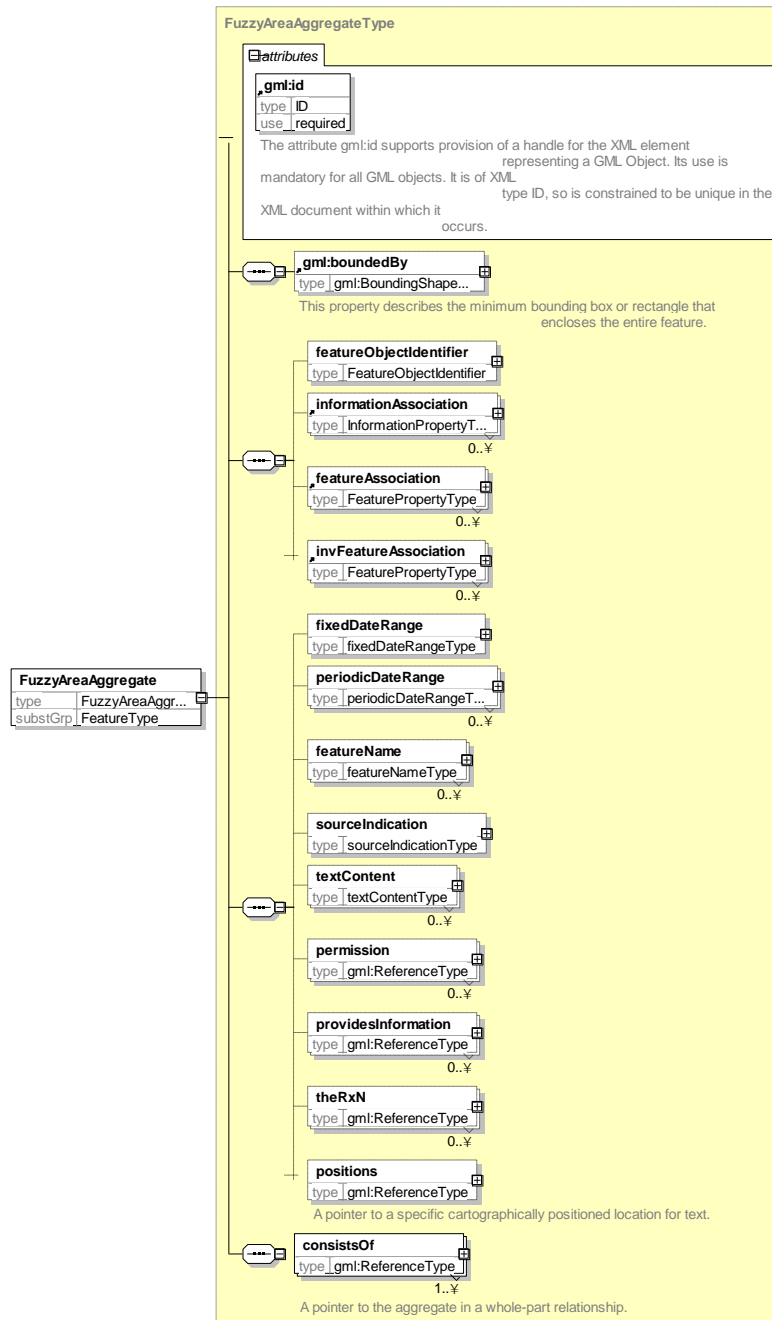
type	**FuzzyAreaAggregateType**
substitution group	**FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions consistsOf**

element **GMDSSArea**
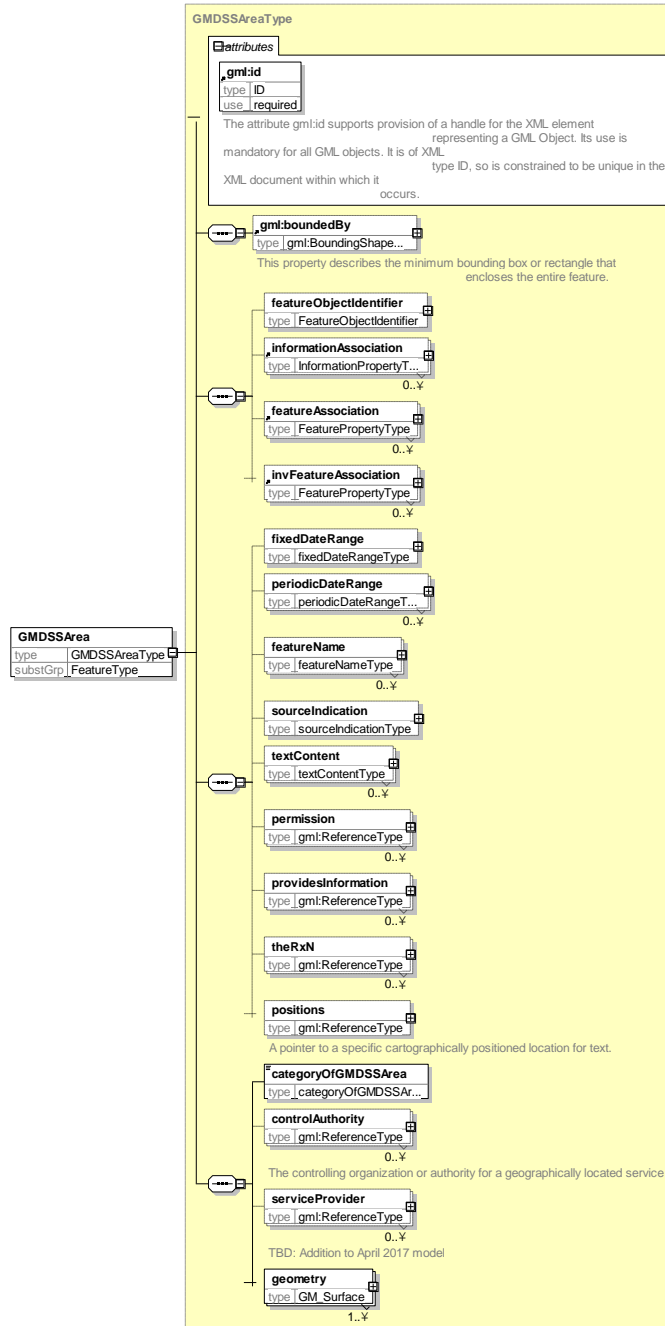
diagram	
type	**GMDSSAreaType**
substitution group	**FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions categoryOfGMDSSArea controlAuthority serviceProvider geometry**

element **InclusionType**

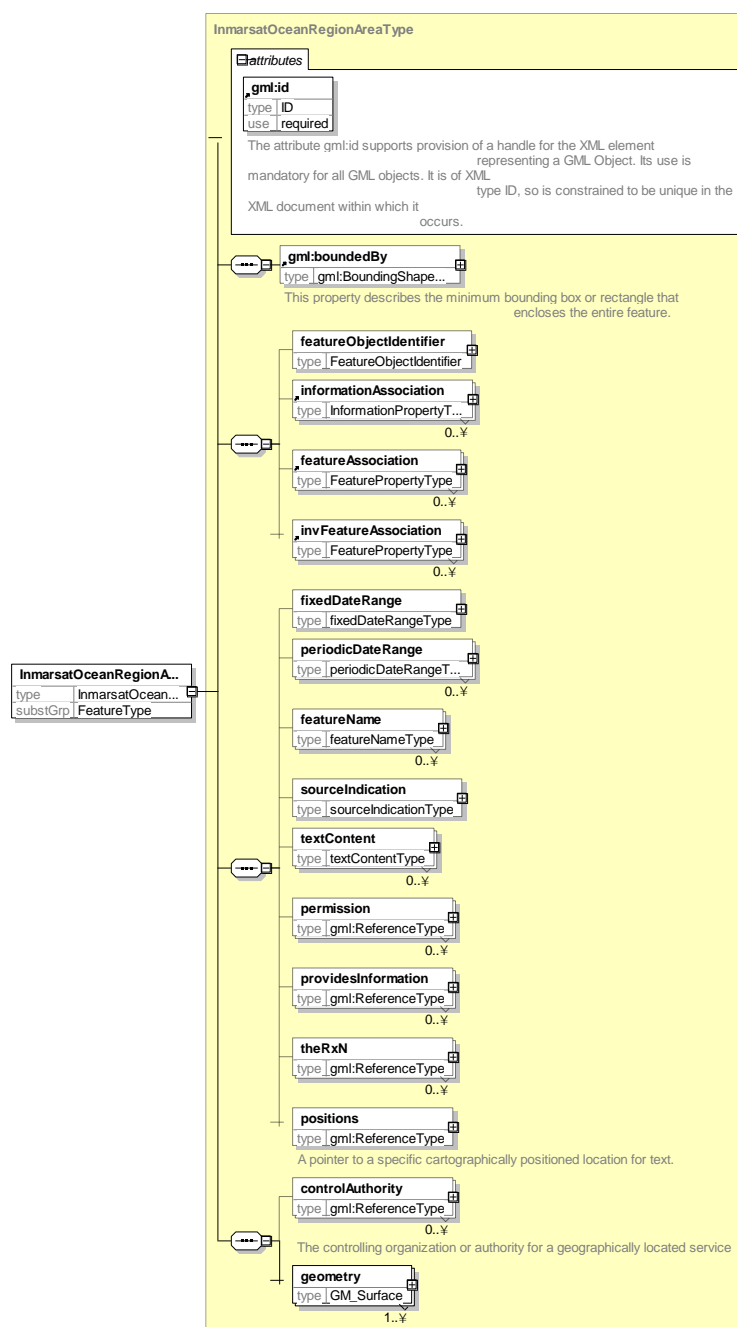|	
diagram	
type	**InclusionType**
substitution group	**InformationType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation membership theApplicableRxN isApplicableTo**

element **IndeterminateZone**
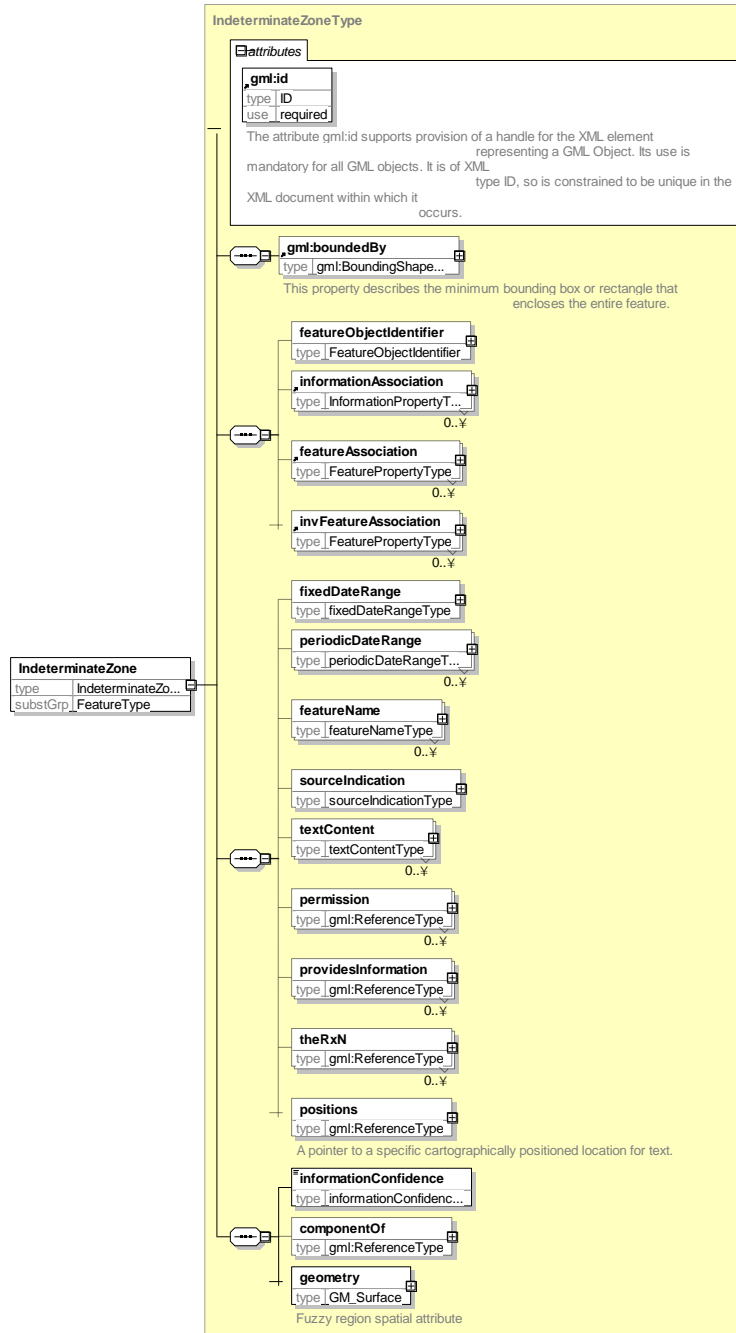
diagram	
type	**IndeterminateZoneType**
substitution group	**FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions informationConfidence componentOf geometry**

element **InformationType**

diagram	 **InformationTypeType** **attributes** **gml:id** type ID use required The attribute gml:id supports provision of a handle for the XML element representing a GML Object. Its use is mandatory for all GML objects. It is of XML type ID, so is constrained to be unique in the XML document within which it occurs. **InformationType** type InformationTypeType **informationAssociation** type InformationPropertyT... 0..¥ **invInformationAssociati...** type InverseInformationAs... 0..¥ **fixedDateRange** type fixedDateRangeType **periodicDateRange** type periodicDateRangeT... 0..¥ **featureName** type featureNameType 0..¥ **sourceIndication** type sourceIndicationType **providesInformation** type gml:ReferenceType 0..¥
type	**InformationTypeType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation**

element **InmarsatOceanRegionArea**

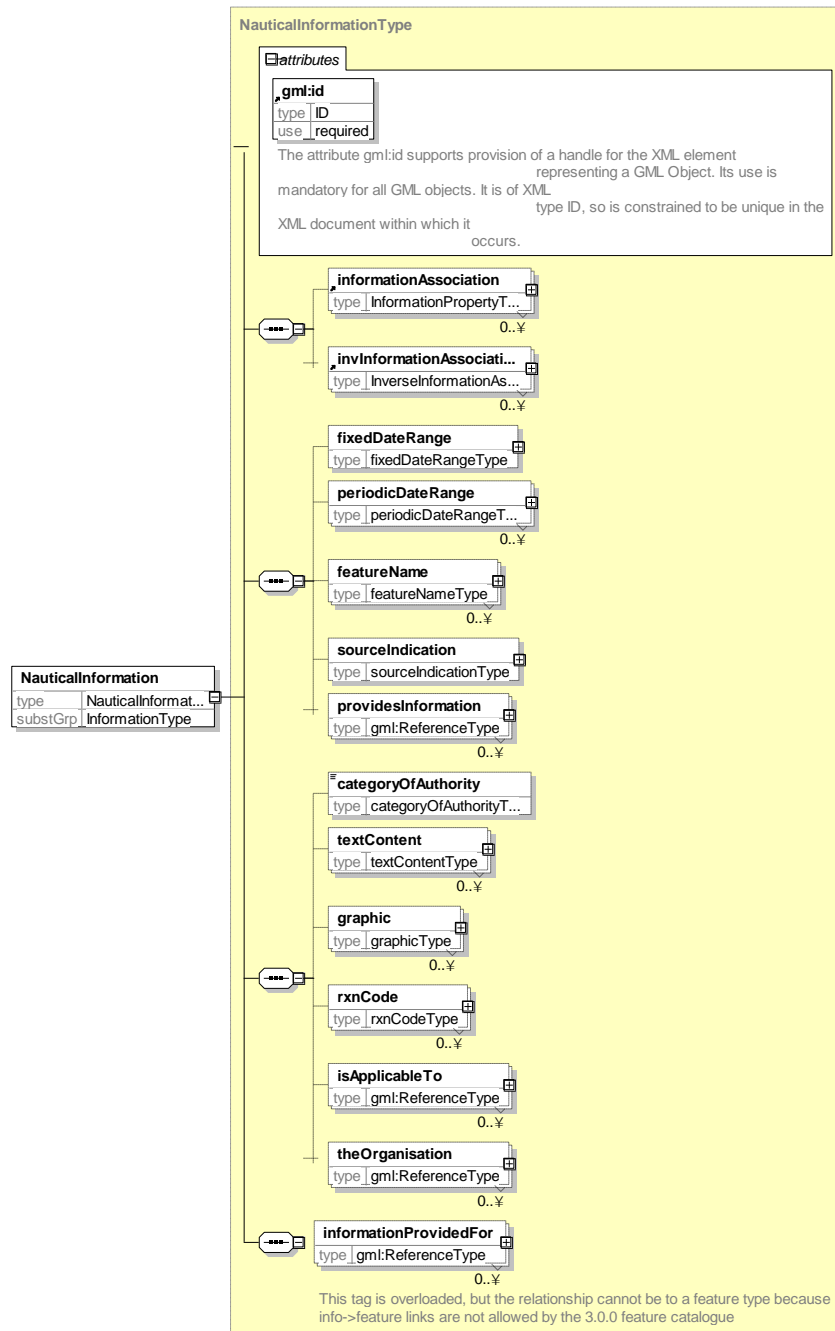|	
diagram	
type	**InmarsatOceanRegionAreaType**
substitution group	**FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions controlAuthority geometry**

element **Landmark**
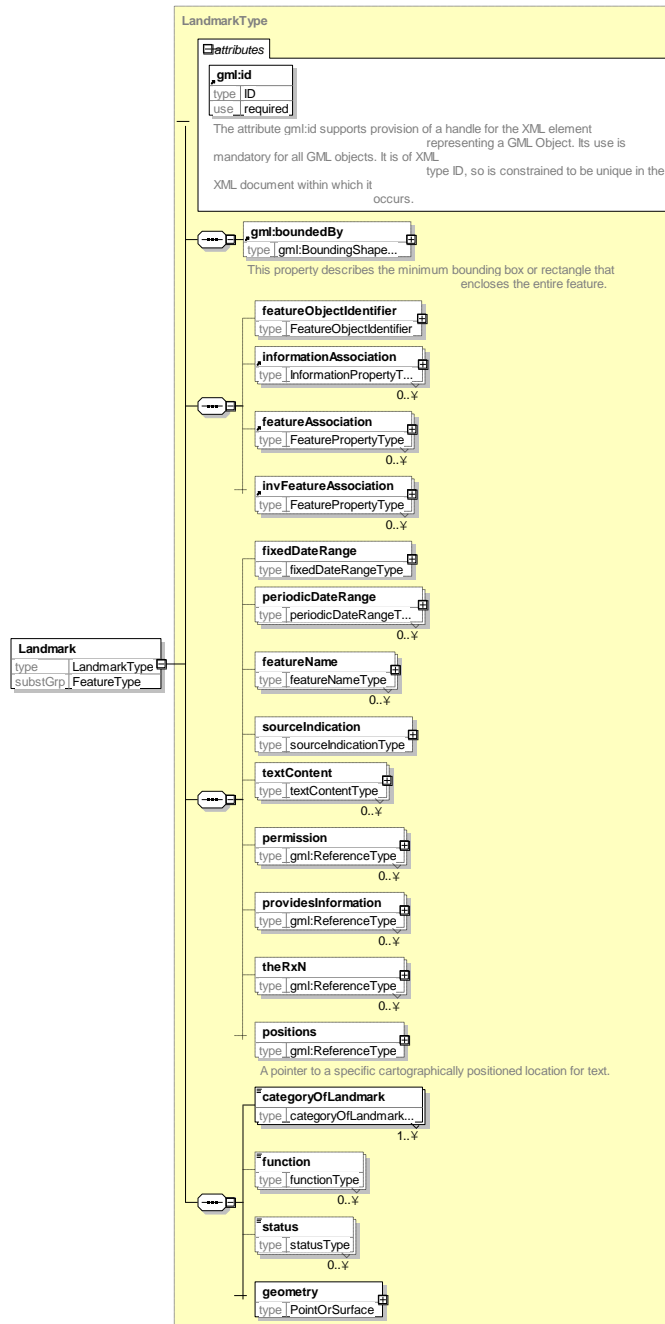
diagram	
type	**LandmarkType**
substitution group	**FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions categoryOfLandmark function status geometry**

element **MetaFeatureType**

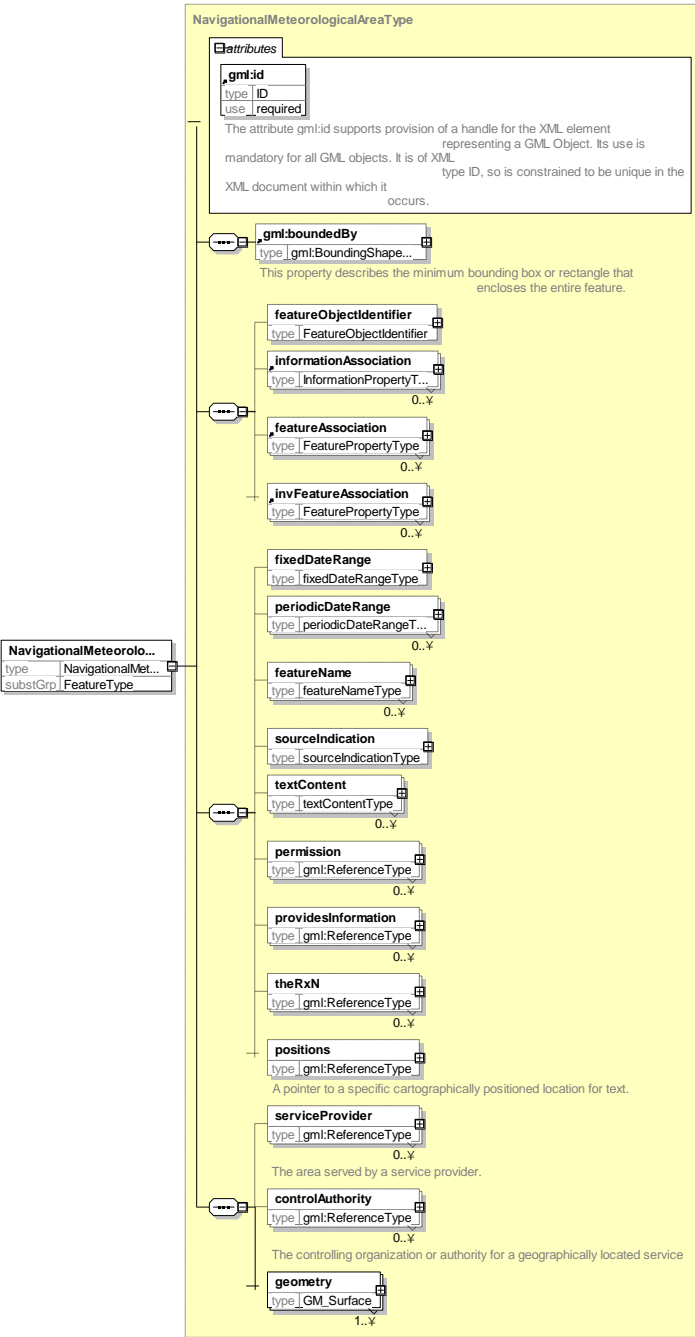| diagram	
type	**MetaFeatureType**
substitution group	**gml:AbstractFeature**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation**

element **NauticalInformation**

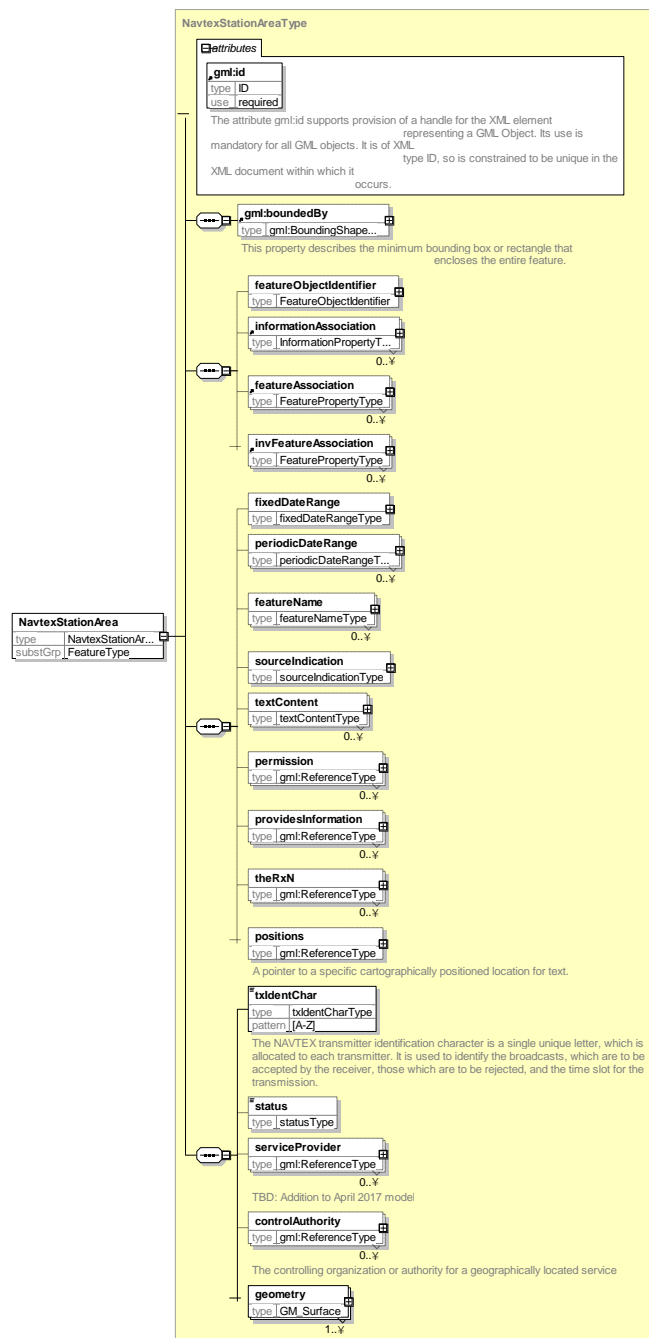|	
diagram	
type	**NauticalInformationType**
substitution group	**InformationType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation categoryOfAuthority textContent graphic rxnCode isApplicableTo theOrganisation informationProvidedFor**

element **NavigationalMeteorologicalArea**

diagram	
type	**NavigationalMeteorologicalAreaType**
substitution group	**FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions serviceProvider controlAuthority geometry**

element **NavtexStationArea**

diagram	
type	**NavtexStationAreaType**
substitution group	**FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions txIdentChar status serviceProvider controlAuthority geometry**

element **NonStandardWorkingDay**

diagram	
type	**NonStandardWorkingDayType**
substitution group	**InformationType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation fixedDate variableDate information theServiceHours_nsdy**

element **PermissionType**
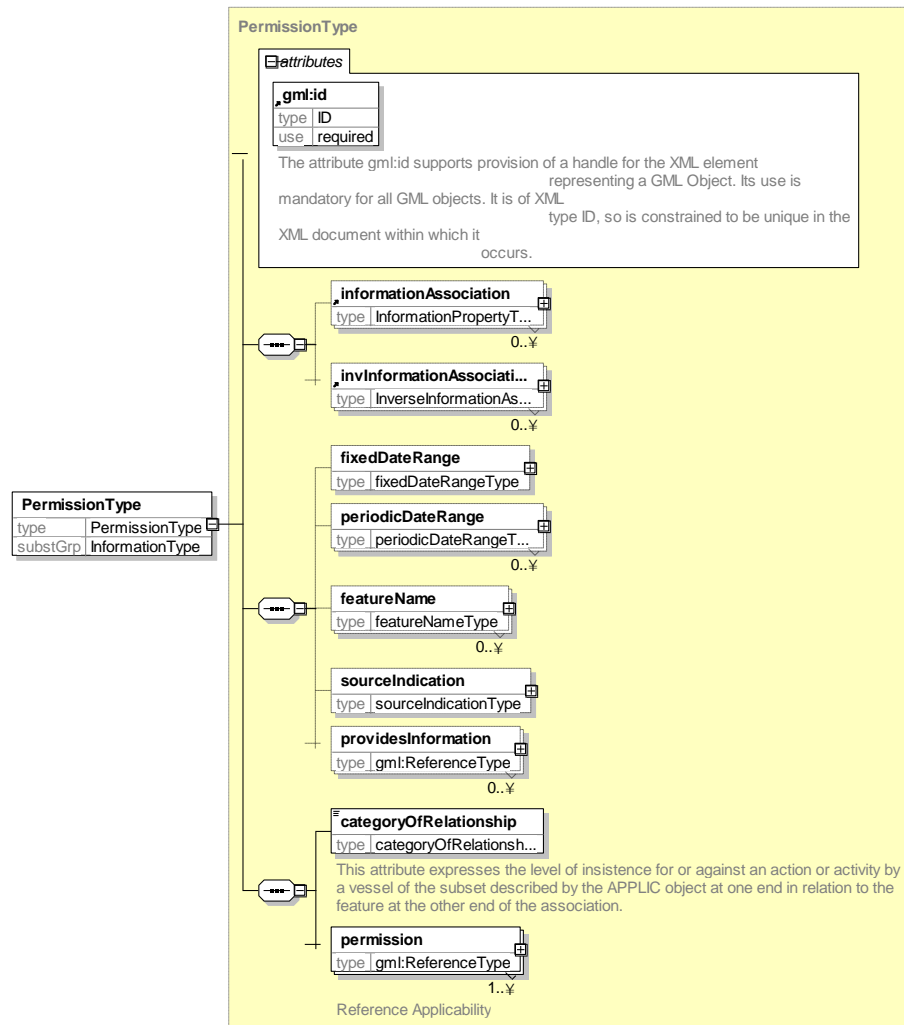
diagram	
type	**PermissionType**
substitution group	**InformationType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation categoryOfRelationship permission**

element **QualityOfNonBathymetricData**
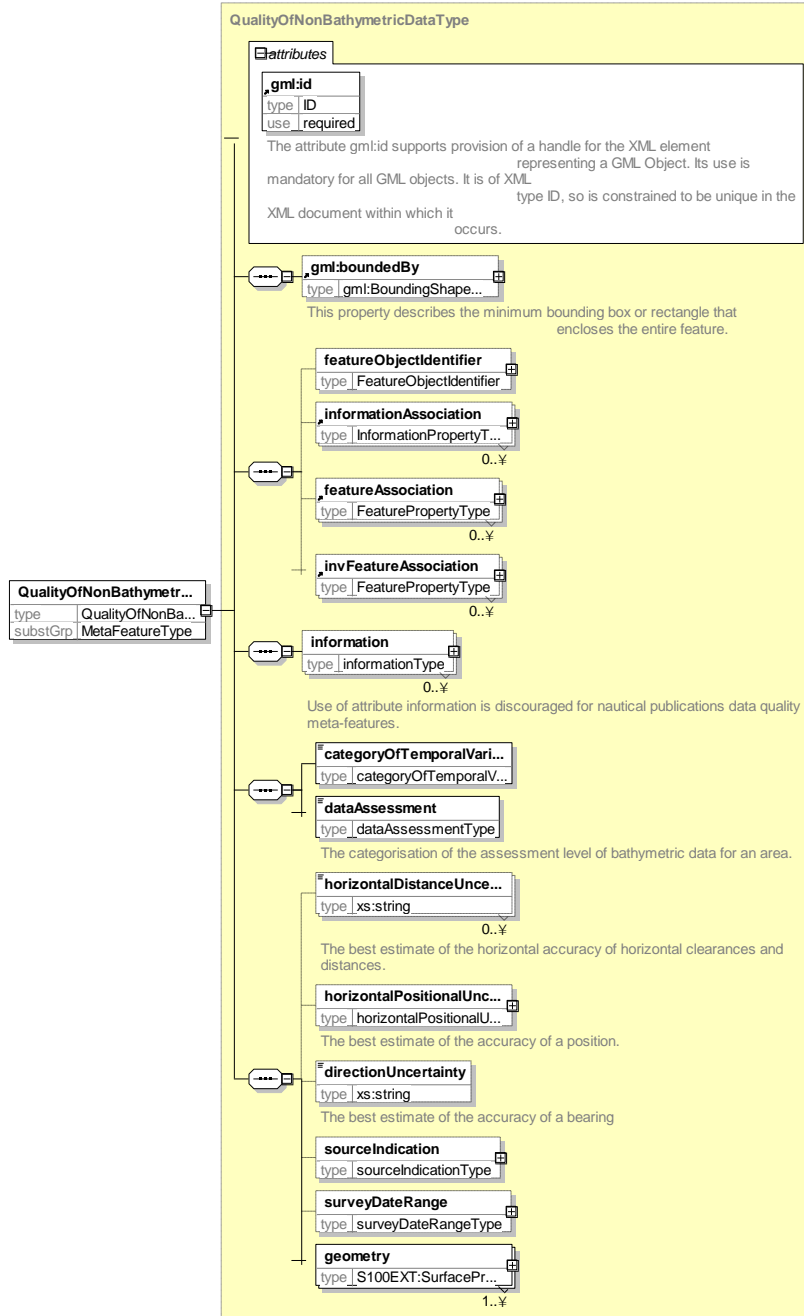
diagram	
type	**QualityOfNonBathymetricDataType**
substitution group	**MetaFeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation information categoryOfTemporalVariation dataAssessment horizontalDistanceUncertainty horizontalPositionalUncertainty directionUncertainty sourceIndication surveyDateRange geometry**

element **QualityOfTemporalVariationType**

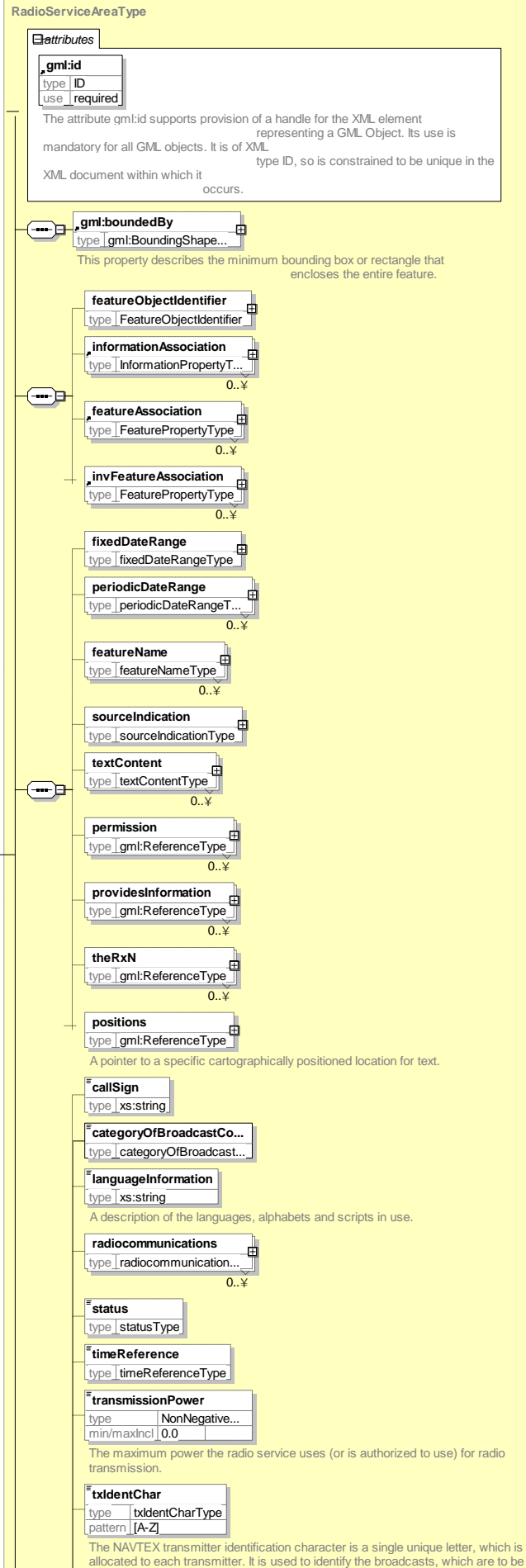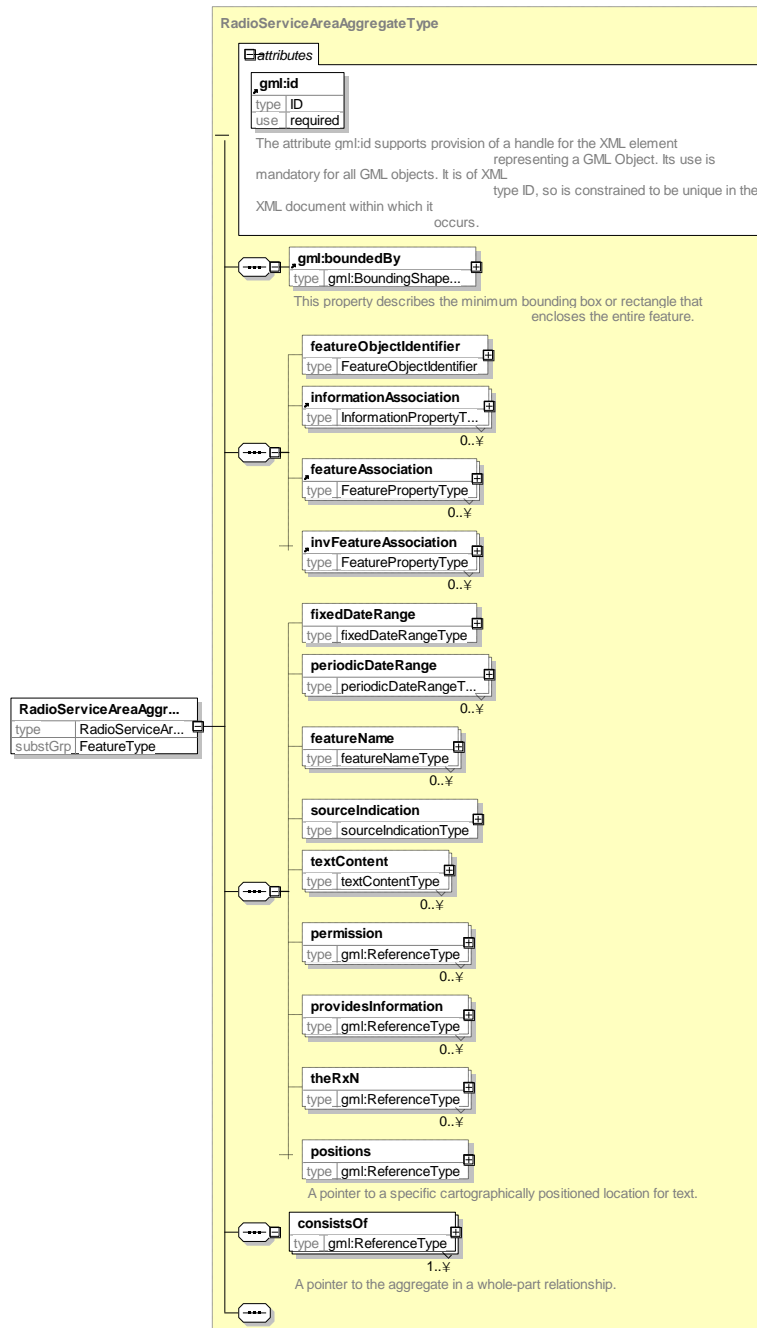|	
diagram	
type	**QualityOfTemporalVariationType**
substitution group	**MetaFeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation information categoryOfTemporalVariation dataAssessment**

element **RadioServiceArea**

diagram

RadioServiceAreaType

attributes

gml:id
| type | ID |
| use | required |

The attribute gml:id supports provision of a handle for the XML element representing a GML Object. Its use is mandatory for all GML objects. It is of XML type ID, so is constrained to be unique in the XML document within which it occurs.

gml:boundedBy
| type | gml:BoundingShape... |

This property describes the minimum bounding box or rectangle that encloses the entire feature.

featureObjectIdentifier
| type | FeatureObjectIdentifier |

informationAssociation
| type | InformationPropertyT... |

0..¥

featureAssociation
| type | FeaturePropertyType |

0..¥

invFeatureAssociation
| type | FeaturePropertyType |

0..¥

fixedDateRange
| type | fixedDateRangeType |

periodicDateRange
| type | periodicDateRangeT... |

0..¥

featureName
| type | featureNameType |

0..¥

sourceIndication
| type | sourceIndicationType |

textContent
| type | textContentType |

0..¥

permission
| type | gml:ReferenceType |

0..¥

providesInformation
| type | gml:ReferenceType |

0..¥

theRxN
| type | gml:ReferenceType |

0..¥

positions
| type | gml:ReferenceType |

A pointer to a specific cartographically positioned location for text.

callSign
| type | xs:string |

categoryOfBroadcastCo...
| type | categoryOfBroadcast... |

languageInformation
| type | xs:string |

A description of the languages, alphabets and scripts in use.

radiocommunications
| type | radiocommunication... |

0..¥

status
| type | statusType |

timeReference
| type | timeReferenceType |

transmissionPower
| type | NonNegative... |
| min/maxIncl | 0.0 |

The maximum power the radio service uses (or is authorized to use) for radio transmission.

txIdentChar
| type | txIdentCharType |
| pattern | [A-Z] |

The NAVTEX transmitter identification character is a single unique letter, which is allocated to each transmitter. It is used to identify the broadcasts, which are to be

RadioServiceArea
| type | RadioServiceAr... |
| substGrp | FeatureType |

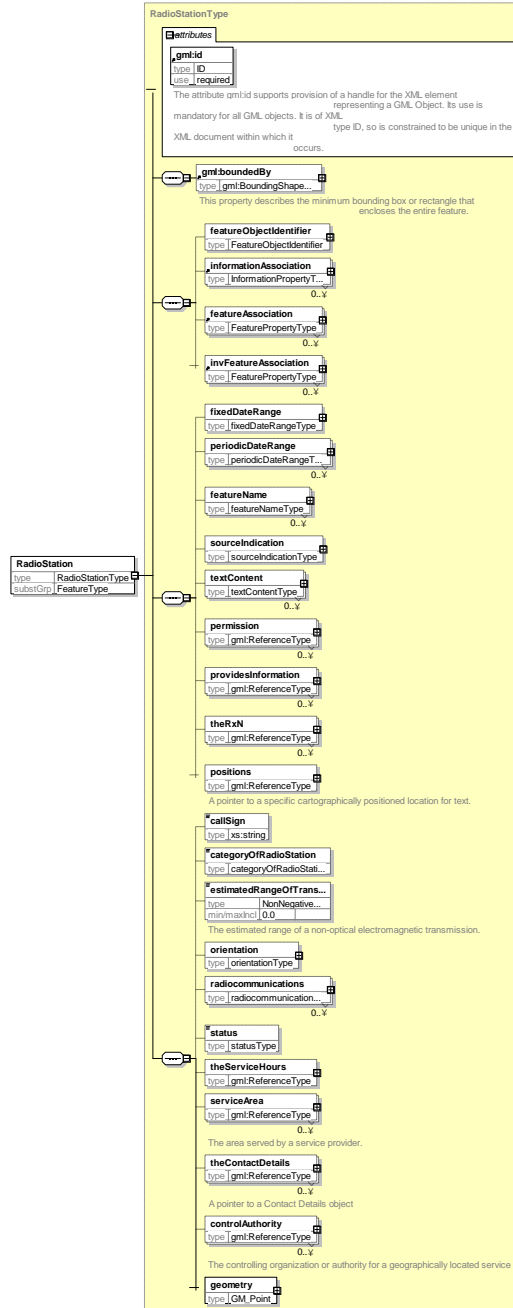| type	**RadioServiceAreaType**
substitution group	**FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions callSign categoryOfBroadcastCommunication languageInformation radiocommunications status timeReference transmissionPower txIdentChar txTrafficList theServiceHours serviceProvider theContactDetails controlAuthority componentOf geometry**

element **RadioServiceAreaAggregate**

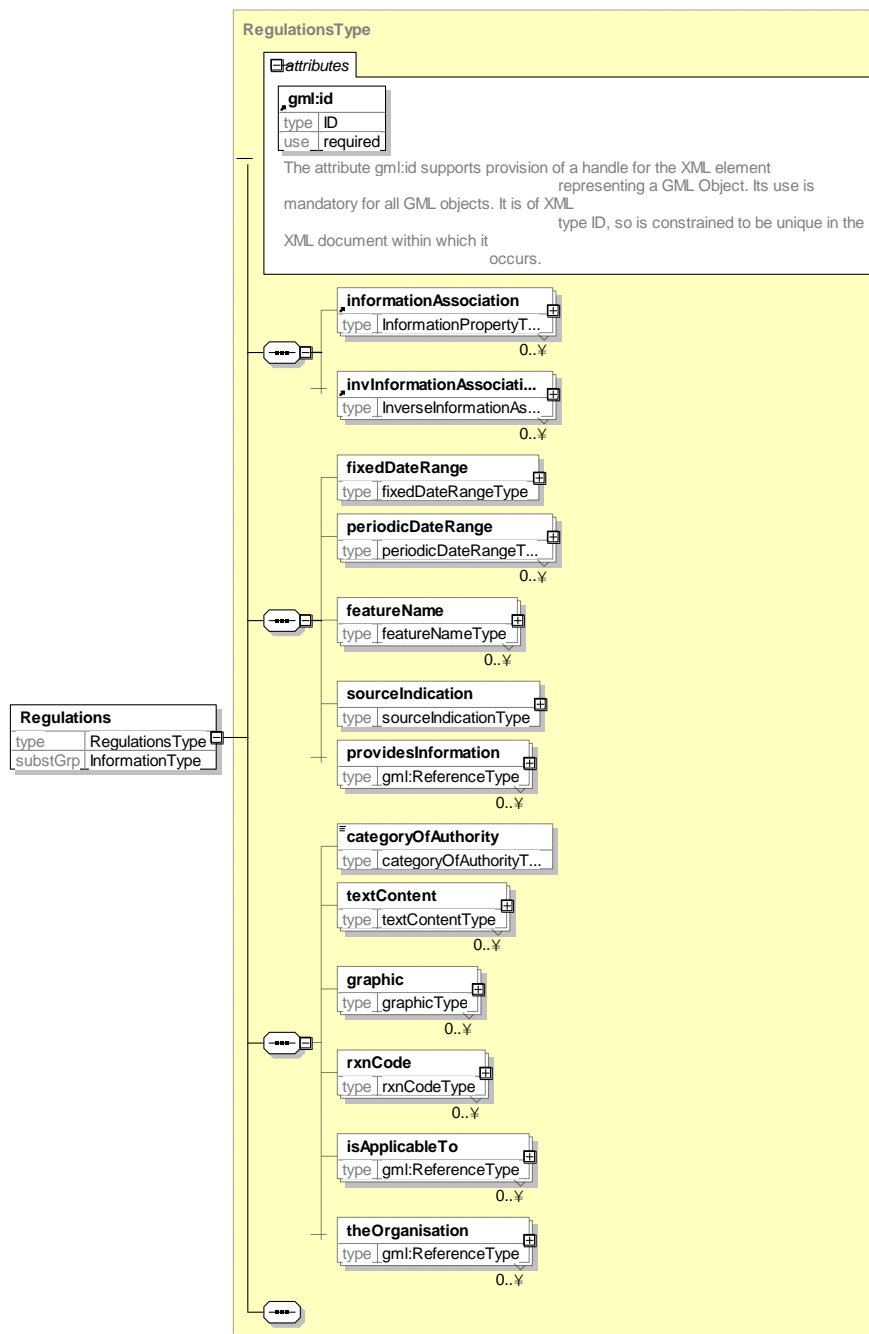| diagram	
type	**RadioServiceAreaAggregateType**
substitution group	**FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions consistsOf**

element **RadioStation**

diagram	
type	**RadioStationType**
substitution group	**FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions callSign categoryOfRadioStation estimatedRangeOfTransmission orientation radiocommunications status theServiceHours serviceArea theContactDetails controlAuthority geometry**

element **Recommendations**

diagram	
type	**RecommendationsType**
substitution group	**InformationType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation categoryOfAuthority textContent graphic rxnCode isApplicableTo theOrganisation**

element **Regulations**

diagram	
type	**RegulationsType**
substitution group	**InformationType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation categoryOfAuthority textContent graphic rxnCode isApplicableTo theOrganisation**

element **Restrictions**

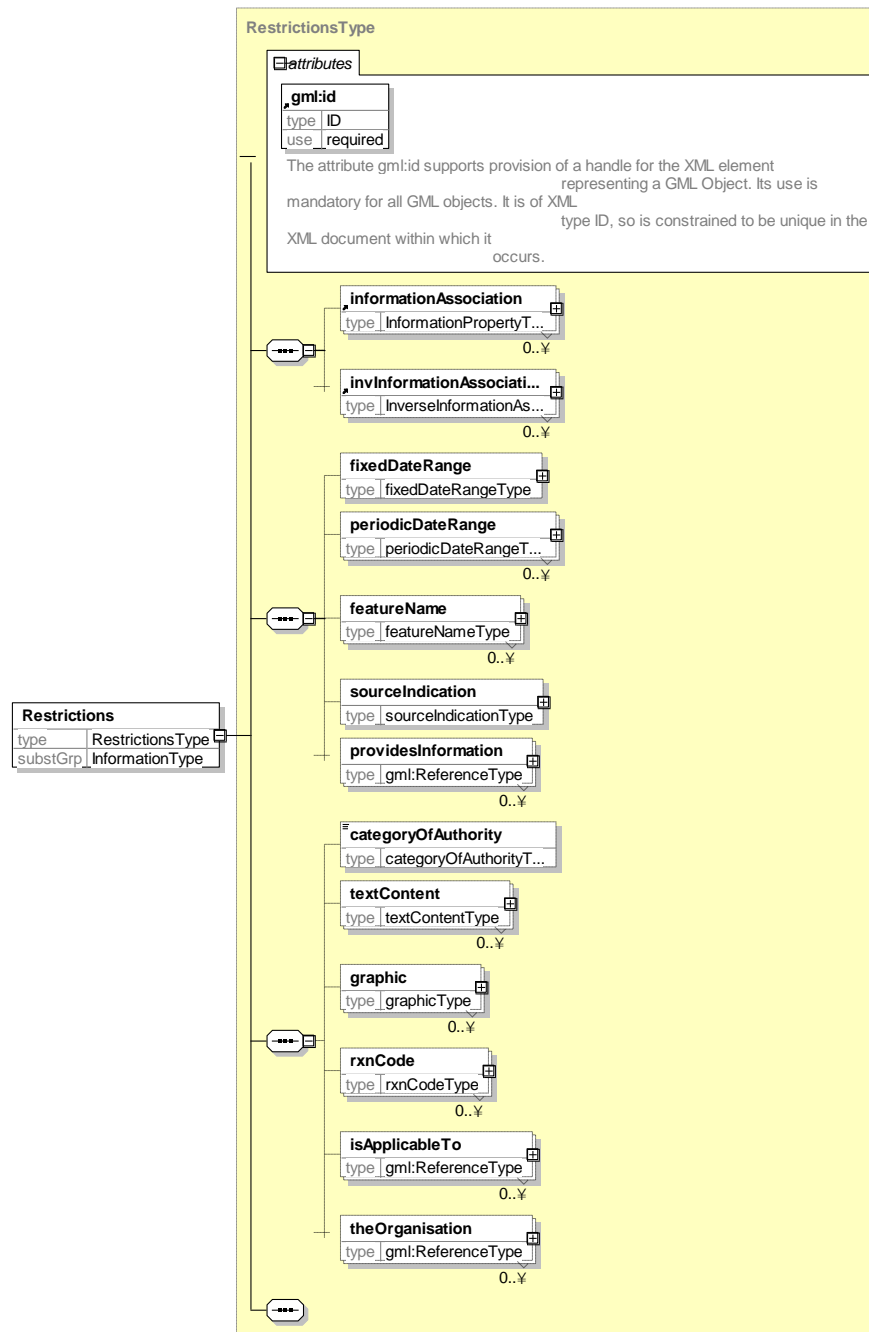|	
diagram	
type	**RestrictionsType**
substitution group	**InformationType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation categoryOfAuthority textContent graphic rxnCode isApplicableTo theOrganisation**

element **ServiceHours**
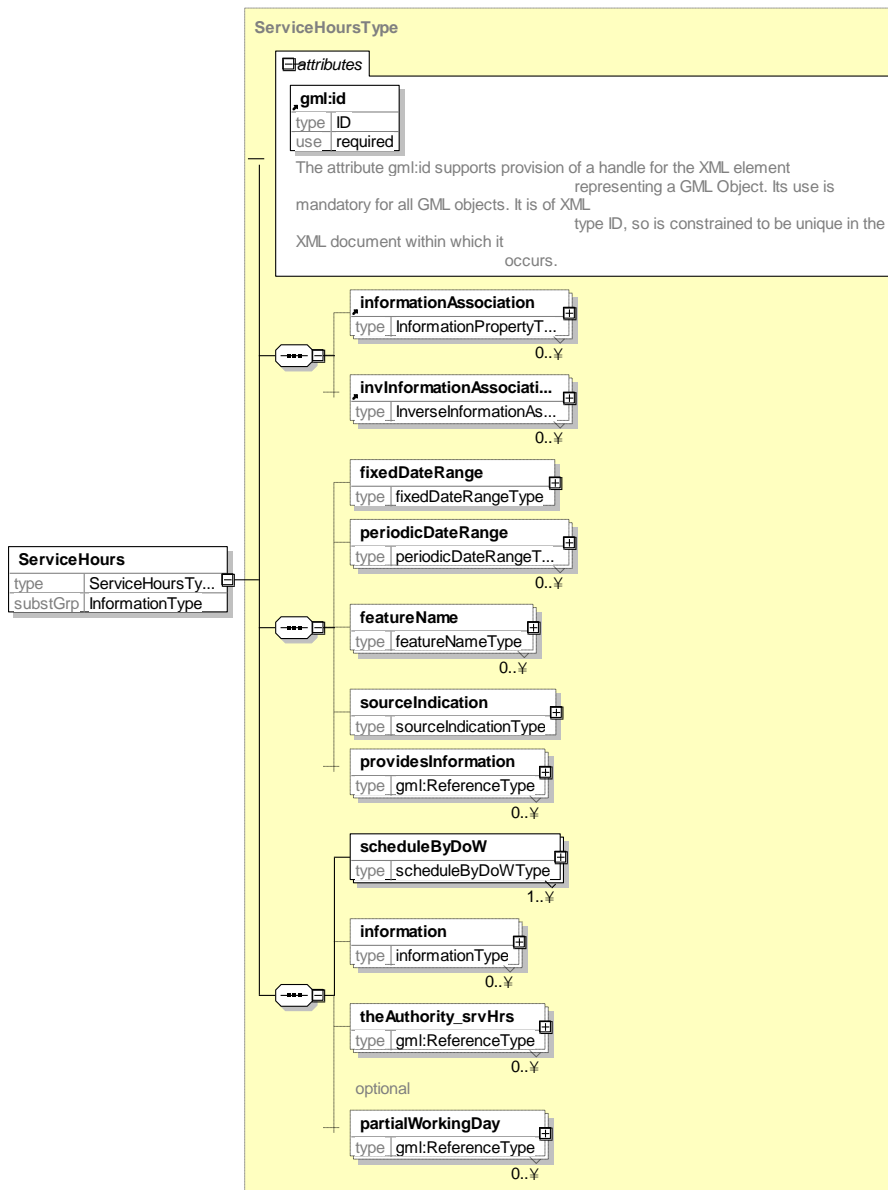
diagram	
type	**ServiceHoursType**
substitution group	**InformationType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation scheduleByDoW information theAuthority_srvHrs partialWorkingDay**

element **SpatialQuality**

diagram	
type	**SpatialQuality**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation categoryOfTemporalVariation horizontalPositionalUncertainty qualityOfHorizontalMeasurement**

element **SpatialQualityPoints**

diagram	
type	**SpatialQualityPoints**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation categoryOfTemporalVariation horizontalPositionalUncertainty qualityOfHorizontalMeasurement**

element **TextPlacement**

diagram	**TextPlacement** **flipBearing** type xs:decimal The bearing at which text is re-located to the opposite side of a feature when screen display is oriented away from true north. **scaleMinimum** type xs:integer **textJustification** type textJustificationType The anchor point of a text string. **TextPlacement** type TextPlacement **text** type xs:string A non-formatted digital text string. **textType** type textTypeType **identifies** type gml:ReferenceType Association to feature for which the text is placed **geometry** type GM_Point 1..∀
type	**TextPlacement**
children	**flipBearing scaleMinimum textJustification text textType identifies geometry**

element **WeatherForecastWarningArea**

diagram	
type	**WeatherForecastWarningAreaType**
substitution group	**FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions categoryOfFrcstAndWarningArea nationality status serviceProvider controlAuthority componentOf geometry**

complexType **AbstractRXNType**

diagram	
type	extension of **InformationTypeType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation categoryOfAuthority textContent graphic rxnCode isApplicableTo theOrganisation**
annotation	documentation An abstract superclass for information types that encode rules, recommendations, and general information in text or graphic form. documentation Remarks: Subtypes of AbstractRxN carry the same attributes, but differ in the nature of information they encode. There are currently four such subtypes: Regulations, Restrictions, Recommendations, and NauticalInformation.

element **AbstractRXNType/categoryOfAuthority**

diagram	**categoryOfAuthority** type categoryOfAuthorityT...
type	**categoryOfAuthorityType**

facets	Kind	Value	Annotation
	enumeration	customs	documentation
			The agency or establishment for collecting duties, tolls. (Merriam-Websters online Dictionary 23rd February 2006, amended).
	enumeration	border control	documentation
			The administration to prevent or detect and prosecute violations of rules and regulations at international boundaries (adapted from Merriam-Websters online Dictionary 23rd February 2006).
	enumeration	police	documentation
			The department of government, or civil force, charged with maintaining public order. (Adapted from OED)
	enumeration	port	documentation
			Person or corporation, owners of, or entrusted with or invested with the power of managing a port. May be called a Harbour Board, Port Trust, Port Commission, Harbour Commission, Marine Department (NP 100 8th Edition 14 Oct 2004)
	enumeration	immigration	documentation
			The authority controlling people entering a country.
	enumeration	health	documentation
			The authority with responsibility for checking the validity of the health declaration of a vessel and for declaring free pratique.
	enumeration	coast guard	documentation
			Organisation keeping watch on shipping and coastal waters according to governmental law; normally the authority with reponsibility for search and rescue.
	enumeration	agricultural	documentation
			The authority with responsibility for preventing infection of the agriculture of a country and for the protection of the agricultural interests of a country.
	enumeration	military	documentation
			A military authority which provides control of access to or approval for transit through designated areas or airspace.
	enumeration	private company	documentation
			A private or publicly owned company or commercial enterprise which exercises control of facilities, for example a callibration area.
	enumeration	maritime police	documentation
			A governmental or military force with jurisdiction in territorial waters. Examples could include Gendarmerie Maritime, Carabinierie, and Guardia Civil.
	enumeration	environmental	documentation
			An authority with responsibility for the protection of the environment.
	enumeration	fishery	documentation
			An authority with responsibility for the control of fisheries.
	enumeration	finance	documentation
			an authority with responsibility for the control and movement of money.
	enumeration	maritime	documentation
			A national or regional authority charged with administration of maritime affairs.

element **AbstractRXNType/textContent**

diagram	
	textContentType **textContent** type textContentType 0..¥ **categoryOfText** type categoryOfTextType **information** type informationType 0..¥ **onlineResource** type onlineResourceType **sourceIndication** type sourceIndicationType
type	**textContentType**
children	**categoryOfText information onlineResource sourceIndication**

element **AbstractRXNType/graphic**

diagram	
	graphicType **graphic** type graphicType 0..¥ **pictorialRepresentation** type xs:string 1..¥ **pictureCaption** type xs:string Short description of the purpose of the image. **sourceDate** type xs:date **pictureInformation** type xs:string A set of information to provide credits to picture creator, copyright owner etc. **bearingInformation** type bearingInformationTy...
type	**graphicType**
children	**pictorialRepresentation pictureCaption sourceDate pictureInformation bearingInformation**

element **AbstractRXNType/rxnCode**

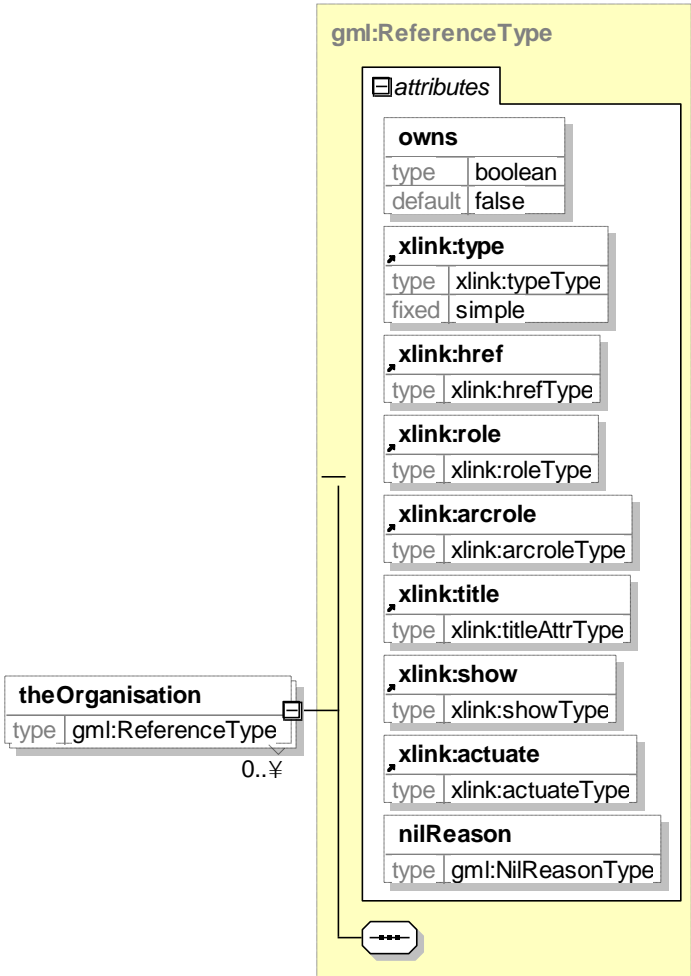| diagram	
type	**rxnCodeType**
children	**categoryOfRxN** **actionOrActivity** **headline**

element **AbstractRXNType/isApplicableTo**

diagram	
type	**gml:ReferenceType**

element **AbstractRXNType/theOrganisation**

diagram	
	gml:ReferenceType

theOrganisation
type gml:ReferenceType
0..¥

gml:ReferenceType

attributes

owns
type boolean
default false

xlink:type
type xlink:typeType
fixed simple

xlink:href
type xlink:hrefType

xlink:role
type xlink:roleType

xlink:arcrole
type xlink:arcroleType

xlink:title
type xlink:titleAttrType

xlink:show
type xlink:showType

xlink:actuate
type xlink:actuateType

nilReason
type gml:NilReasonType

type	**gml:ReferenceType**

complexType **ApplicabilityType**

diagram	
type	extension of **InformationTypeType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation ballast categoryOfCargo categoryOfDangerousOrHazardousCargo categoryOfVessel categoryOfVesselRegistry logicalConnectives thicknessOfIceCapability information vesselPerformance vesselsMeasurements vslLocation theApplicableRxN**
annotation	documentation Describes the relationship between vessel characteristics and: (i) the applicability of an associated information object or feature to the vessel; or, (ii) the use of a facility, place, or service by the vessel; or, (iii) passage of the vessel through an area.

element **ApplicabilityType/ballast**

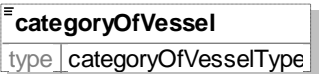| diagram	ballast type xs:boolean True: Vessel is predominantly empty of cargo and stabilised with the use of ballast water False: Vessel is carrying cargo and is not ballasted.
type	**xs:boolean**
annotation	documentation True: Vessel is predominantly empty of cargo and stabilised with the use of ballast water False: Vessel is carrying cargo and is not ballasted.

element **ApplicabilityType/categoryOfCargo**

diagram	categoryOfCargo type categoryOfCargoType 0..¥		
type	**categoryOfCargoType**		
facets	Kind	Value	Annotation
	enumeration	bulk	documentation Normally dry cargo which is transported to and from the vessel on conveyors or grabs
	enumeration	container	documentation One of a number of standard sized cargo carrying units, secured using standard corner attachments and bars
	enumeration	general	documentation Break bulk cargo normally loaded by crane
	enumeration	liquid	documentation Any cargo loaded by pipeline
	enumeration	passenger	documentation A fee paying traveller
	enumeration	livestock	documentation Live animals carried in bulk
	enumeration	dangerous or hazardous	documentation Dangerous or hazardous cargo as described by the IMO International Maritime Dangerous Goods code

element **ApplicabilityType/categoryOfDangerousOrHazardousCargo**
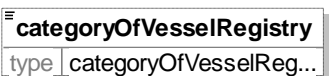
diagram	categoryOfDangerousOr... type categoryOfDangerou... 0..¥		
type	**categoryOfDangerousOrHazardousCargoType**		
facets	Kind	Value	Annotation
	enumeration	IMDG Code Class 1 Div. 1.1	documentation Explosives, Division 1: substances and articles which have a mass explosion hazard

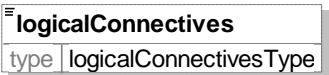|			
	enumeration	IMDG Code Class 1 Div. 1.2	documentation Explosives, Division 2: substances and articles which have a projection hazard but not a mass explosion hazard
	enumeration	IMDG Code Class 1 Div. 1.3	documentation Explosives, Division 3: substances and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard
	enumeration	IMDG Code Class 1 Div. 1.4	documentation Explosives, Division 4: substances and articles which present no significant hazard
	enumeration	IMDG Code Class 1 Div. 1.5	documentation Explosives, Division 5: very insensitive substances which have a mass explosion hazard
	enumeration	IMDG Code Class 1 Div. 1.6	documentation Explosives, Division 6: extremely insensitive articles which do not have a mass explosion hazard
	enumeration	IMDG Code Class 2 Div. 2.1	documentation Gases, flammable gases
	enumeration	IMDG Code Class 2 Div. 2.2	documentation Gases, non-flammable, non-toxic gases
	enumeration	IMDG Code Class 2 Div. 2.3	documentation Gases, toxic gases
	enumeration	IMDG Code Class 3	documentation flammable liquids
	enumeration	IMDG Code Class 4 Div. 4.1	documentation flammable solids, self-reactive substances and desensitized explosives
	enumeration	IMDG Code Class 4 Div. 4.2	documentation substances liable to spontaneous combustion
	enumeration	IMDG Code Class 4 Div. 4.3	documentation substances which, in contact with water, emit flammable gases
	enumeration	IMDG Code Class 5 Div. 5.1	documentation oxidizing substances
	enumeration	IMDG Code Class 5 Div. 5.2	documentation organic peroxides
	enumeration	IMDG Code Class 6 Div. 6.1	documentation toxic substances
	enumeration	IMDG Code Class 6. Div. 6.2	documentation infectious substances
	enumeration	IMDG Code Class 7	documentation Radioactive material
	enumeration	IMDG Code Class 8	documentation Corrosive substances
	enumeration	IMDG Code Class 9	documentation Miscellaneous dangerous substances and articles
	enumeration	Harmful Substances in packaged form	documentation Harmful substances are those substances which are identified as marine pollutants in the International Maritime Dangerous Goods Code (IMDG Code). Packaged form is defined as the forms of containment specified for harmful substances in the IMDG Code. (MARPOL (73/78) Annex III)

element **ApplicabilityType/categoryOfVessel**

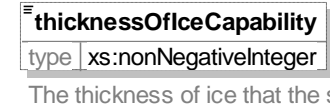| diagram	categoryOfVessel type categoryOfVesselType
type	**categoryOfVesselType**

element **ApplicabilityType/categoryOfVesselRegistry**

diagram	categoryOfVesselRegistry type categoryOfVesselReg...
type	**categoryOfVesselRegistryType**
facets	Kind	Value	Annotation
	enumeration	domestic	documentation The vessel is registered or enrolled under the same national flag as the port, harbour, territorial sea, exclusive economic zone, or administrative area in which the object that possesses this attribute applies or is located.
	enumeration	foreign	documentation The vessel is registered or enrolled under a national flag different from the port, harbour, territorial sea, exclusive economic zone, or other administrative area in which the object that possesses this attribute applies or is located.

element **ApplicabilityType/logicalConnectives**

diagram	logicalConnectives type logicalConnectivesType
type	**logicalConnectivesType**
facets	Kind	Value	Annotation
	enumeration	logical conjunction	documentation all the conditions described by the other attributes of the object, or sub-attributes of the same complex attribute, are true
	enumeration	logical disjunction	documentation at least one of the conditions described by the other attributes of the object, or sub-attributes of the same complex attributes, is true

element **ApplicabilityType/thicknessOfIceCapability**

diagram	thicknessOfIceCapability type xs:nonNegativeInteger The thickness of ice that the ship can safely transit
type	**xs:nonNegativeInteger**
annotation	documentation The thickness of ice that the ship can safely transit

element **ApplicabilityType/information**

diagram	
type	**informationType**
children	**fileLocator** **fileReference** **headline** **language** **text**

Within the diagram:

informationType

fileLocator
type xs:string
The string encodes the location of a fragment of text or other information in a support file.

fileReference
type xs:string
The string encodes the file name of a single external text file that contains the text.

information
type informationType
0..¥

headline
type xs:string
Words set at the head of a passage or page to introduce or categorize

language
type xs:string
ISO 639-3 value

text
type xs:string
A non-formatted digital text string.

element **ApplicabilityType/vesselPerformance**

diagram	**vesselPerformance** type xs:string A description of the required handling characteristics of a vessel including hull design, main and auxilliary machinery, cargo handling equipment, navigation equipment and manoeuvring behaviour.
type	**xs:string**
annotation	documentation A description of the required handling characteristics of a vessel including hull design, main and auxilliary machinery, cargo handling equipment, navigation equipment and manoeuvring behaviour.

element **ApplicabilityType/vesselsMeasurements**

diagram	
type	**vesselsMeasurementsType**
children	**comparisonOperator vesselsCharacteristics vesselsCharacteristicsValue vesselsCharacteristicsUnit**

element **ApplicabilityType/vslLocation**

diagram	
type	**gml:ReferenceType**

annotation	documentation Association to the Association class PermissionType

element **ApplicabilityType/theApplicableRxN**

diagram	

type	**gml:ReferenceType**
annotation	documentation To InclusionType

complexType **AuthorityType**

diagram	
type	extension of **InformationTypeType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation categoryOfAuthority textContent theContactDetails theServiceHours theInformation**
annotation	documentation A person or organisation having political or administrative power and control. (Oxford Dictionary of English)

element **AuthorityType/categoryOfAuthority**

diagram			
type	**categoryOfAuthorityType**		
facets	Kind	Value	Annotation
	enumeration	customs	documentation The agency or establishment for collecting duties, tolls. (Merriam-Websters online Dictionary 23rd February 2006, amended).
	enumeration	border control	documentation The administration to prevent or detect and prosecute violations of rules and regulations at international boundaries (adapted from Merriam-Websters online Dictionary 23rd

			February 2006).
	enumeration	police	documentation
			The department of government, or civil force, charged with maintaining public order. (Adapted from OED)
	enumeration	port	documentation
			Person or corporation, owners of, or entrusted with or invested with the power of managing a port. May be called a Harbour Board, Port Trust, Port Commission, Harbour Commission, Marine Department (NP 100 8th Edition 14 Oct 2004)
	enumeration	immigration	documentation
			The authority controlling people entering a country.
	enumeration	health	documentation
			The authority with responsibility for checking the validity of the health declaration of a vessel and for declaring free pratique.
	enumeration	coast guard	documentation
			Organisation keeping watch on shipping and coastal waters according to governmental law; normally the authority with reponsibility for search and rescue.
	enumeration	agricultural	documentation
			The authority with responsibility for preventing infection of the agriculture of a country and for the protection of the agricultural interests of a country.
	enumeration	military	documentation
			A military authority which provides control of access to or approval for transit through designated areas or airspace.
	enumeration	private company	documentation
			A private or publicly owned company or commercial enterprise which exercises control of facilities, for example a callibration area.
	enumeration	maritime police	documentation
			A governmental or military force with jurisdiction in territorial waters. Examples could include Gendarmerie Maritime, Carabinierie, and Guardia Civil.
	enumeration	environmental	documentation
			An authority with responsibility for the protection of the environment.
	enumeration	fishery	documentation
			An authority with responsibility for the control of fisheries.
	enumeration	finance	documentation
			an authority with responsibility for the control and movement of money.
	enumeration	maritime	documentation
			A national or regional authority charged with administration of maritime affairs.

element **AuthorityType/textContent**

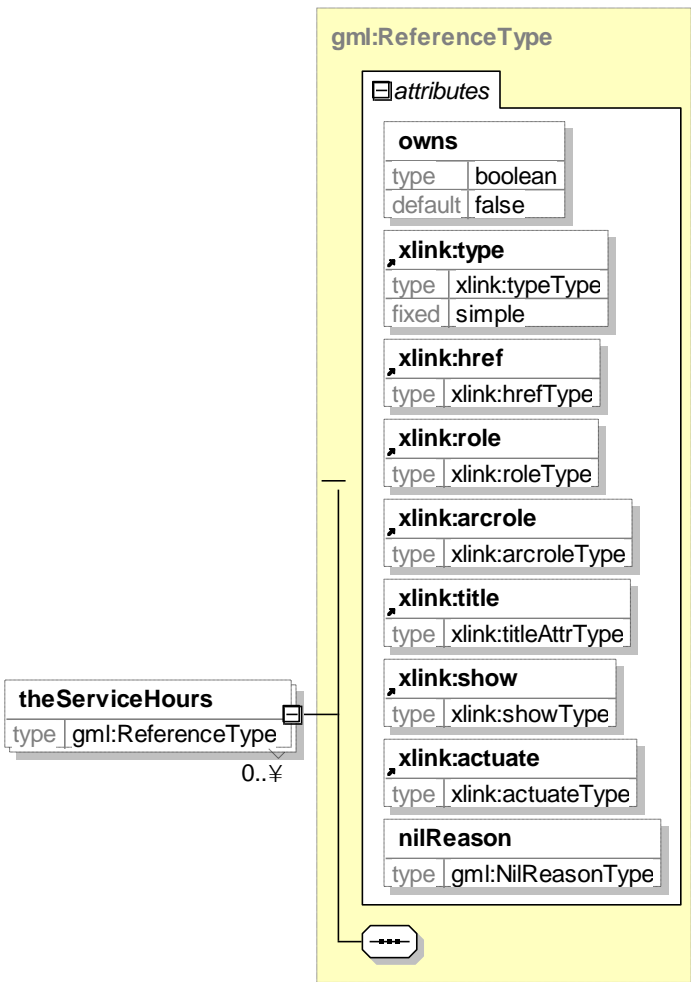| diagram	
type	**textContentType**
children	**categoryOfText** **information** **onlineResource** **sourceIndication**

element **AuthorityType/theContactDetails**

diagram	

type	**gml:ReferenceType**
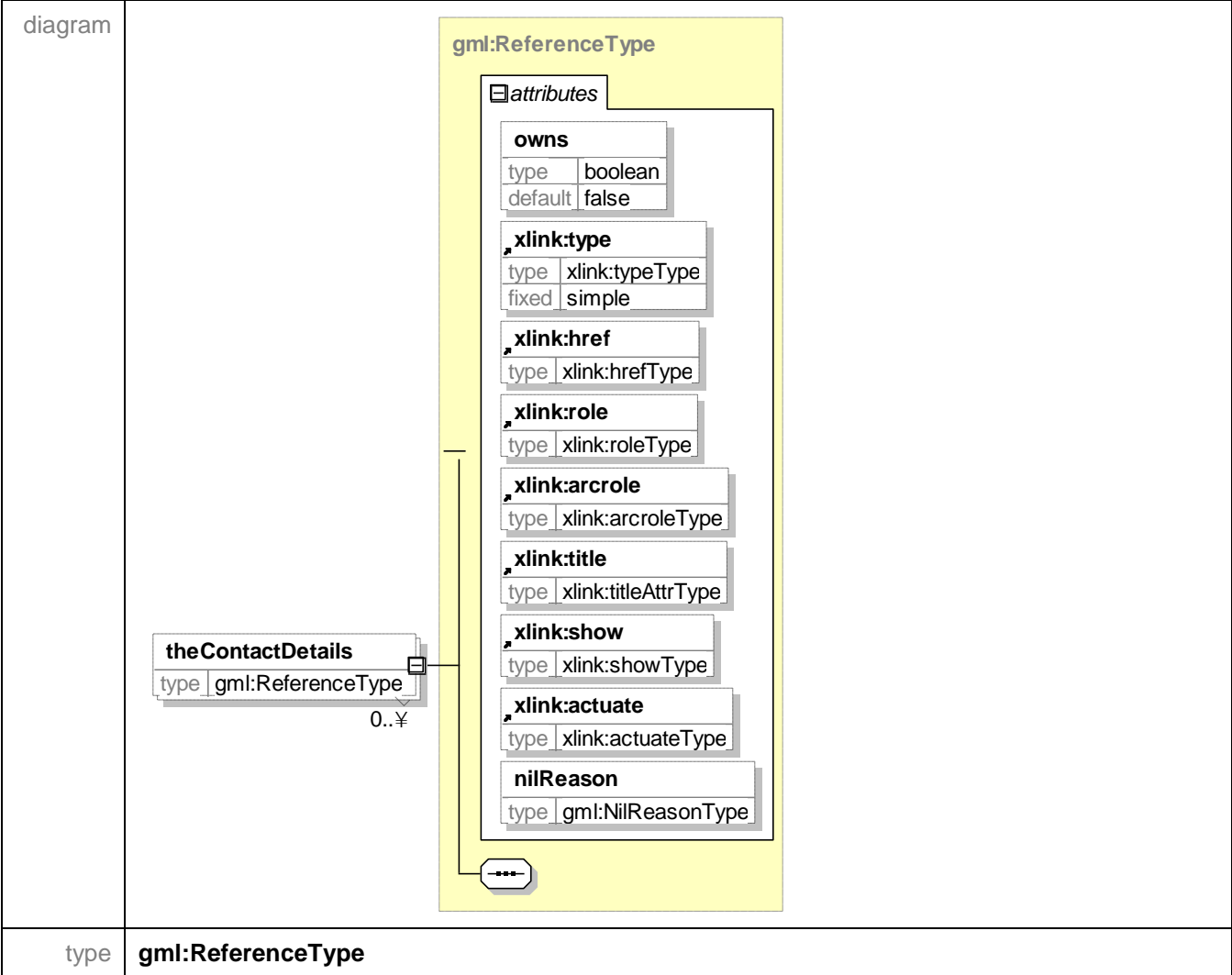
element **AuthorityType/theServiceHours**

diagram	
	gml:ReferenceType
	⊟ *attributes*
	owns — type: boolean, default: false
	xlink:type — type: xlink:typeType, fixed: simple
	xlink:href — type: xlink:hrefType
	xlink:role — type: xlink:roleType
	xlink:arcrole — type: xlink:arcroleType
	xlink:title — type: xlink:titleAttrType
	xlink:show — type: xlink:showType
	xlink:actuate — type: xlink:actuateType
	nilReason — type: gml:NilReasonType
	theServiceHours — type: gml:ReferenceType — 0..¥
type	**gml:ReferenceType**
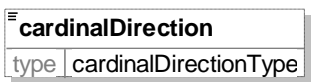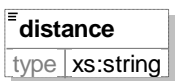
element **AuthorityType/theInformation**

diagram	

type	**gml:ReferenceType**
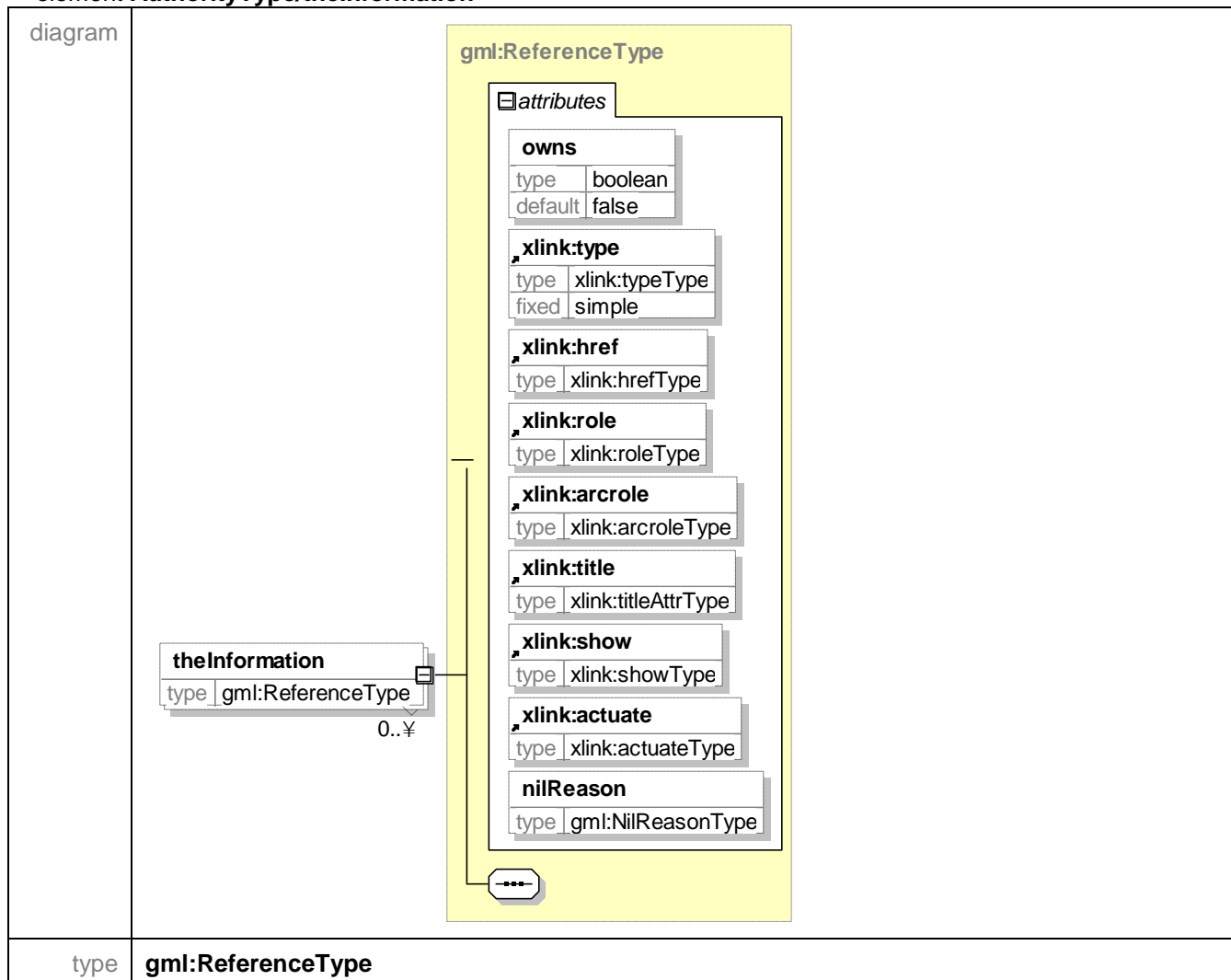
complexType **bearingInformationType**

diagram	

children	**cardinalDirection distance information orientation sectorBearing**
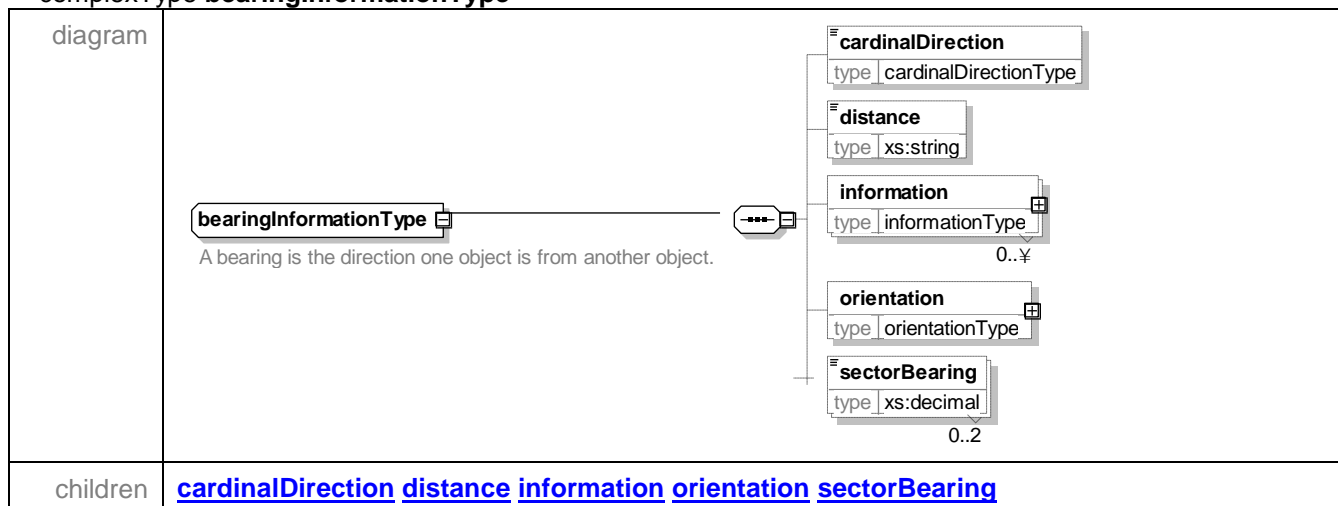
annotation	documentation
	A bearing is the direction one object is from another object.
	documentation
	At least one of the sub-attributes must be present.

element **bearingInformationType/cardinalDirection**

diagram	
	cardinalDirection
	type cardinalDirectionType
type	**cardinalDirectionType**
facets	

Kind	Value	Annotation
enumeration	N	documentation North
enumeration	NNE	documentation Northnortheast
enumeration	NE	documentation Northeast
enumeration	ENE	documentation Eastnortheast
enumeration	E	documentation East
enumeration	ESE	documentation Eastsoutheast
enumeration	SE	documentation Southeast
enumeration	SSE	documentation Southsoutheast
enumeration	S	documentation South
enumeration	SSW	documentation Southsouthwest
enumeration	SW	documentation Southwest
enumeration	WSW	documentation Westsouthwest
enumeration	W	documentation West
enumeration	WNW	documentation Westnorthwest
enumeration	NW	documentation Northwest
enumeration	NNW	documentation Northnorthwest

element **bearingInformationType/distance**

diagram	
	distance
	type xs:string
type	**xs:string**

element **bearingInformationType/information**

diagram	
type	**informationType**
children	**fileLocator fileReference headline language text**

element **bearingInformationType/orientation**

diagram	
type	**orientationType**
children	**orientationUncertainty orientationValue**
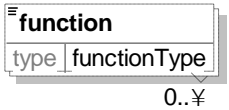
element **bearingInformationType/sectorBearing**
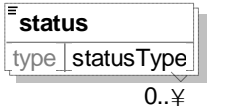
diagram	
type	**xs:decimal**

complexType **BuildingType**

diagram	

type	extension of **FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions function status geometry**
annotation	documentation A free-standing self-supporting construction that is roofed, usually walled, and is intended for human occupancy (for example: a place of work or recreation) and/or habitation. documentation S-123 Note: Only features relevant to radio communications are encoded e.g., radio towers or radio masts. If the feature can be encoded as a radio station at the same location, a coincident Landmark must not be encoded.

element **BuildingType/function**

diagram	function type functionType 0..¥		
type	**functionType**		
facets	Kind	Value	Annotation
	enumeration	communication	documentation Transmitting and/or receiving electronic communication signals. (Defence Geospatial Information Working Group; Feature Data Dictionary Register, 2010).
	enumeration	radio	documentation Transmitting and/or receiving radio-frequency electromagnetic waves as a means of communication. (Defence Geospatial Information Working Group; Feature Data Dictionary Register, 2010).
	enumeration	microwave	documentation Broadcasting and receiving signals using microwaves. (S-57 Edition 3.1, Appendix A – Chapter 2, Page 2.133, November 2000).
	enumeration	control	documentation Used to control the flow of traffic within a specified range of an installation. (Defence Geospatial Information Working Group; Feature Data Dictionary Register, 2010).
	enumeration	sea rescue control	documentation A unit responsible for promoting efficient organization of search and rescue services and for coordinating the conduct of search and rescue operations within a search and rescue region. (Defence Geospatial Information Working Group; Feature Data Dictionary Register, 2010).

element **BuildingType/status**

diagram	status type statusType 0..¥		
type	**statusType**		
facets	Kind	Value	Annotation
	enumeration	permanent	documentation Intended to last or function indefinitely
	enumeration	occasional	documentation Acting on special occasions; happening irregularly
	enumeration	recommended	documentation Presented as worthy of confidence, acceptance, use, etc.
	enumeration	not in use	documentation Use has ceased, but the facility still exists intact; disused.
	enumeration	periodic/intermittent	documentation Recurring at intervals
	enumeration	reserved	documentation Set apart for some specific use
	enumeration	temporary	documentation Meant to last only for a time

	enumeration	private	documentation
			Administered by an individual or corporation, rather than a State or a public body.
	enumeration	mandatory	documentation
			Compulsory; enforced.
	enumeration	extinguished	documentation
			No longer lit
	enumeration	illuminated	documentation
			Lit by floodlights, strip lights, etc.
	enumeration	historic	documentation
			Famous in history; of historical interest
	enumeration	public	documentation
			Belonging to, available to, used or shared by, the community as a whole and not restricted to private use.
	enumeration	synchronised	documentation
			Occur at a time, coincide in point of time, be contemporary or simultaneous
	enumeration	watched	documentation
			Looked at or observed over a period of time especially so as to be aware of any movement or change.
	enumeration	un-watched	documentation
			Usually automatic in operation, without any permanently-stationed personnel to superintend it.
	enumeration	existence doubtful	documentation
			A feature that has been reported but has not been definitely determined to exist.
	enumeration	buoyed	documentation
			Marked by buoys

element **BuildingType/geometry**

diagram	
type	**PointOrSurface**
children	**pointProperty surfaceProperty**

complexType **CoastguardStationType**

diagram	
type	extension of **FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions communicationChannel isMRCC status controlAuthority theContactDetails theServiceHours geometry**
annotation	documentation A station at which a visual/radio/radar marine watch is kept either continuously or at certain times only. documentation S-123 Note: Only those instances concerned to radio communications are encoded in S-123
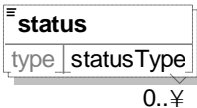
	datasets.

element **CoastguardStationType/communicationChannel**

diagram	
	communicationChannel type xs:string 0..¥
type	**xs:string**

element **CoastguardStationType/isMRCC**

diagram	
	isMRCC type xs:boolean In S-123 datasets, only MRCC or MRSC coastguard stations are encoded, so the value of this attribute should be TRUE for all instances in an S-123 dataset.
type	**xs:boolean**
annotation	documentation In S-123 datasets, only MRCC or MRSC coastguard stations are encoded, so the value of this attribute should be TRUE for all instances in an S-123 dataset.

element **CoastguardStationType/status**

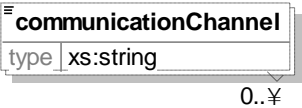| diagram	
	status type statusType 0..¥ 1: permanent;4: not in use;5: periodic/intermittent;16: watched;17: un-watched
type	**statusType**
facets	Kind Value Annotation enumeration permanent documentation Intended to last or function indefinitely enumeration occasional documentation Acting on special occasions; happening irregularly enumeration recommended documentation Presented as worthy of confidence, acceptance, use, etc. enumeration not in use documentation Use has ceased, but the facility still exists intact; disused. enumeration periodic/intermittent documentation Recurring at intervals enumeration reserved documentation Set apart for some specific use enumeration temporary documentation Meant to last only for a time enumeration private documentation Administered by an individual or corporation, rather than a State or a public body.

	enumeration	mandatory	documentation
			Compulsory; enforced.
	enumeration	extinguished	documentation
			No longer lit
	enumeration	illuminated	documentation
			Lit by floodlights, strip lights, etc.
	enumeration	historic	documentation
			Famous in history; of historical interest
	enumeration	public	documentation
			Belonging to, available to, used or shared by, the community as a whole and not restricted to private use.
	enumeration	synchronised	documentation
			Occur at a time, coincide in point of time, be contemporary or simultaneous
	enumeration	watched	documentation
			Looked at or observed over a period of time especially so as to be aware of any movement or change.
	enumeration	un-watched	documentation
			Usually automatic in operation, without any permanently-stationed personnel to superintend it.
	enumeration	existence doubtful	documentation
			A feature that has been reported but has not been definitely determined to exist.
	enumeration	buoyed	documentation
			Marked by buoys
annotation	documentation		
	1: permanent;4: not in use;5: periodic/intermittent;16: watched;17: un-watched		

element **CoastguardStationType/controlAuthority**
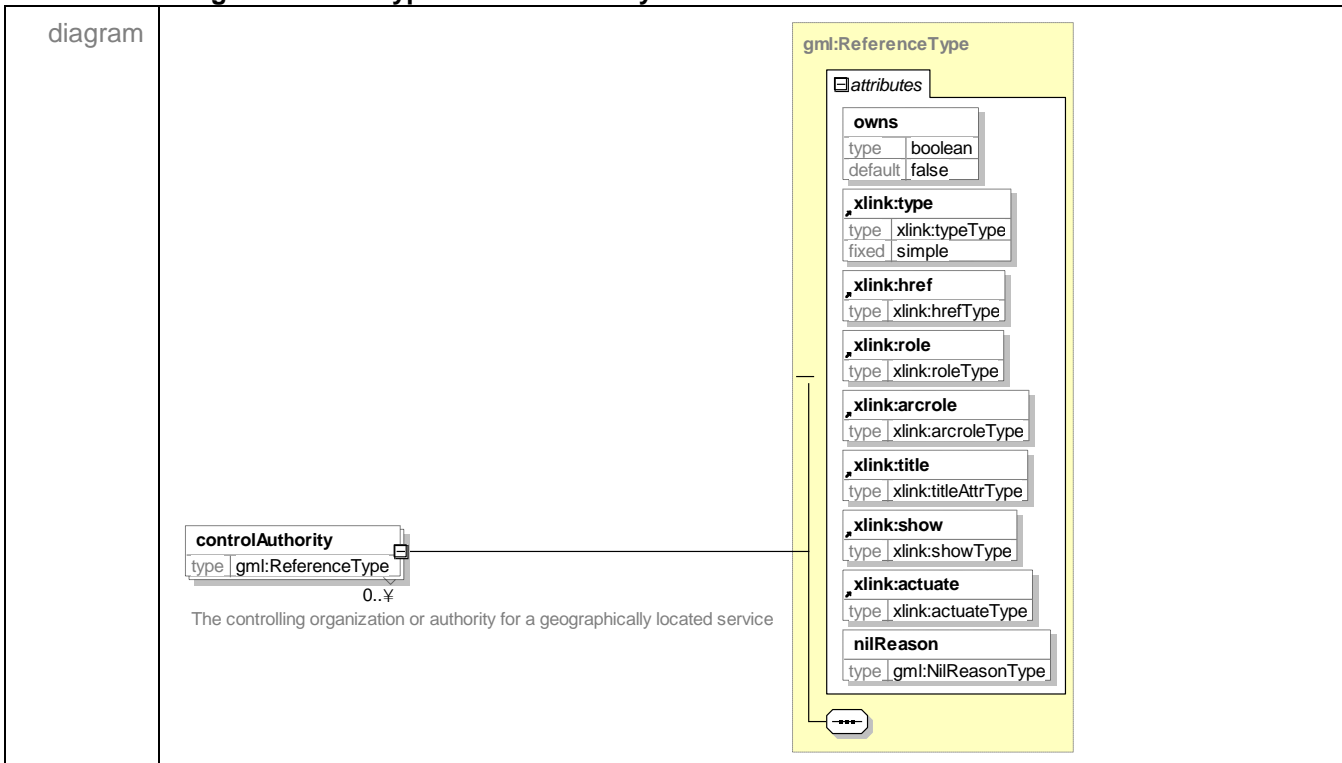
diagram	

type	**gml:ReferenceType**
annotation	documentation The controlling organization or authority for a geographically located service

element **CoastguardStationType/theContactDetails**

diagram	
type	**gml:ReferenceType**

element **CoastguardStationType/theServiceHours**

diagram	
	  gml:ReferenceType ☐*attributes* **owns** type | boolean default | false **xlink:type** type | xlink:typeType fixed | simple **xlink:href** type | xlink:hrefType **xlink:role** type | xlink:roleType **xlink:arcrole** type | xlink:arcroleType **xlink:title** type | xlink:titleAttrType **xlink:show** type | xlink:showType **xlink:actuate** type | xlink:actuateType **nilReason** type | gml:NilReasonType **theServiceHours** type | gml:ReferenceType
type	**gml:ReferenceType**

element **CoastguardStationType/geometry**

diagram	
	PointOrSurface **geometry** type | PointOrSurface **S100:pointProperty** type | PointPropertyType **S100:surfaceProperty** type | SurfacePropertyType
type	**PointOrSurface**
children	**pointProperty surfaceProperty**

complexType **contactAddressType**

diagram	
children	**deliveryPoint cityName administrativeDivision country postalCode**
annotation	documentation Direction or superscription of a letter, package, etc., specifying the name of the place to which it is directed, and optionally a contact person or organisation who should receive it. (Oxford English Dictionary, 2nd Ed., adapted).

element **contactAddressType/deliveryPoint**

diagram	
	deliveryPoint type xs:string 0..¥ Details of where post can be delivered such as the apartment, name and/or number of a street, building or PO Box.
type	**xs:string**
annotation	documentation Details of where post can be delivered such as the apartment, name and/or number of a street, building or PO Box.

element **contactAddressType/cityName**

diagram	
	cityName type xs:string The name of a town or city.
type	**xs:string**
annotation	documentation The name of a town or city.

element **contactAddressType/administrativeDivision**

diagram	
	administrativeDivision type xs:string Administrative division is a generic term for an administrative region within a country at a level below that of the sovereign state.

type	**xs:string**
annotation	documentation Administrative division is a generic term for an administrative region within a country at a level below that of the sovereign state.

element **contactAddressType/country**

diagram	country type xs:string The name of a nation. (Adapted from The American Heritage Dictionaries)
type	**xs:string**
annotation	documentation The name of a nation. (Adapted from The American Heritage Dictionaries)

element **contactAddressType/postalCode**

diagram	postalCode type xs:string Known in various countries as a postcode, or ZIP code, the postal code is a series of letters and/or digits that identifies each postal delivery area.
type	**xs:string**
annotation	documentation Known in various countries as a postcode, or ZIP code, the postal code is a series of letters and/or digits that identifies each postal delivery area.

complexType **ContactDetailsType**

diagram	

type	extension of **InformationTypeType**
children	**informationAssociation invInformationAssociation** **fixedDateRange periodicDateRange featureName sourceIndication providesInformation callName callSign communicationChannel contactAddress frequencyPair contactInstructions information mMSICode onlineResource telecommunications radiocommunications theAuthority**
annotation	documentation Information on how to reach a person or organisation by postal, internet, telephone, telex and radio systems.

element **ContactDetailsType/callName**

diagram	**callName** type xs:string The designated call name of a station, e.g. radio station, radar station, pilot. This is the name used when calling a radio station by radio i.e. "Singapore Pilots".
type	**xs:string**
annotation	documentation The designated call name of a station, e.g. radio station, radar station, pilot. This is the name used when calling a radio station by radio i.e. "Singapore Pilots".
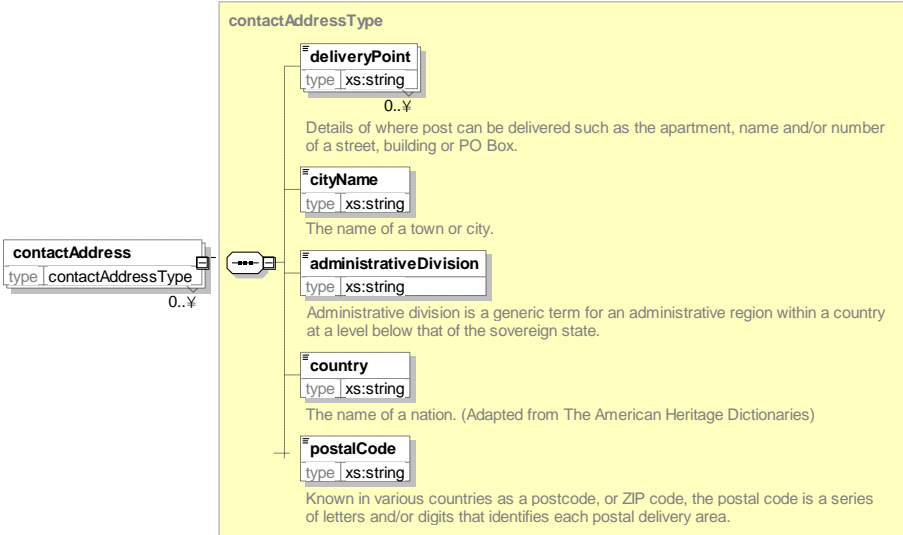
element **ContactDetailsType/callSign**

diagram	**callSign** type xs:string The designated call-sign of a radio station.
type	**xs:string**
annotation	documentation The designated call-sign of a radio station.

element **ContactDetailsType/communicationChannel**

diagram	**communicationChannel** type xs:string 0..∀
type	**xs:string**

element **ContactDetailsType/contactAddress**

diagram	

type	**contactAddressType**
children	**deliveryPoint** **cityName** **administrativeDivision** **country** **postalCode**

element **ContactDetailsType/frequencyPair**

diagram	

frequencyPairType

frequencyShoreStationT...
type | xs:positiveInteger
The shore station transmitter frequency expressed in kHz to one decimal place. Units: kHZ, Resolution: 0.1, Format: XXXXXX
Examples: 4379.1 kHz becomes 043791; 13162.8 kHz becomes 131628

frequencyShoreStation...
type | xs:positiveInteger
The shore station receiver frequency expressed in kHz to one decimal place. Units: kHz, Resolution: 0.1, Format: XXXXXX
Examples: 4379.1 kHz becomes 043791; 13162.8 kHz becomes 131628

frequencyPair
type | frequencyPairType
0..¥

type	**frequencyPairType**
children	**frequencyShoreStationTransmits** **frequencyShoreStationReceives**

element **ContactDetailsType/contactInstructions**
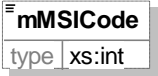
diagram	

contactInstructions
type | xs:string
supplemental instructions on how or when to contact the individual, organisation, or service

type	**xs:string**
annotation	documentation supplemental instructions on how or when to contact the individual, organisation, or service

element **ContactDetailsType/information**
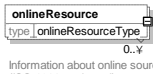
diagram	

informationType

fileLocator
type | xs:string
The string encodes the location of a fragment of text or other information in a support file.

fileReference
type | xs:string
The string encodes the file name of a single external text file that contains the text.

information
type | informationType
0..¥

headline
type | xs:string
Words set at the head of a passage or page to introduce or categorize

language
type | xs:string
ISO 639-3 value

text
type | xs:string
A non-formatted digital text string.

type	**informationType**

children	**fileLocator fileReference headline language text**

element **ContactDetailsType/mMSICode**

diagram	**mMSICode** type xs:int The Maritime Mobile Service Identity (MMSI) Code is formed of a series of nine digits which are transmitted over the radio path in order to uniquely identify ship stations, ship earth stations, coast stations, coast earth stations, and group calls. These identities are formed in such a way that the identity or part thereof can be used by telephone and telex subscribers connected to the general telecommunications network principally to call ships automatically.
type	**xs:int**
annotation	documentation The Maritime Mobile Service Identity (MMSI) Code is formed of a series of nine digits which are transmitted over the radio path in order to uniquely identify ship stations, ship earth stations, coast stations, coast earth stations, and group calls. These identities are formed in such a way that the identity or part thereof can be used by telephone and telex subscribers connected to the general telecommunications network principally to call ships automatically.

element **ContactDetailsType/onlineResource**

diagram	
type	**onlineResourceType**
children	**linkage protocol applicationProfile nameOfResource onlineDescription onlineFunction protocolRequest**
annotation	documentation Information about online sources from which a resource or data can be obtained (ISO 19115, adapted)

element **ContactDetailsType/telecommunications**

diagram	
type	**telecommunicationsType**
children	**telecommunicationIdentifier telcomCarrier contactInstructions telecommunicationService categoryOfCommPref scheduleByDoW**
annotation	documentation information for contact by means of a telecommunications service. Distinctions: emailAddress, internetAddress, callName, callSign, COMCHA

element **ContactDetailsType/radiocommunications**

diagram	
type	**radiocommunicationsType**
children	**categoryOfCommPref** **categoryOfRadioMethods** **categoryOfMaritimeBroadcast** **communicationChannel** **contactInstructions** **facsimileDrumSpeed** **frequencyPair** **selectiveCallNumber** **signalFrequency** **timeOfObservation** **timesOfTransmission** **transmissionContent** **tmIntervalsByDoW** **transmissionRegularity**

annotation	documentation
	When bound to ContactDetails, only the listed sub-attributes may be used:
	
	    - communicationChannel
	    - contactinstructions
	    - frequencypair
	    -
	categoryOfChannelOrFrequencyPreference
	
	    - categoryOfRadioMethods
	    - tmIntervalsByDoW

element **ContactDetailsType/theAuthority**

diagram	
type	**gml:ReferenceType**
annotation	documentation Implements reverse association from ContactDetails to Authority from the April 2017 model. To be added to feature catalogue.

complexType **CurveOrSurface**

diagram	
children	**curveProperty surfaceProperty**

complexType **DataCoverageType**

diagram	
type	extension of **MetaFeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation maximumDisplayScale minimumDisplayScale geometry**
annotation	documentation A geographical area that describes the coverage and extent of spatial types.

element **DataCoverageType/maximumDisplayScale**

diagram	
type	**xs:positiveInteger**
annotation	documentation The largest intended viewing scale for the data. Not nillable(?)

element **DataCoverageType/minimumDisplayScale**

diagram	
type	**xs:positiveInteger**
annotation	documentation The smallest intended viewing scale for the data. Not nillable(?)

element **DataCoverageType/geometry**

diagram	
type	**SurfacePropertyType**
children	**surfaceProperty**

complexType **DataQualityType**

diagram	
type	extension of **MetaFeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation information**
annotation	documentation Abstract feature type for data quality meta-features

element **DataQualityType/information**

diagram	
type	**informationType**
children	**fileLocator fileReference headline language text**
annotation	documentation Use of attribute information is discouraged for nautical publications data quality meta-features.

complexType **DatasetType**

diagram	
type	extension of **gml:AbstractFeatureType**
children	**gml:boundedBy DatasetIdentificationInformation DatasetStructureInformation Point MultiPoint Curve CompositeCurve OrientableCurve Surface Polygon imember member**
annotation	documentation Dataset element for MPA dataset as "GML document"

element **DatasetType/DatasetIdentificationInformation**

diagram	
	S100:DataSetIdentificationType
	encodingSpecification type xs:string fixed S-100 Part 10b Encoding specification that defines the encoding.
	encodingSpecificationE... type xs:string fixed 1.0 Edition of the encoding specification
	productIdentifier type xs:string Unique identifier of the data product as specified in the product specification
	productEdition type xs:string Edition of the product specification
	applicationProfile type xs:string Identifier that specifies a profile within the data product
DatasetIdentificationInf... type S100:DataSetIdentifi... Dataset identification information	**datasetFileIdentifier** type xs:string The file identifier of the dataset
	datasetTitle type xs:string The title of the dataset
	datasetReferenceDate type xs:date The reference date of the dataset
	datasetLanguage type ISO-639-1 default en The (primary) language used in this dataset
	datasetAbstract type xs:string The abstract of the dataset
	datasetTopicCategory type MD_TopicCategoryCo... 1..¥ A set of topic categories

type	**DataSetIdentificationType**
children	**encodingSpecification encodingSpecificationEdition productIdentifier productEdition applicationProfile datasetFileIdentifier datasetTitle datasetReferenceDate datasetLanguage datasetAbstract datasetTopicCategory**
annotation	documentation Dataset identification information

element **DatasetType/DatasetStructureInformation**

diagram	
	S100:DataSetStructureInformationType **datasetCoordOriginX** type xs:double Shift used to adjust X coordinate before encoding **datasetCoordOriginY** type xs:double Shift used to adjust Y coordinate before encoding **datasetCoordOriginZ** type xs:double Shift used to adjust Z coordinate before encoding **coordMultFactorX** type xs:positiveInteger Floating point to integer multiplication factor for X coordinate or longitude **coordMultFactorY** type xs:positiveInteger Floating point to integer multiplication factor for Y coordinate or latitude **coordMultFactorZ** type xs:positiveInteger Floating point to integer multiplication factor for Z coordinate or depths or height **DatasetStructureInform...** type S100:DataSetStruct... Dataset structure information **nInfoRec** type xs:nonNegativeInteger Number of information records in the data set **nPointRec** type xs:nonNegativeInteger Number of point records in the data set **nMultiPointRec** type xs:nonNegativeInteger Number of multipoint records in the data set **nCurveRec** type xs:nonNegativeInteger Number of curve records in the data set **nCompositeCurveRec** type xs:nonNegativeInteger Number of composite curve records in the data set **nSurfaceRec** type xs:nonNegativeInteger Number of surface records in the data set **nFeatureRec** type xs:nonNegativeInteger Number of feature records in the data set
type	**DataSetStructureInformationType**
children	**datasetCoordOriginX datasetCoordOriginY datasetCoordOriginZ coordMultFactorX coordMultFactorY coordMultFactorZ nInfoRec nPointRec nMultiPointRec nCurveRec nCompositeCurveRec nSurfaceRec nFeatureRec**
annotation	documentation Dataset structure information

element **DatasetType/imember**

diagram	
type	**IMemberType**
children	**InformationType**
annotation	documentation intended for S100 information types. Extension of GML practice, not addressed by ISO 19136.

element **DatasetType/member**

diagram	
type	**MemberType**
children	**gml:AbstractFeature**
annotation	documentation intended for technical GML 3.2 requirement for making the dataset a "GML document" and clause 21.3 of the OGC GML standard

complexType **facsimileDrumSpeedType**
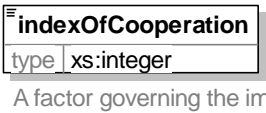
diagram	
children	**drumSpeed indexOfCooperation**
annotation	documentation The drum speed and index of co-operation of a facsimile machine.

element **facsimileDrumSpeedType/drumSpeed**
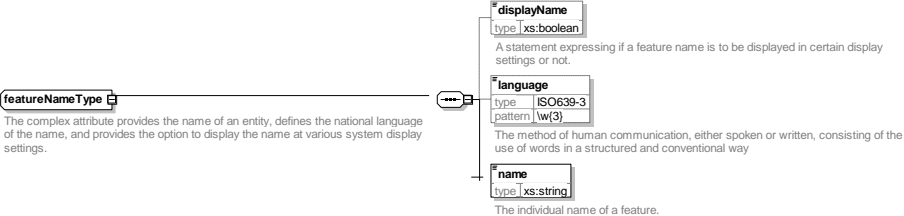
diagram	
type	**xs:integer**

annotation	documentation
	The drum speed in revolutions per minute.
	documentation
	The drum speed should be encoded using three digits for the speed including a leading zero if necessary. Resolution: 1
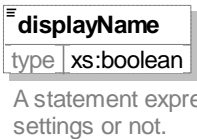
element **facsimileDrumSpeedType/indexOfCooperation**

diagram	indexOfCooperation — type xs:integer — A factor governing the image resolution of radiofax transmissions.
type	**xs:integer**
annotation	documentation
	A factor governing the image resolution of radiofax transmissions.
	documentation
	The Index of Cooperation must be known to decode the transmission. The Index of Co-operation is generally 576, although 288 with alternate line scanning is sometimes used.

complexType **featureNameType**

diagram	featureNameType — The complex attribute provides the name of an entity, defines the national language of the name, and provides the option to display the name at various system display settings. displayName — type xs:boolean — A statement expressing if a feature name is to be displayed in certain display settings or not. language — type ISO639-3 — pattern \w{3} — The method of human communication, either spoken or written, consisting of the use of words in a structured and conventional way. name — type xs:string — The individual name of a feature.
children	**displayName language name**
annotation	documentation
	The complex attribute provides the name of an entity, defines the national language of the name, and provides the option to display the name at various system display settings.
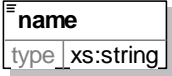
element **featureNameType/displayName**

diagram	displayName — type xs:boolean — A statement expressing if a feature name is to be displayed in certain display settings or not.
type	**xs:boolean**
annotation	documentation
	A statement expressing if a feature name is to be displayed in certain display settings or not.
	documentation
	Indication: Boolean. A True value is an indication that the name is intended to be displayed.
	documentation
	Remarks: Where it is allowable to encode multiple instances of feature name for a single feature instance, only one feature name instance can indicate that the name is to be displayed (display name set to True).

element **featureNameType/language**

diagram	**language**
	type ISO639-3
	pattern \w{3}
	The method of human communication, either spoken or written, consisting of the use of words in a structured and conventional way
type	**ISO639-3**
facets	Kind Value Annotation pattern \w{3}
annotation	documentation The method of human communication, either spoken or written, consisting of the use of words in a structured and conventional way documentation Remarks: The language is encoded by a character code following ISO 639-3

element **featureNameType/name**

diagram	**name**
	type xs:string
	The individual name of a feature.
type	**xs:string**
annotation	documentation The individual name of a feature.

complexType **FeatureType**

diagram	
type	extension of **AbstractFeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions**
annotation	documentation Generalized feature type which carry all the common attributes

element **FeatureType/fixedDateRange**

diagram	
type	**fixedDateRangeType**
children	**dateStart** **dateEnd**

element **FeatureType/periodicDateRange**

diagram	
type	**periodicDateRangeType**
children	**dateStart** **dateEnd**

element **FeatureType/featureName**

diagram	
type	**featureNameType**
children	**displayName** **language** **name**

element **FeatureType/sourceIndication**

diagram	
type	**sourceIndicationType**
children	**categoryOfAuthority country featureName reportedDate source sourceType**

The diagram shows:

sourceIndication — type sourceIndicationType

sourceIndicationType:
- **categoryOfAuthority** — type categoryOfAuthorityT...
- **country** — type xs:string
- **featureName** — type featureNameType — 0..¥
- **reportedDate** — type S100_TruncatedDate
- **source** — type xs:string — The publication, document, or reference work from which information comes or is acquired.
- **sourceType** — type sourceTypeType — Type of source

---

element **FeatureType/textContent**

diagram	
type	**textContentType**
children	**categoryOfText information onlineResource sourceIndication**

The diagram shows:

textContent — type textContentType — 0..¥

textContentType:
- **categoryOfText** — type categoryOfTextType
- **information** — type informationType — 0..¥
- **onlineResource** — type onlineResourceType
- **sourceIndication** — type sourceIndicationType

element **FeatureType/permission**

diagram	
	gml:ReferenceType **attributes** **owns** type: boolean default: false **xlink:type** type: xlink:typeType fixed: simple **xlink:href** type: xlink:hrefType **xlink:role** type: xlink:roleType **xlink:arcrole** type: xlink:arcroleType **xlink:title** type: xlink:titleAttrType **xlink:show** type: xlink:showType **xlink:actuate** type: xlink:actuateType **nilReason** type: gml:NilReasonType **permission** type: gml:ReferenceType 0..¥
type	**gml:ReferenceType**
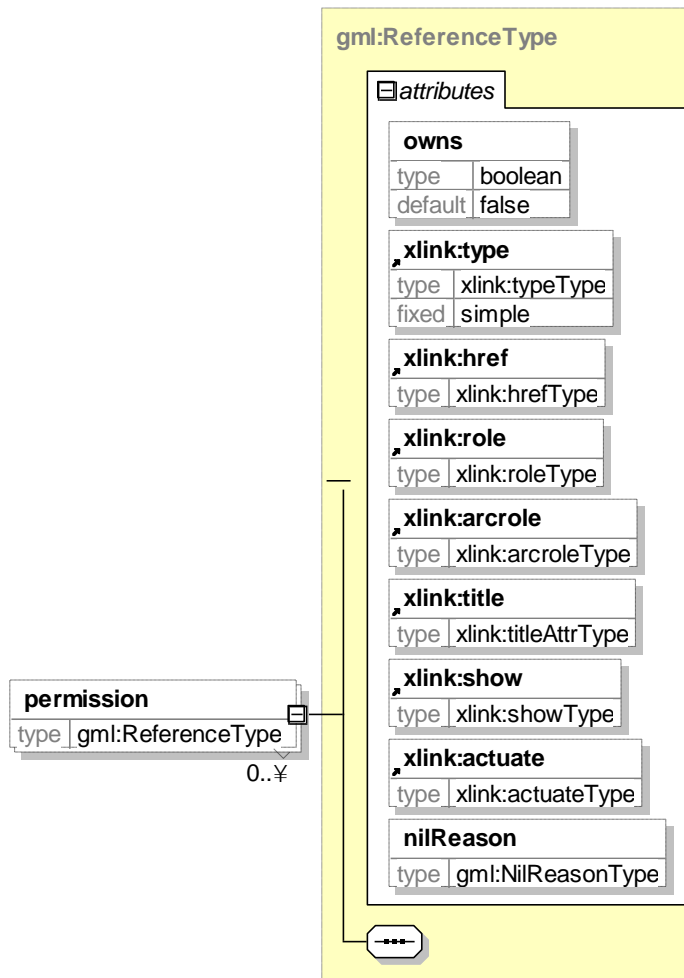
element **FeatureType/providesInformation**

diagram	
	gml:ReferenceType attributes **owns** type boolean default false **xlink:type** type xlink:typeType fixed simple **xlink:href** type xlink:hrefType **xlink:role** type xlink:roleType **xlink:arcrole** type xlink:arcroleType **xlink:title** type xlink:titleAttrType **xlink:show** type xlink:showType **xlink:actuate** type xlink:actuateType **nilReason** type gml:NilReasonType **providesInformation** type gml:ReferenceType 0..¥
type	**gml:ReferenceType**
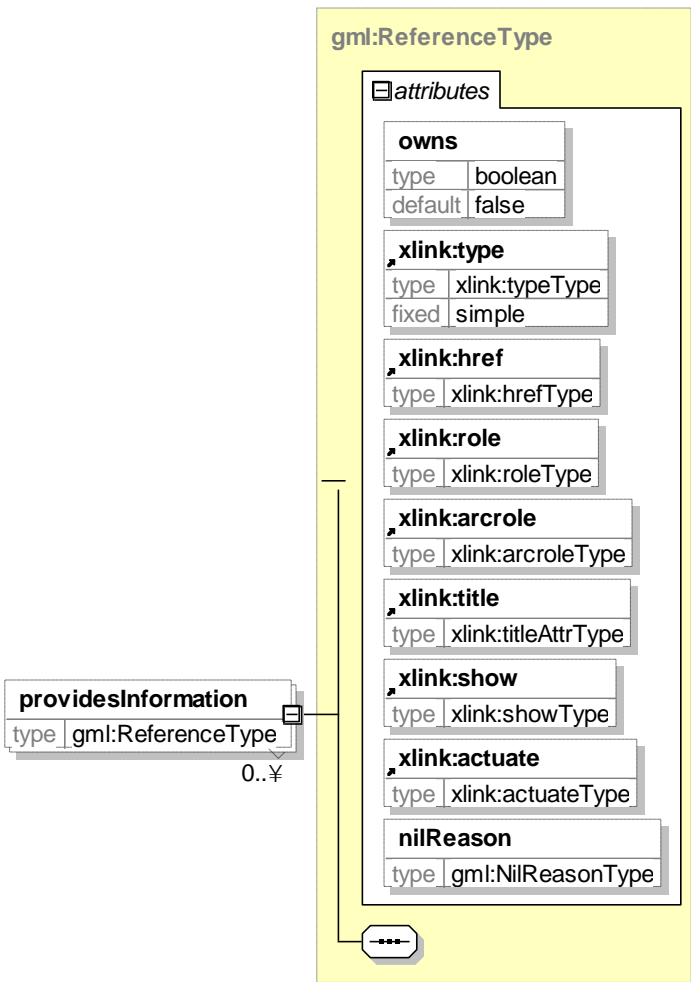
element **FeatureType/theRxN**

diagram	
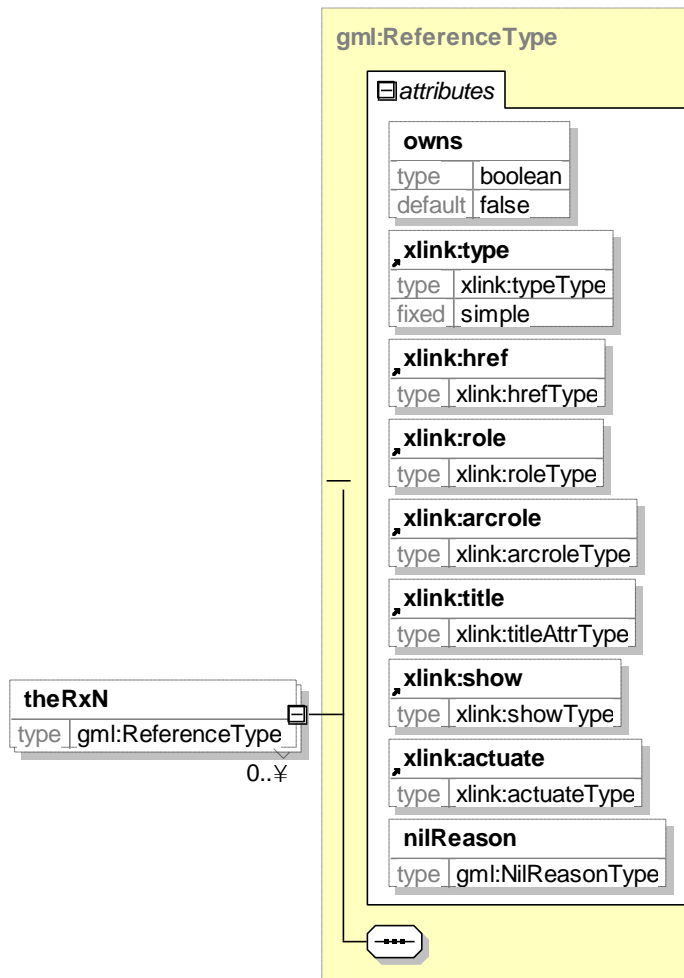
type	**gml:ReferenceType**

element **FeatureType/positions**

diagram	
	gml:ReferenceType
	⊟*attributes*
	owns type boolean default false
	xlink:type type xlink:typeType fixed simple
	xlink:href type xlink:hrefType
	xlink:role type xlink:roleType
	xlink:arcrole type xlink:arcroleType
	xlink:title type xlink:titleAttrType
	xlink:show type xlink:showType
	xlink:actuate type xlink:actuateType
	nilReason type gml:NilReasonType
	positions type gml:ReferenceType A pointer to a specific cartographically positioned location for text.
type	**gml:ReferenceType**
annotation	documentation A pointer to a specific cartographically positioned location for text.

complexType **fixedDateRangeType**

diagram	
	fixedDateRangeType Describes a single fixed period, as the date range between its sub-attributes. **dateStart** type S100_TruncatedDate The start date or time of the interval. **dateEnd** type S100_TruncatedDate The end date or time of the interval.
children	**dateStart dateEnd**
annotation	documentation Describes a single fixed period, as the date range between its sub-attributes. documentation Remarks: Sub-attributes date end and date start must have the calendar year encoded using 4 digits for the calendar year (CCYY). Month (MM) and day (DD) are optional.

element **fixedDateRangeType/dateStart**

diagram	
type	**S100_TruncatedDate**
children	**gDay gMonth gYear gMonthDay gYearMonth date**
annotation	documentation The start date or time of the interval.

element **fixedDateRangeType/dateEnd**

diagram	
type	**S100_TruncatedDate**
children	**gDay gMonth gYear gMonthDay gYearMonth date**
annotation	documentation

	The end date or time of the interval.

complexType **ForecastAreaAggregateType**

diagram	
type	extension of **FuzzyAreaAggregateType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions consistsOf**
annotation	documentation Aggregation of areas where forecasts and warnings broadcasted for a Weather forecast and warning area may be available with differing levels of reliability. documentation consistsOf removed from this type because duplicating the element of the same name in supertype FuzzyAreaAggregate violates XML schema rules

complexType **frequencyPairType**

diagram	
	frequencyPairType — A pair of frequencies for transmitting and receiving radio signals. The shore station transmits and receives on the frequencies indicated — frequencyShoreStationT... type xs:positiveInteger — The shore station transmitter frequency expressed in kHz to one decimal place. Units: kHZ, Resolution: 0.1, Format: XXXXXX Examples: 4379.1 kHz becomes 043791; 13162.8 kHz becomes 131628 — frequencyShoreStation... type xs:positiveInteger — The shore station receiver frequency expressed in kHz to one decimal place. Units: kHz, Resolution: 0.1, Format: XXXXXX Examples: 4379.1 kHz becomes 043791; 13162.8 kHz becomes 131628
children	**frequencyShoreStationTransmits frequencyShoreStationReceives**
annotation	documentation A pair of frequencies for transmitting and receiving radio signals. The shore station transmits and receives on the frequencies indicated

element **frequencyPairType/frequencyShoreStationTransmits**

diagram	
	frequencyShoreStationT... type xs:positiveInteger The shore station transmitter frequency expressed in kHz to one decimal place. Units: kHZ, Resolution: 0.1, Format: XXXXXX Examples: 4379.1 kHz becomes 043791; 13162.8 kHz becomes 131628
type	**xs:positiveInteger**
annotation	documentation The shore station transmitter frequency expressed in kHz to one decimal place. Units: kHZ, Resolution: 0.1, Format: XXXXXX Examples: 4379.1 kHz becomes 043791; 13162.8 kHz becomes 131628

element **frequencyPairType/frequencyShoreStationReceives**

diagram	
	frequencyShoreStation... type xs:positiveInteger The shore station receiver frequency expressed in kHz to one decimal place. Units: kHz, Resolution: 0.1, Format: XXXXXX Examples: 4379.1 kHz becomes 043791; 13162.8 kHz becomes 131628
type	**xs:positiveInteger**
annotation	documentation The shore station receiver frequency expressed in kHz to one decimal place. Units: kHz, Resolution: 0.1, Format: XXXXXX Examples: 4379.1 kHz becomes 043791; 13162.8 kHz becomes 131628

complexType **FuzzyAreaAggregateType**

diagram	
	FeatureType (extension)

type	extension of **FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions consistsOf**
annotation	documentation Aggregation of a geographic feature describing a service or phenomenon with zones of different confidence about the availability of the service, occurrence of the phenomenon, or applicability of the information described by the geographic feature.

element **FuzzyAreaAggregateType/consistsOf**

diagram	
type	**gml:ReferenceType**
annotation	documentation A pointer to the aggregate in a whole-part relationship. documentation Used for both the IndeterminateZone and core feature associations (same role name used for both)

complexType **GM_Curve**

diagram	
children	**curveProperty**

complexType **GM_Point**

diagram	
children	**pointProperty**

complexType **GM_Surface**
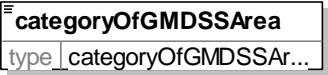
diagram	
	GM_Surface — S100:surfaceProperty / type SurfacePropertyType
children	**surfaceProperty**

complexType **GMDSSAreaType**

diagram	

GMDSSAreaType

An area defined for a global communications service based upon automated systems, both satellite based and terrestrial, to provide distress alerting and promulgation of maritime safety information for mariners. (Adapted IHO Dictionary, S-32, 5th Edition, 2048)

FeatureType (extension)

attributes

gml:id
type ID
use required

The attribute gml:id supports provision of a handle for the XML element representing a GML Object. Its use is mandatory for all GML objects. It is of XML type ID, so is constrained to be unique in the XML document within which it occurs.

gml:boundedBy
type gml:BoundingShape...

This property describes the minimum bounding box or rectangle that encloses the entire feature.

featureObjectIdentifier
type FeatureObjectIdentifier

informationAssociation
type InformationPropertyT...
0..∞

featureAssociation
type FeaturePropertyType
0..∞

invFeatureAssociation
type FeaturePropertyType
0..∞

fixedDateRange
type fixedDateRangeType

periodicDateRange
type periodicDateRangeT...
0..∞

featureName
type featureNameType
0..∞

sourceIndication
type sourceIndicationType

textContent
type textContentType
0..∞

permission
type gml:ReferenceType
0..∞

providesInformation
type gml:ReferenceType
0..∞

theRxN
type gml:ReferenceType
0..∞

positions
type gml:ReferenceType

A pointer to a specific cartographically positioned location for text.

categoryOfGMDSSArea
type categoryOfGMDSSAr...

controlAuthority
type gml:ReferenceType
0..∞

The controlling organization or authority for a geographically located service

serviceProvider
type gml:ReferenceType
0..∞

TBD: Addition to April 2017 model

geometry
type GM_Surface
1..∞

type	extension of **FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions categoryOfGMDSSArea controlAuthority serviceProvider geometry**
annotation	documentation An area defined for a global communications service based upon automated systems, both satellite based and terrestrial, to provide distress alerting and promulgation of maritime safety information for mariners. (Adapted IHO Dictionary, S-32, 5th Edition, 2048)

element **GMDSSAreaType/categoryOfGMDSSArea**

diagram	categoryOfGMDSSArea type categoryOfGMDSSAr...
type	**categoryOfGMDSSAreaType**
facets	Kind — enumeration, Value — Area A1, Annotation — documentation: Within range of VHF coast stations with continuous DSC alerting available (about 20 – 30 miles) Kind — enumeration, Value — Area A2, Annotation — documentation: Beyond area A1, but within range of MF coastal stations with continuous DSC alerting available (about l00 miles) Kind — enumeration, Value — Area A3, Annotation — documentation: Beyond the first two areas, but within coverage of geostationary maritime communication satellites (in practice this means Inmarsat). This covers the area between roughly 70 deg N and 70 deg S. Kind — enumeration, Value — Area A4, Annotation — documentation: The remaining sea areas. The most important of these is the sea around the North Pole (the area around the South Pole is mostly land). Geostationary satellites, which are positioned above the equator, cannot reach this far.

element **GMDSSAreaType/controlAuthority**

diagram	
type	**gml:ReferenceType**
annotation	documentation The controlling organization or authority for a geographically located service

element **GMDSSAreaType/serviceProvider**

diagram	

type	**gml:ReferenceType**
annotation	documentation TBD: Addition to April 2017 model

element **GMDSSAreaType/geometry**

diagram	

type	**GM_Surface**
children	**surfaceProperty**

complexType **graphicType**

diagram	
	pictorialRepresentation type xs:string 1..¥ **pictureCaption** type xs:string Short description of the purpose of the image. **graphicType** ⊟ ┄ ⊟ **sourceDate** type xs:date **pictureInformation** type xs:string A set of information to provide credits to picture creator, copyright owner etc. **bearingInformation** type bearingInformationTy...
children	**pictorialRepresentation pictureCaption sourceDate pictureInformation bearingInformation**

element **graphicType/pictorialRepresentation**

diagram	
	pictorialRepresentation type xs:string 1..¥
type	**xs:string**
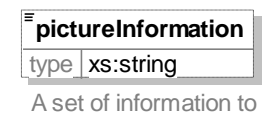
element **graphicType/pictureCaption**

diagram	
	pictureCaption type xs:string Short description of the purpose of the image.
type	**xs:string**
annotation	documentation Short description of the purpose of the image.
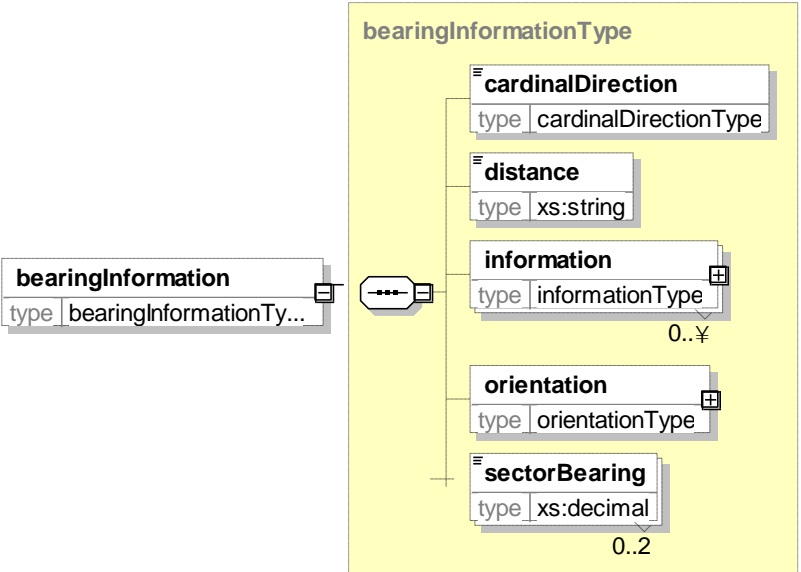
element **graphicType/sourceDate**

diagram	
	sourceDate type xs:date
type	**xs:date**
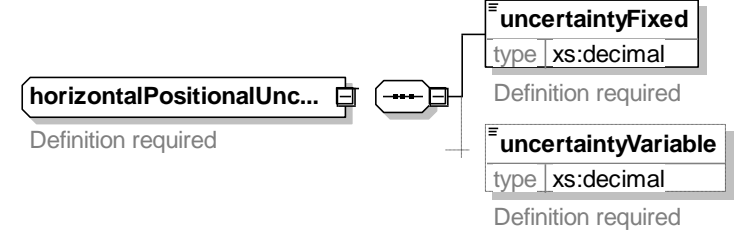
element **graphicType/pictureInformation**

diagram	**pictureInformation** type xs:string A set of information to provide credits to picture creator, copyright owner etc.
type	**xs:string**
annotation	documentation A set of information to provide credits to picture creator, copyright owner etc.
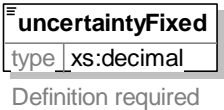
element **graphicType/bearingInformation**

diagram	**bearingInformationType** **bearingInformation** type bearingInformationTy... **cardinalDirection** type cardinalDirectionType **distance** type xs:string **information** type informationType 0..¥ **orientation** type orientationType **sectorBearing** type xs:decimal 0..2
type	**bearingInformationType**
children	**cardinalDirection distance information orientation sectorBearing**
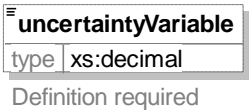
complexType **horizontalPositionalUncertainty**

diagram	**horizontalPositionalUnc...** Definition required **uncertaintyFixed** type xs:decimal Definition required **uncertaintyVariable** type xs:decimal Definition required
children	**uncertaintyFixed uncertaintyVariable**
annotation	documentation Definition required
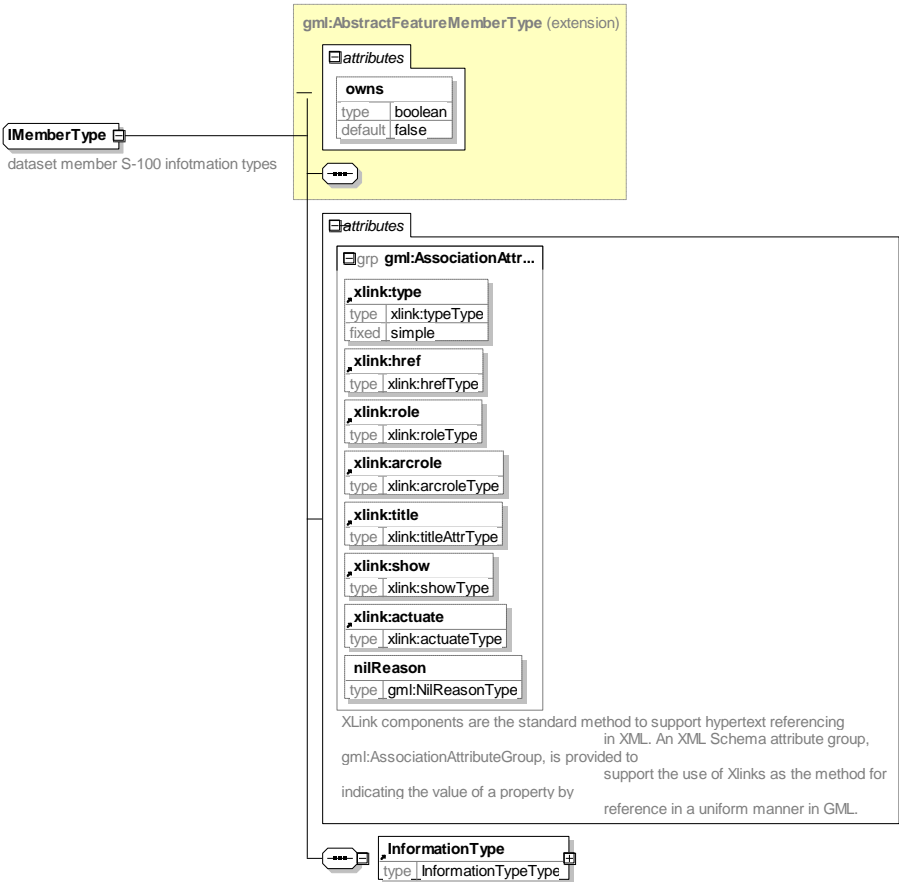
element **horizontalPositionalUncertainty/uncertaintyFixed**

diagram	
	uncertaintyFixed
	type xs:decimal
	Definition required
type	**xs:decimal**
annotation	documentation
	Definition required

element **horizontalPositionalUncertainty/uncertaintyVariable**

diagram	
	uncertaintyVariable
	type xs:decimal
	Definition required
type	**xs:decimal**
annotation	documentation
	Definition required

complexType **IMemberType**

diagram	
type	extension of **gml:AbstractFeatureMemberType**

children	**InformationType**
annotation	documentation dataset member S-100 infotmation types

complexType **InclusionType**

diagram	
type	extension of **InformationTypeType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation membership theApplicableRxN isApplicableTo**
annotation	documentation Association class specifying the relationship between the subset of vessels described by an APPLIC data object and a regulation (restriction, recommendation, or nautical information).

element **InclusionType/membership**

diagram	
type	**membershipType**
facets	Kind Value Annotation enumeration included documentation Vessels with these characteristics are included in the

	enumeration excluded	regulation/restriction/recommendation/nautical information.
		documentation
		Vessels with these characteristics are excluded from the regulation/restriction/recommendation/nautical information.
annotation	documentation	indicates whether a vessel is included or excluded from the regulation/restriction/recommendation/nautical information

element **InclusionType/theApplicableRxN**

diagram	
type	**gml:ReferenceType**

element **InclusionType/isApplicableTo**

diagram	
	gml:ReferenceType ⊟*attributes* **owns** — type: boolean, default: false **xlink:type** — type: xlink:typeType, fixed: simple **xlink:href** — type: xlink:hrefType **xlink:role** — type: xlink:roleType **xlink:arcrole** — type: xlink:arcroleType **xlink:title** — type: xlink:titleAttrType **xlink:show** — type: xlink:showType **xlink:actuate** — type: xlink:actuateType **nilReason** — type: gml:NilReasonType **isApplicableTo** — type: gml:ReferenceType — 1..¥
type	**gml:ReferenceType**

complexType **IndeterminateZoneType**

diagram	
type	extension of **FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions informationConfidence componentOf geometry**
annotation	documentation A region in which the perception of a phenomenon or the availability of a service is known only to a specified level of confidence. documentation Remark: IndeterminateZone features associated to the same fuzzy area aggregate must not overlap.

element **IndeterminateZoneType/informationConfidence**

diagram	informationConfidence type | informationConfidenc...
type	**informationConfidenceType**

facets	Kind Value Annotation
	enumeration virtuallyCertain documentation
	                                      Virtually certain to be experienced by (or available to) an individual vessel; will be experienced by nearly all vessels. (FAA, adapted.)
	enumeration highLikelihood documentation
	                                      Frequently experienced by (or available to) an individual vessel; experienced by a majority of vessels. (FAA, adapted.)
	enumeration mediumLikelihood documentation
	                                      Occasionally experienced by (or available to) an individual vessel; experienced by (or available to) about half of all vessels. (FAA, adapted.)
	enumeration lowLikelihood documentation
	                                      Unlikely, but sometimes (rarely) experienced by (or available to) an individual vessel; experienced by (or available to) a minority of vessels). (FAA, adapted.)

element **IndeterminateZoneType/componentOf**

diagram	
	gml:ReferenceType ⊟*attributes* **owns** type boolean default false **xlink:type** type xlink:typeType fixed simple **xlink:href** type xlink:hrefType **xlink:role** type xlink:roleType **xlink:arcrole** type xlink:arcroleType **xlink:title** type xlink:titleAttrType **xlink:show** type xlink:showType **xlink:actuate** type xlink:actuateType **nilReason** type gml:NilReasonType **componentOf** type gml:ReferenceType
type	**gml:ReferenceType**

element **IndeterminateZoneType/geometry**

diagram	
	geometry type GM_Surface Fuzzy region spatial attribute **GM_Surface** **S100:surfaceProperty** type SurfacePropertyType
type	**GM_Surface**
children	**surfaceProperty**
annotation	documentation Fuzzy region spatial attribute

complexType **informationType**

diagram	
children	**fileLocator** **fileReference** **headline** **language** **text**
annotation	documentation Provides textual information that cannot be provided using other allowable attributes for the feature, in a defined language. The information may be provided as a string in sub-attribute text, or by encoding the file name of a single external text file that contains the text in sub-attribute file reference. documentation Remarks: - The sub-attribute text should be used, for example, to hold the information that is shown on paper charts by cautionary and explanatory notes. No formatting of text is possible within the sub-attribute text. If formatted text is required then an associated text file referenced by the sub-attribute file reference must be used; - The sub-attribute file reference is generally used for long text strings or those that require formatting, however there is no restriction on the type of text (except for lexical level) that can be held in files referenced by sub-attribute file reference.

element **informationType/fileLocator**
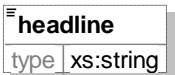
diagram	
type	**xs:string**
annotation	documentation The string encodes the location of a fragment of text or other information in a support file. documentation Remarks: - Application schemas must describe how the associated file is identified. The associated file will commonly be named in a file reference co-attribute of the same complex attribute.; - Each DCEG must specify requirements for the format of the associated file and the semantics of file locator. For example, the value of file locator may be an HTML ID in an HTML file, line number in a text file) or a bookmark in a PDF file.

element **informationType/fileReference**
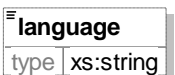
diagram	
type	**xs:string**

annotation	documentation The string encodes the file name of a single external text file that contains the text. documentation Remarks: The attribute file reference is generally used for long text strings or those that require formatting, however there is no restriction on the type of text (except for lexical level) that can be held in files referenced by sub-attribute file reference.
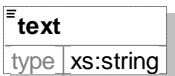
element **informationType/headline**

diagram	**headline** type xs:string Words set at the head of a passage or page to introduce or categorize
type	**xs:string**
annotation	documentation Words set at the head of a passage or page to introduce or categorize

element **informationType/language**

diagram	**language** type xs:string ISO 639-3 value
type	**xs:string**
annotation	documentation ISO 639-3 value

element **informationType/text**

diagram	**text** type xs:string A non-formatted digital text string.
type	**xs:string**
annotation	documentation A non-formatted digital text string. documentation Remarks: The attribute should be used, for example, to hold the information that is shown on paper charts by short cautionary and explanatory notes. Therefore text populated in text must not exceed 300 characters. Text may be in English or in a national language defined by the attribute language. No formatting of text is possible within the sub-attribute text. If formatted text, or text strings exceeding 300 characters, is required, then the attribute file reference must be used.

complexType **InformationTypeType**

diagram	
type	extension of **AbstractInformationType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation**
annotation	documentation Generalized information type which carry all the common attributes

element **InformationTypeType/fixedDateRange**

diagram	
type	**fixedDateRangeType**
children	**dateStart dateEnd**

element **InformationTypeType/periodicDateRange**

diagram	
	periodicDateRangeType **periodicDateRange** type periodicDateRangeT... 0..¥ **dateStart** type S100_TruncatedDate The start date or time of the interval. **dateEnd** type S100_TruncatedDate The end date or time of the interval.
type	**periodicDateRangeType**
children	**dateStart** **dateEnd**

element **InformationTypeType/featureName**

diagram	
	featureNameType **displayName** type xs:boolean A statement expressing if a feature name is to be displayed in certain display settings or not. **featureName** type featureNameType 0..¥ **language** type ISO639-3 pattern \w{3} The method of human communication, either spoken or written, consisting of the use of words in a structured and conventional way **name** type xs:string The individual name of a feature.
type	**featureNameType**
children	**displayName** **language** **name**

element **InformationTypeType/sourceIndication**

diagram	
	sourceIndicationType **categoryOfAuthority** type categoryOfAuthorityT... **country** type xs:string **featureName** type featureNameType 0..¥ **sourceIndication** type sourceIndicationType **reportedDate** type S100_TruncatedDate **source** type xs:string The publication, document, or reference work from which information comes or is acquired. **sourceType** type sourceTypeType Type of source

type	**sourceIndicationType**
children	**categoryOfAuthority country featureName reportedDate source sourceType**

element **InformationTypeType/providesInformation**

diagram	
type	**gml:ReferenceType**

complexType **InmarsatOceanRegionAreaType**

diagram	
type	extension of **FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions controlAuthority geometry**
annotation	documentation The ocean region of the earth's surface, within which a station can obtain line-of-sight communication, with an Inmarsat satellite.

element **InmarsatOceanRegionAreaType/controlAuthority**

diagram	
type	**gml:ReferenceType**
annotation	documentation The controlling organization or authority for a geographically located service

element **InmarsatOceanRegionAreaType/geometry**

diagram	
type	**GM_Surface**
children	**surfaceProperty**
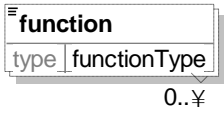
complexType **LandmarkType**

diagram	
type	extension of **FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions categoryOfLandmark function status geometry**
annotation	documentation Any prominent object on land which can be used in determining a location or a direction. (IHO Dictionary – S-32). S-123 Note: Only features relevant to radio communications are encoded e.g., radio towers or radio masts. If the feature can be encoded as a radio station at the same location, a coincident Landmark must not be encoded.
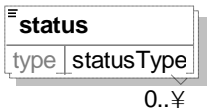
element **LandmarkType/categoryOfLandmark**

diagram	
	categoryOfLandmark type categoryOfLandmark... 1..∀

type	**categoryOfLandmarkType**

facets	Kind	Value	Annotation
	enumeration	dish aerial	documentation A parabolic aerial for the receipt and transmission of high frequency radio signals. (IHO Dictionary – S-32).
	enumeration	mast	documentation A relatively tall structure usually held vertical by guy lines. (S-57 Edition 3.1, Appendix A – Chapter 2, Page 2.45, November 2000).
	enumeration	tower	documentation A relatively tall, narrow structure that may either stand alone or may form part of another structure. (Defence Geospatial Information Working Group; Feature Data Dictionary Register, 2010).
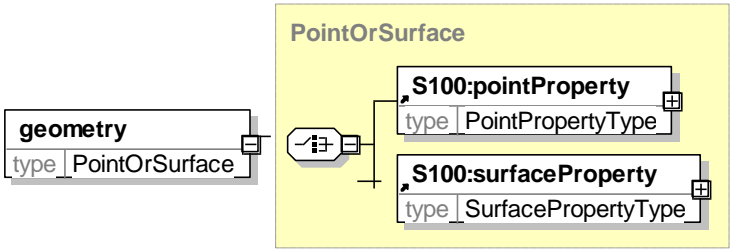
element **LandmarkType/function**

diagram	
	function type functionType 0..∀

type	**functionType**

facets	Kind	Value	Annotation
	enumeration	communication	documentation Transmitting and/or receiving electronic communication signals. (Defence Geospatial Information Working Group; Feature Data Dictionary Register, 2010).
	enumeration	radio	documentation Transmitting and/or receiving radio-frequency electromagnetic waves as a means of communication. (Defence Geospatial Information Working Group; Feature Data Dictionary Register, 2010).
	enumeration	microwave	documentation Broadcasting and receiving signals using microwaves. (S-57 Edition 3.1, Appendix A – Chapter 2, Page 2.133, November 2000).
	enumeration	control	documentation Used to control the flow of traffic within a specified range of an installation. (Defence Geospatial Information Working Group; Feature Data Dictionary Register, 2010).
	enumeration	sea rescue control	documentation A unit responsible for promoting efficient organization of search and rescue services and for coordinating the conduct of search and rescue operations within a search and rescue region. (Defence Geospatial Information Working Group; Feature Data Dictionary Register, 2010).

element **LandmarkType/status**

diagram	
	status type statusType 0..¥

type	**statusType**

facets	Kind	Value	Annotation
	enumeration	permanent	documentation Intended to last or function indefinitely
	enumeration	occasional	documentation Acting on special occasions; happening irregularly
	enumeration	recommended	documentation Presented as worthy of confidence, acceptance, use, etc.
	enumeration	not in use	documentation Use has ceased, but the facility still exists intact; disused.
	enumeration	periodic/intermittent	documentation Recurring at intervals
	enumeration	reserved	documentation Set apart for some specific use
	enumeration	temporary	documentation Meant to last only for a time
	enumeration	private	documentation Administered by an individual or corporation, rather than a State or a public body.
	enumeration	mandatory	documentation Compulsory; enforced.
	enumeration	extinguished	documentation No longer lit
	enumeration	illuminated	documentation Lit by floodlights, strip lights, etc.
	enumeration	historic	documentation Famous in history; of historical interest
	enumeration	public	documentation Belonging to, available to, used or shared by, the community as a whole and not restricted to private use.
	enumeration	synchronised	documentation Occur at a time, coincide in point of time, be contemporary or simultaneous
	enumeration	watched	documentation Looked at or observed over a period of time especially so as to be aware of any movement or change.
	enumeration	un-watched	documentation Usually automatic in operation, without any permanently-stationed personnel to superintend it.
	enumeration	existence doubtful	documentation A feature that has been reported but has not been definitely determined to exist.
	enumeration	buoyed	documentation Marked by buoys

element **LandmarkType/geometry**

diagram	
type	**PointOrSurface**
children	**pointProperty surfaceProperty**

complexType **MemberType**

diagram	**gml:AbstractFeatureMemberType** (extension) attributes **owns** type boolean default false **MemberType** dataset member attributes grp **gml:AssociationAttr...** **xlink:type** type xlink:typeType fixed simple **xlink:href** type xlink:hrefType **xlink:role** type xlink:roleType **xlink:arcrole** type xlink:arcroleType **xlink:title** type xlink:titleAttrType **xlink:show** type xlink:showType **xlink:actuate** type xlink:actuateType **nilReason** type gml:NilReasonType XLink components are the standard method to support hypertext referencing in XML. An XML Schema attribute group, gml:AssociationAttributeGroup, is provided to support the use of Xlinks as the method for indicating the value of a property by reference in a uniform manner in GML. **gml:AbstractFeature** type gml:AbstractFe... substGrp gml:AbstractGML This abstract element serves as the head of a substitution group which may contain any elements whose content model is derived from gml:AbstractFeatureType. This may be used as a variable in the construction of content models. gml:AbstractFeature may be thought of as "anything that is a GML feature" and may be used to define variables or templates in which the value of a GML property is "any feature". This occurs in particular in a GML feature collection where the feature member properties contain one or multiple copies of gml:AbstractFeature respectively.
type	extension of **gml:AbstractFeatureMemberType**
children	**gml:AbstractFeature**
annotation	documentation dataset member

complexType **MetaFeatureType**

diagram	
type	extension of **AbstractFeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation**
annotation	documentation Generalized feature type which carry all the common attributes

complexType **NauticalInformationType**

diagram	
type	extension of **AbstractRXNType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation categoryOfAuthority textContent graphic rxnCode isApplicableTo theOrganisation informationProvidedFor**
annotation	documentation Nautical information about a related area or facility. Constraint: If Regulations.textContent is populated, there cannot be textualDescription or information attributes directly bound to the Regulations.. A similar constraint applies to the information types Recommendations, Restrictions, and NauticalInformation.

element **NauticalInformationType/informationProvidedFor**

diagram	
type	**gml:ReferenceType**
annotation	documentation This tag is overloaded, but the relationship cannot be to a feature type because info->feature links are not allowed by the 3.0.0 feature catalogue

complexType **NavigationalMeteorologicalAreaType**

diagram	
type	extension of **FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions serviceProvider controlAuthority geometry**
annotation	documentation The geographic areas in which various governments are responsible for navigation and weather warnings. documentation Remarks: The roman number of NAV/METAREA is to be coded by using the feature name attribute. NAVTEX transmitting station identification characters are allocated within the same areas.

element **NavigationalMeteorologicalAreaType/serviceProvider**

diagram	
type	**gml:ReferenceType**
annotation	documentation The area served by a service provider.

element **NavigationalMeteorologicalAreaType/controlAuthority**

diagram	
	gml:ReferenceType
	attributes
	owns — type: boolean, default: false
	xlink:type — type: xlink:typeType, fixed: simple
	xlink:href — type: xlink:hrefType
	xlink:role — type: xlink:roleType
	xlink:arcrole — type: xlink:arcroleType
	xlink:title — type: xlink:titleAttrType
	xlink:show — type: xlink:showType
	xlink:actuate — type: xlink:actuateType
	nilReason — type: gml:NilReasonType
	controlAuthority — type: gml:ReferenceType — 0..∞ — The controlling organization or authority for a geographically located service
type	**gml:ReferenceType**
annotation	documentation The controlling organization or authority for a geographically located service

element **NavigationalMeteorologicalAreaType/geometry**

diagram	
	geometry — type: GM_Surface — 1..∞
	GM_Surface
	S100:surfaceProperty — type: SurfacePropertyType
type	**GM_Surface**
children	**surfaceProperty**

complexType **NavtexStationAreaType**

diagram	
type	extension of **FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions txIdentChar status serviceProvider controlAuthority geometry**
annotation	documentation The geographic areas in which radio stations are responsible for broadcast navigation and weather warnings.

element **NavtexStationAreaType/txIdentChar**

diagram	**txIdentChar**
	type | txIdentCharType
	pattern | [A-Z]
	The NAVTEX transmitter identification character is a single unique letter, which is allocated to each transmitter. It is used to identify the broadcasts, which are to be accepted by the receiver, those which are to be rejected, and the time slot for the transmission.
type	**txIdentCharType**
facets	Kind Value Annotation
	pattern [A-Z]
annotation	documentation
	The NAVTEX transmitter identification character is a single unique letter, which is allocated to each transmitter. It is used to identify the broadcasts, which are to be accepted by the receiver, those which are to be rejected, and the time slot for the transmission.
	documentation
	Remarks: The transmitter identification character should be indicated by a single character (A-Z)

element **NavtexStationAreaType/status**

diagram	**status**
	type | statusType
type	**statusType**

facets	Kind	Value	Annotation
	enumeration	permanent	documentation
			Intended to last or function indefinitely
	enumeration	occasional	documentation
			Acting on special occasions; happening irregularly
	enumeration	recommended	documentation
			Presented as worthy of confidence, acceptance, use, etc.
	enumeration	not in use	documentation
			Use has ceased, but the facility still exists intact; disused.
	enumeration	periodic/intermittent	documentation
			Recurring at intervals
	enumeration	reserved	documentation
			Set apart for some specific use
	enumeration	temporary	documentation
			Meant to last only for a time
	enumeration	private	documentation
			Administered by an individual or corporation, rather than a State or a public body.
	enumeration	mandatory	documentation
			Compulsory; enforced.
	enumeration	extinguished	documentation
			No longer lit
	enumeration	illuminated	documentation
			Lit by floodlights, strip lights, etc.
	enumeration	historic	documentation
			Famous in history; of historical interest

	enumeration	public	documentation
			Belonging to, available to, used or shared by, the community as a whole and not restricted to private use.
	enumeration	synchronised	documentation
			Occur at a time, coincide in point of time, be contemporary or simultaneous
	enumeration	watched	documentation
			Looked at or observed over a period of time especially so as to be aware of any movement or change.
	enumeration	un-watched	documentation
			Usually automatic in operation, without any permanently-stationed personnel to superintend it.
	enumeration	existence doubtful	documentation
			A feature that has been reported but has not been definitely determined to exist.
	enumeration	buoyed	documentation
			Marked by buoys

element **NavtexStationAreaType/serviceProvider**

diagram	
type	**gml:ReferenceType**
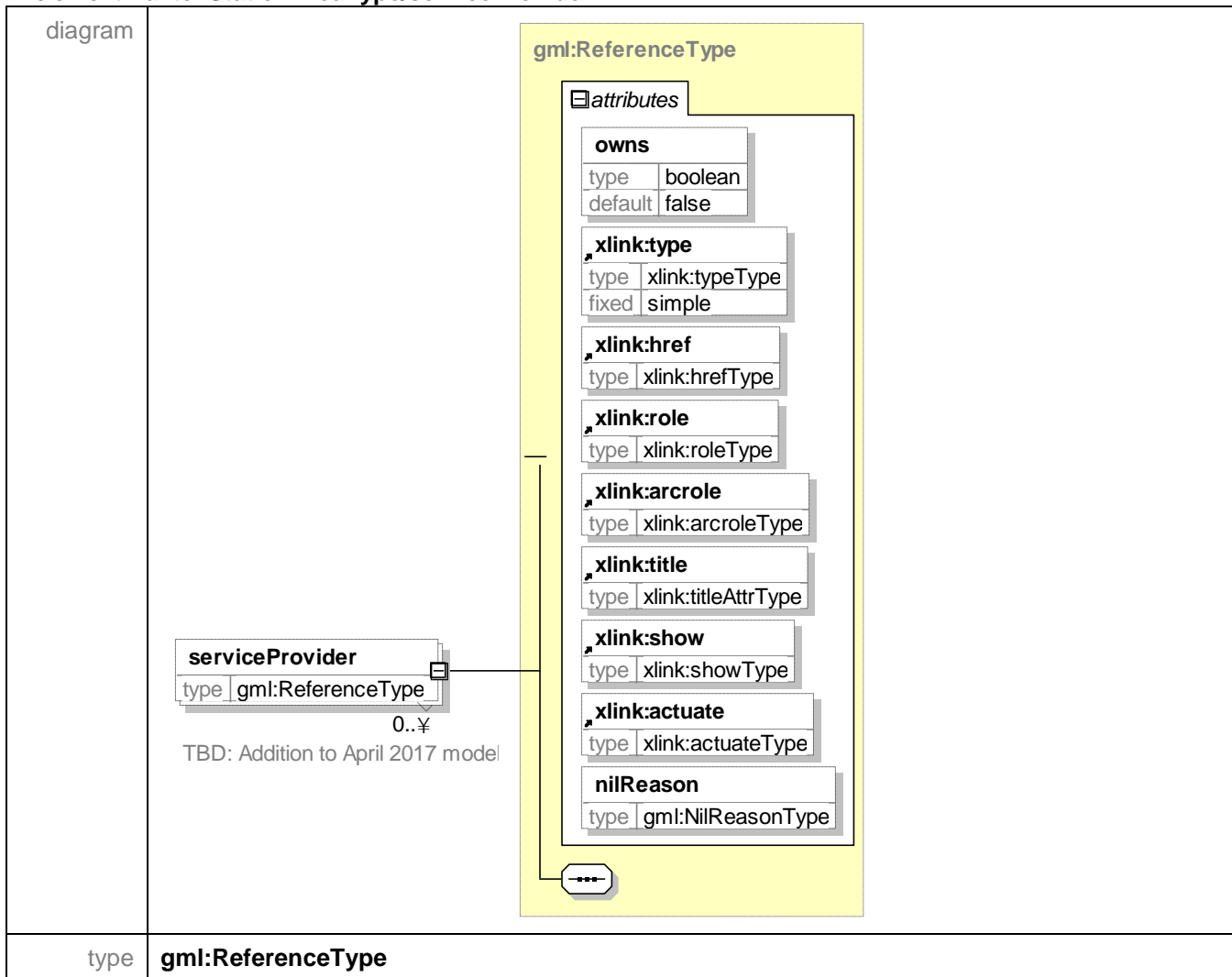
annotation	documentation
	TBD: Addition to April 2017 model

element **NavtexStationAreaType/controlAuthority**

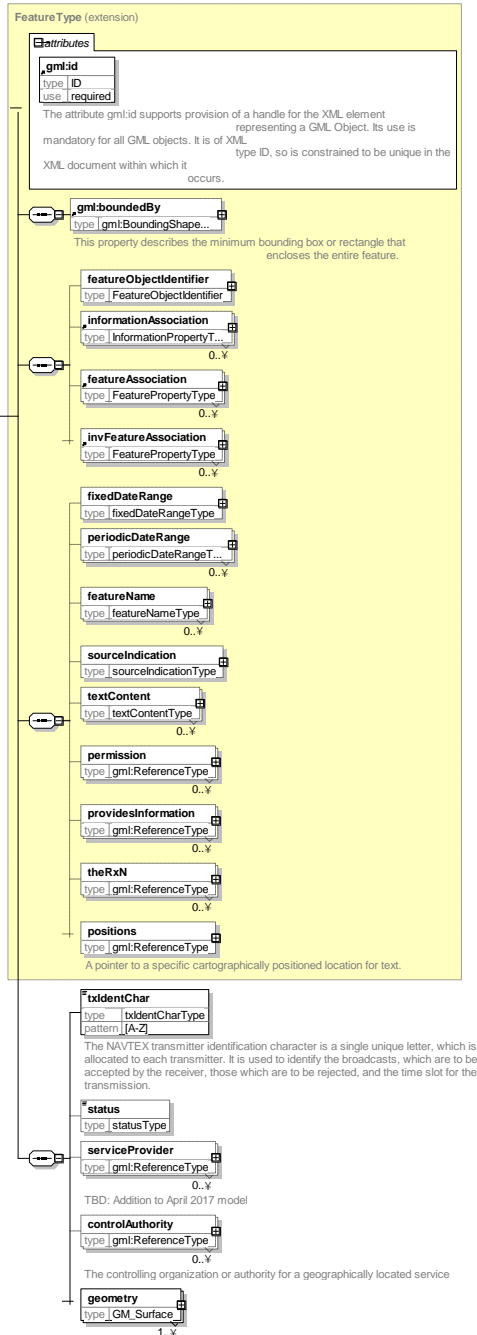| diagram	
type	**gml:ReferenceType**
annotation	documentation The controlling organization or authority for a geographically located service
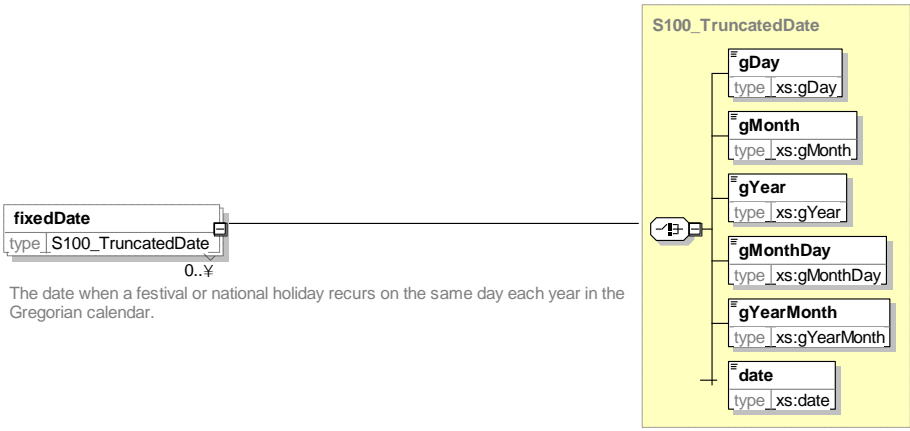
element **NavtexStationAreaType/geometry**

diagram	
type	**GM_Surface**
children	**surfaceProperty**
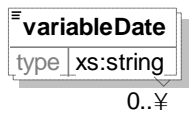
complexType **NonStandardWorkingDayType**

diagram	
type	extension of **InformationTypeType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation fixedDate variableDate information theServiceHours_nsdy**
annotation	documentation Days when many services are not available. Often days of festivity or recreation when normal working hours are limited, esp. a national or religious festival, etc.

element **NonStandardWorkingDayType/fixedDate**

diagram	
	The date when a festival or national holiday recurs on the same day each year in the Gregorian calendar.
type	**S100_TruncatedDate**
children	**gDay gMonth gYear gMonthDay gYearMonth date**
annotation	documentation The date when a festival or national holiday recurs on the same day each year in the Gregorian calendar.

element **NonStandardWorkingDayType/variableDate**

diagram	
	A day which is not fixed in the Gregorian calendar. Examples: The fourth Thursday in November; new moon day of Kartika (Diwali); Easter Sunday.
type	**xs:string**
annotation	documentation A day which is not fixed in the Gregorian calendar. Examples: The fourth Thursday in November; new moon day of Kartika (Diwali); Easter Sunday.

element **NonStandardWorkingDayType/information**

diagram	
type	**informationType**
children	**fileLocator fileReference headline language text**

element **NonStandardWorkingDayType/theServiceHours_nsdy**

diagram	
type	**gml:ReferenceType**
annotation	documentation optional

complexType **onlineResourceType**

diagram	
children	**linkage protocol applicationProfile nameOfResource onlineDescription onlineFunction protocolRequest**
annotation	documentation Information about online sources from which a resource or data can be obtained (ISO 19115, adapted).

element **onlineResourceType/linkage**

diagram	**linkage** type xs:anyURI location (address) for on-line access using a URL/URI address or similar addressing scheme. (Adapted from ISO 19115:2014.)
type	**xs:anyURI**
annotation	documentation location (address) for on-line access using a URL/URI address or similar addressing scheme. (Adapted from ISO 19115:2014.)
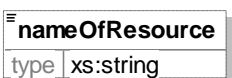
element **onlineResourceType/protocol**

diagram	**protocol** type xs:string connection protocol to be used. Example: ftp, http get KVP, http POST, etc. (ISO 19115)
type	**xs:string**
annotation	documentation connection protocol to be used. Example: ftp, http get KVP, http POST, etc. (ISO 19115)

element **onlineResourceType/applicationProfile**

diagram	applicationProfile type xs:string name of an application profile that can be used with the online resource (ISO 19115)
type	**xs:string**
annotation	documentation name of an application profile that can be used with the online resource (ISO 19115)
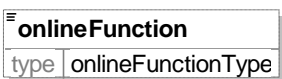
element **onlineResourceType/nameOfResource**

diagram	nameOfResource type xs:string name of the online resource (ISO 19115, adapted)
type	**xs:string**
annotation	documentation name of the online resource (ISO 19115, adapted)
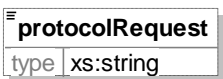
element **onlineResourceType/onlineDescription**

diagram	onlineDescription type xs:string detailed text description of what the online resource is/does (ISO 19115)
type	**xs:string**
annotation	documentation detailed text description of what the online resource is/does (ISO 19115)

element **onlineResourceType/onlineFunction**

diagram	onlineFunction type onlineFunctionType code for function performed by the online resource (ISO 19115)
type	**onlineFunctionType**
annotation	documentation code for function performed by the online resource (ISO 19115)

element **onlineResourceType/protocolRequest**

diagram	protocolRequest type xs:string Request used to access the resource. Structure and content depend on the protocol and standard used by the online resource, such as Web Feature Service standard. (ISO 19115, adapted)
type	**xs:string**

annotation	documentation
	Request used to access the resource. Structure and content depend on the protocol and standard used by the online resource, such as Web Feature Service standard. (ISO 19115, adapted)

complexType **orientationType**

diagram	
children	**orientationUncertainty orientationValue**

element **orientationType/orientationUncertainty**

diagram	
type	**xs:string**

element **orientationType/orientationValue**

diagram	
type	**xs:decimal**

complexType **periodicDateRangeType**

diagram	
children	**dateStart dateEnd**
annotation	documentation
	This complex attribute describes the active period for a seasonal feature or information type.

element **periodicDateRangeType/dateStart**

diagram	
type	**S100_TruncatedDate**
children	**gDay gMonth gYear gMonthDay gYearMonth date**
annotation	documentation The start date or time of the interval.

element **periodicDateRangeType/dateEnd**

diagram	
type	**S100_TruncatedDate**
children	**gDay gMonth gYear gMonthDay gYearMonth date**
annotation	documentation

	The end date or time of the interval.

complexType **PermissionType**

diagram	
type	extension of **InformationTypeType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation categoryOfRelationship permission**
annotation	documentation Association class for associations describing whether the subsets of vessels determined by the ship characteristics specified in APPLIC may (or must, etc.) transit, enter, or use a feature.

element **PermissionType/categoryOfRelationship**

diagram	**categoryOfRelationship** type categoryOfRelationsh... This attribute expresses the level of insistence for or against an action or activity by a vessel of the subset described by the APPLIC object at one end in relation to the feature at the other end of the association.			
type	**categoryOfRelationshipType**			
facets	Kind	Value	Annotation	
	enumeration	prohibited	documentation	
			use of facility, waterway or service is forbidden	
	enumeration	not recommended	documentation	
			use of facility, waterway or service is not recommended	
	enumeration	permitted	documentation	
			use of facility, waterway, or service is permitted but not	

			required
	enumeration	recommended	documentation
			use of facility, waterway, or service is recommended
	enumeration	required	documentation
			use of facility, waterway, or service is required
	enumeration	not required	documentation
			use of facility, waterway, or service is not required
annotation	documentation		
	This attribute expresses the level of insistence for or against an action or activity by a vessel of the subset described by the APPLIC object at one end in relation to the feature at the other end of the association.		

element **PermissionType/permission**

diagram	
type	**gml:ReferenceType**
annotation	documentation Reference Applicability

complexType **PointCurveSurface**

diagram	
children	**pointProperty curveProperty surfaceProperty**

complexType **PointOrCurve**

diagram	
children	**curveProperty surfaceProperty**

complexType **PointOrSurface**

diagram	
children	**pointProperty surfaceProperty**

complexType **QualityOfNonBathymetricDataType**

diagram	
type	extension of **QualityOfTemporalVariationType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation information categoryOfTemporalVariation dataAssessment horizontalDistanceUncertainty horizontalPositionalUncertainty directionUncertainty sourceIndication surveyDateRange geometry**
annotation	documentation An area within which a uniform assessment of the quality of the non-bathymetric data exists. (Adapted from S-57 Edition 3.1, Appendix A – Chapter 1, Page 1.208, November 2000).

element **QualityOfNonBathymetricDataType/horizontalDistanceUncertainty**

diagram	

type	**xs:string**
annotation	documentation The best estimate of the horizontal accuracy of horizontal clearances and distances.

element **QualityOfNonBathymetricDataType/horizontalPositionalUncertainty**

diagram	
type	**horizontalPositionalUncertainty**
children	**uncertaintyFixed uncertaintyVariable**
annotation	documentation The best estimate of the accuracy of a position.

element **QualityOfNonBathymetricDataType/directionUncertainty**

diagram	
type	**xs:string**
annotation	documentation The best estimate of the accuracy of a bearing

element **QualityOfNonBathymetricDataType/sourceIndication**

diagram	

type	**sourceIndicationType**
children	**categoryOfAuthority country featureName reportedDate source sourceType**

element **QualityOfNonBathymetricDataType/surveyDateRange**

diagram	
type	**surveyDateRangeType**
children	**dateStart dateEnd**
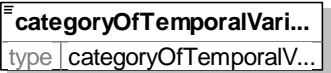
element **QualityOfNonBathymetricDataType/geometry**

diagram	
type	**SurfacePropertyType**
children	**surfaceProperty**

complexType **QualityOfTemporalVariationType**
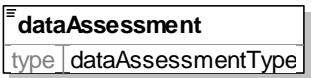
diagram	
type	extension of **DataQualityType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation information categoryOfTemporalVariation dataAssessment**
annotation	documentation Abstract type for meta-feature which can describe temporal variation.

element **QualityOfTemporalVariationType/categoryOfTemporalVariation**

diagram	categoryOfTemporalVari... type categoryOfTemporalV...
type	**categoryOfTemporalVariationType**
facets	**Kind** / **Value** / **Annotation** enumeration / extreme event / documentation NIPWG: No new hydrographic survey conducted after an event (e.g., hurricane, earthquake, volcanic eruption, landslide, etc.) which is considered likely to have resulted in significant change at the location. documentation In GI Registry: Definition: No new hydrographic survey conducted after an event (e.g. hurricane, earthquake, volcanic eruption, landslide, etc), which is considered likely to have changed the seafloor significantly. enumeration / likely to change / documentation NIPWG: Continuous or frequent change (e.g., river siltation, sand waves, seasonal storms, construction,

		etc.)	
			GI
		Registry:	
enumeration	likely to change but significant shoaling not expected	Continuous or frequent change (e.g. river siltation, sand waves, seasonal storms, ice bergs, etc.).	
		documentation	
		GI Registry: Likely to change but significant shoaling no expected	
enumeration	unlikely to change	[Proposed draft 6/27/2014: Recommended that SNPWG not use this enumerate - ref. E.M. email 6/27/2014.]	
		documentation	
		NIPWG: Significant change at the location is not expected.	
		documentation	
		GI Registry: Significant change to the seafloor is not expected.	
enumeration	unassessed	documentation	
		Temporal variation not assessed or cannot be determined	
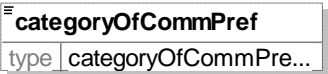
element **QualityOfTemporalVariationType/dataAssessment**

diagram	
	dataAssessment
	type dataAssessmentType
	The categorisation of the assessment level of bathymetric data for an area.
type	**dataAssessmentType**
facets	Kind	Value	Annotation
	enumeration	assessed	documentation
			The quality of the bathymetric data has been assessed.
	enumeration	oceanic	documentation
			The quality of oceanic bathymetric data has been assessed or is not required.
	enumeration	unassessed	documentation
			The quality of the bathymetric data has yet to be assessed.
annotation	documentation
	The categorisation of the assessment level of bathymetric data for an area.

complexType **radiocommunicationsType**

diagram	
children	**categoryOfCommPref** **categoryOfRadioMethods** **categoryOfMaritimeBroadcast** **communicationChannel** **contactInstructions** **facsimileDrumSpeed** **frequencyPair** **selectiveCallNumber** **signalFrequency** **timeOfObservation** **timesOfTransmission** **transmissionContent** **tmIntervalsByDoW** **transmissionRegularity**
annotation	documentation Detailed radiocommunications description with channels, frequencies, preferences and time schedules

element **radiocommunicationsType/categoryOfCommPref**

diagram	
	categoryOfCommPref type categoryOfCommPre...
type	**categoryOfCommPrefType**

facets	Kind	Value	Annotation
	enumeration	preferred calling	documentation the first choice channel or frequency to be used when calling a radio station
	enumeration	alternate calling	documentation a channel or frequency to be used for calling a radio station when the preferred channel or frequency is busy or is suffering from interference
	enumeration	preferred	documentation

| | enumeration | working | the first choice channel or frequency to be used when working with a radio station |
| | enumeration | alternate working | documentation a channel or frequency to be used for working with a radio station when the preferred working channel or frequency is busy or is suffering from interference |

element **radiocommunicationsType/categoryOfRadioMethods**

diagram	
	categoryOfRadioMethods type categoryOfRadioMeth... 0..¥

type	**categoryOfRadioMethodsType**

facets	Kind	Value	Annotation
	enumeration	Low Frequency (LF) voice traffic	documentation Frequency in a frequency range between 30 and 300 kHz used for voice traffic
	enumeration	Medium Frequency (MF) voice traffic	documentation Frequency in a frequency range between 300 and 3 000kHz used for voice traffic
	enumeration	High Frequency (HF) voice traffic	documentation Frequency in a frequency range between 3 and 30 MHz used for voice traffic
	enumeration	Very High Frequency (VHF) voice traffic	documentation Frequency in a frequency range between 30 and 300 MHz used for voice traffic
	enumeration	High Frequency Narrow Band Direct Printing	documentation High Frequency Narrow Band Direct Printing
	enumeration	NAVTEX	documentation Narrow-band direct-printing telegraphy system for transmission of maritime safety information.
	enumeration	SafetyNET	documentation SafetyNET is an international automatic direct-printing satellite-based service for the promulgation of navigational and meteorological warnings, meteorological forecasts and other urgent safety-related messages - maritime safety information (MSI) - to ships.
	enumeration	NBDP Telegraphy	documentation Narrow Band Direct Printing Telegraphy. A communications system consisting of teletypewriters connected to a telephonic network to send and receive wireless signals.
	enumeration	facsimile	documentation A method or device for transmitting documents, drawings, photographs, or the like, by means of radio or telephone for exact reproduction elsewhere.
	enumeration	NAVIP	documentation A Russian system transmitting navigational information, send by radio and containing information relevant to coastal waters of foreign countries and high seas.
	enumeration	Low Frequency (LF) digital traffic	documentation Frequency in a frequency range between 30 and 300 kHz

				used for digital traffic
	enumeration	Medium Frequency (MF) digital traffic	documentation	Frequency in a frequency range between 300 and 3000kHz used for digital traffic
	enumeration	High Frequency (HF) digital traffic	documentation	Frequency in a frequency range between 3 and 30 MHz used for digital traffic
	enumeration	Very High Frequency (VHF) digital traffic	documentation	Frequency in a frequency range between 30 and 300 MHz used for digital traffic
	enumeration	Low Frequency (LF) telegraph traffic	documentation	Frequency in a frequency range between 30 and 300 kHz used for telegraph traffic
	enumeration	Medium Frequency (MF) telegraph traffic	documentation	Frequency in a frequency range between 300 and 3 000kHz used for telegraph traffic
	enumeration	High Frequency (HF) telegraph traffic	documentation	Frequency in a frequency range between 3 and 30 MHz used for telegraph traffic
	enumeration	Medium Frequency (MF) Digital Selective Call traffic	documentation	Frequency in a frequency range between 300 and 3000kHz used for Digital Selective Call traffic
	enumeration	High Frequency (HF) Digital Selective Call traffic	documentation	Frequency in a frequency range between 3 and 30 MHz used for Digital Selective Call traffic
	enumeration	Very High Frequency (VHF) Digital Selective Call traffic	documentation	Frequency in a frequency range between 30 and 300 MHz used for Digital Selective Call traffic

element **radiocommunicationsType/categoryOfMaritimeBroadcast**

diagram	**categoryOfMaritimeBroa...** type categoryOfMaritimeBr... 0..¥
type	**categoryOfMaritimeBroadcastType**
facets	Kind Value Annotation

Kind	Value	Annotation
enumeration	navigational warning	documentation
		message containing urgent information relevant to safe navigation broadcast to ships in accordance with the provisions of the International Convention for the Safety of Life at Sea, 1974, as amended
enumeration	meteorological warning	documentation
		warning of adverse weather conditions
enumeration	ice report	documentation
		report of the ice situation and restrictions to shipping
enumeration	SAR information	documentation
		broadcast message with information about an ongoing SAR operation
enumeration	pirate attack warning	documentation
		warning of possible attack by pirates

	enumeration	meteorological forecast	documentation	broadcast message containing meteorological forecast
	enumeration	pilot service message	documentation	broadcast message about pilot service
	enumeration	AIS information	documentation	broadcast message about AIS information
	enumeration	LORAN message	documentation	broadcast message about the LORAN service
	enumeration	SATNAV message	documentation	broadcast message about Satellite Navigation service
	enumeration	gale warning	documentation	warning of winds of Beaufort force 8 or 9
	enumeration	storm warning	documentation	warning of winds of Beaufort force 10 or over
	enumeration	tropical revolving storm warning	documentation	warning of hurricanes in the North Atlantic and eastern North Pacific, typhoons in the Western Pacific, cyclones in the Indian Ocean and cyclones of similar nature in other regions
	enumeration	NAVAREA warning	documentation	navigational warning or in-force bulletin promulgated as part of a numbered series by a NAVAREA coordinator (Maritime Safety Information Manual 2009)
	enumeration	coastal warning	documentation	navigational warning promulgated as part of a numbered series by a National coordinator (Maritime Safety Information Manual 2009)
	enumeration	local warning	documentation	warning which covers inshore waters, often within the limits of jurisdiction of a harbour or port authority (Maritime Safety Information Manual 2009)
	enumeration	low water level warning/negative tidal surge	documentation	warning of actual or expected low water level
	enumeration	icing warning	documentation	warning of accretion of ice on ships
	enumeration	tsunami broadcast	documentation	broadcasts about tsunamis, including watches, advisories, and other types of messages relating to tsunamis or potential tsunamis

element **radiocommunicationsType/communicationChannel**

diagram	
	communicationChannel type xs:string 0..¥
type	**xs:string**

element **radiocommunicationsType/contactInstructions**

diagram	**contactInstructions** type xs:string supplemental instructions on how or when to contact the individual, organisation, or service
type	**xs:string**
annotation	documentation supplemental instructions on how or when to contact the individual, organisation, or service
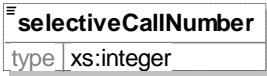
element **radiocommunicationsType/facsimileDrumSpeed**

diagram	
type	**facsimileDrumSpeedType**
children	**drumSpeed indexOfCooperation**

element **radiocommunicationsType/frequencyPair**

diagram	
type	**frequencyPairType**
children	**frequencyShoreStationTransmits frequencyShoreStationReceives**

element **radiocommunicationsType/selectiveCallNumber**
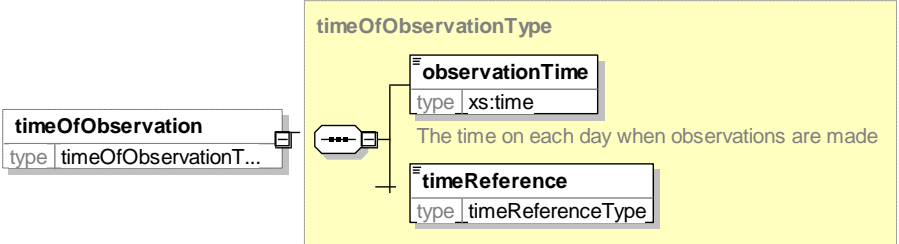
diagram	**selectiveCallNumber** type xs:integer When stations of the maritime mobile service (direct printing telegraphy) use selective calling devices, their Selective Call numbers (SELCAL) are formed of four digits (coast stations). (Adapted: Radio Regulations (ITU))
type	**xs:integer**

annotation	documentation When stations of the maritime mobile service (direct printing telegraphy) use selective calling devices, their Selective Call numbers (SELCAL) are formed of four digits (coast stations). (Adapted: Radio Regulations (ITU))
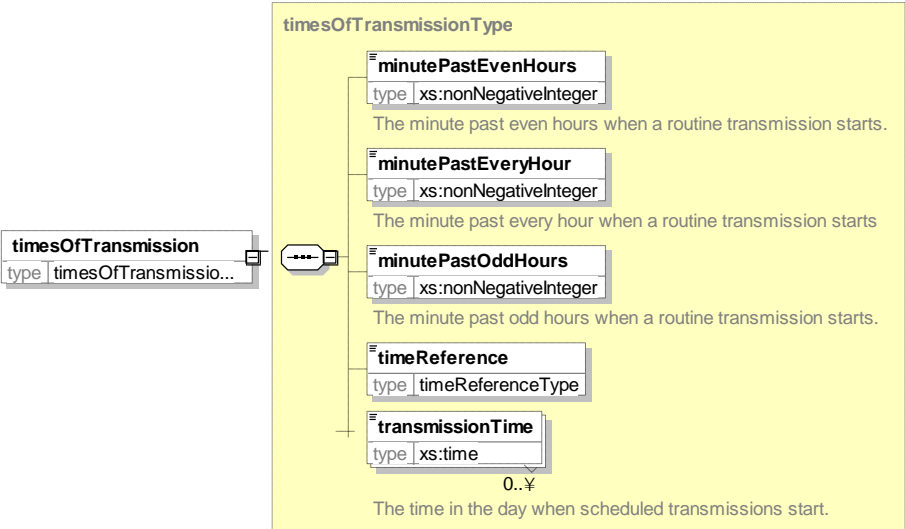
element **radiocommunicationsType/signalFrequency**

diagram	 TBD: Upper bound on multiplcity is a divergence from April 2017 model.
type	**xs:integer**
annotation	documentation TBD: Upper bound on multiplcity is a divergence from April 2017 model.

element **radiocommunicationsType/timeOfObservation**

diagram	
type	**timeOfObservationType**
children	**observationTime timeReference**

element **radiocommunicationsType/timesOfTransmission**

diagram	

type	**timesOfTransmissionType**
children	**minutePastEvenHours minutePastEveryHour minutePastOddHours timeReference transmissionTime**
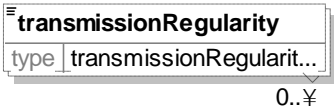
element **radiocommunicationsType/transmissionContent**

diagram	transmissionContent type xs:string Content of transmission. used if CATMAB is populated	Remarks: Not to be
type	**xs:string**	
annotation	documentation Content of transmission. populated	Remarks: Not to be used if CATMAB is

element **radiocommunicationsType/tmIntervalsByDoW**

diagram	
type	**tmIntervalsByDoW**
children	**dayOfWeek dayOfWeekIsRanges timeReference timeOfDayStart timeOfDayEnd**

element **radiocommunicationsType/transmissionRegularity**

diagram	transmissionRegularity type transmissionRegularit... 0..¥ Classification of regularity or conditions for transmission
type	**transmissionRegularityType**
facets	Kind	Value	Annotation
	enumeration	continuous	documentation
			transmission is made continuously
	enumeration	regular	documentation
			transmission is made regularly according to a schedule
	enumeration	on receipt	documentation
			transmission is made when warning or information is received from another authority
	enumeration	as required	documentation
			transmission is made under specified conditions or when needed
	enumeration	on request	documentation
			transmission is made when requested by a user
annotation	documentation Classification of regularity or conditions for transmission

complexType **RadioServiceAreaAggregateType**

diagram	
type	extension of **FuzzyAreaAggregateType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions consistsOf**
annotation	documentation Aggregation of areas where radio services from a single radio service are available to different levels of reliability documentation consistsOf removed from this type because duplicating the element of the same name in supertype FuzzyAreaAggregate violates XML schema rules

complexType **RadioServiceAreaType**

diagram

FeatureType (extension)

attributes

gml:id
| type | ID |
| use | required |

The attribute gml:id supports provision of a handle for the XML element representing a GML Object. Its use is mandatory for all GML objects. It is of XML type ID, so is constrained to be unique in the XML document within which it occurs.

gml:boundedBy
| type | gml:BoundingShape... |

This property describes the minimum bounding box or rectangle that encloses the entire feature.

featureObjectIdentifier
| type | FeatureObjectIdentifier |

informationAssociation
| type | InformationPropertyT... |
0..¥

featureAssociation
| type | FeaturePropertyType |
0..¥

invFeatureAssociation
| type | FeaturePropertyType |
0..¥

fixedDateRange
| type | fixedDateRangeType |

periodicDateRange
| type | periodicDateRangeT... |
0..¥

featureName
| type | featureNameType |
0..¥

sourceIndication
| type | sourceIndicationType |

textContent
| type | textContentType |
0..¥

permission
| type | gml:ReferenceType |
0..¥

providesInformation
| type | gml:ReferenceType |
0..¥

theRxN
| type | gml:ReferenceType |
0..¥

positions
| type | gml:ReferenceType |

A pointer to a specific cartographically positioned location for text.

RadioServiceAreaType

The area where a radio service can be obtained and the characteristics of the radio transmission.
                     Remarks: The objects RDOSTA; RADSTA are used to encode the point of transmission of the signal.

callSign
| type | xs:string |

categoryOfBroadcastCo...
| type | categoryOfBroadcast... |

languageInformation
| type | xs:string |

A description of the languages, alphabets and scripts in use.

radiocommunications
| type | radiocommunication... |
0..¥

status
| type | statusType |

timeReference
| type | timeReferenceType |

transmissionPower
| type | NonNegative... |
| min/maxIncl | 0.0 |

The maximum power the radio service uses (or is authorized to use) for radio transmission.

txIdentChar
| type | txIdentCharType |
| pattern | [A-Z] |

The NAVTEX transmitter identification character is a single unique letter, which is

type	extension of **FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions callSign categoryOfBroadcastCommunication languageInformation radiocommunications status timeReference transmissionPower txIdentChar txTrafficList theServiceHours serviceProvider theContactDetails controlAuthority componentOf geometry**
annotation	documentation The area where a radio service can be obtained and the characteristics of the radio transmission. Remarks: The objects RDOSTA; RADSTA are used to encode the point of transmission of the signal.
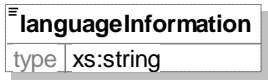
element **RadioServiceAreaType/callSign**

diagram	**callSign** type | xs:string
type	**xs:string**

element **RadioServiceAreaType/categoryOfBroadcastCommunication**

diagram	**categoryOfBroadcastCo...** type | categoryOfBroadcast...
type	**categoryOfBroadcastCommunicationType**
facets	Kind	Value	Annotation
	enumeration	commercial	documentation A service operated with the intention of earning money
	enumeration	non-commercial	documentation A service without any financial interest
	enumeration	public	documentation A service available for the general community
	enumeration	non-public	documentation A service available for limited and pre-defined customers

element **RadioServiceAreaType/languageInformation**

diagram	**languageInformation** type | xs:string A description of the languages, alphabets and scripts in use.
type	**xs:string**
annotation	documentation A description of the languages, alphabets and scripts in use.

element **RadioServiceAreaType/radiocommunications**

diagram	
type	**radiocommunicationsType**
children	**categoryOfCommPref categoryOfRadioMethods categoryOfMaritimeBroadcast communicationChannel contactInstructions facsimileDrumSpeed frequencyPair selectiveCallNumber signalFrequency timeOfObservation timesOfTransmission transmissionContent tmIntervalsByDoW transmissionRegularity**

element **RadioServiceAreaType/status**

diagram	

type	**statusType**		
facets	Kind	Value	Annotation
	enumeration	permanent	documentation
			Intended to last or function indefinitely
	enumeration	occasional	documentation
			Acting on special occasions; happening irregularly
	enumeration	recommended	documentation
			Presented as worthy of confidence, acceptance, use, etc.
	enumeration	not in use	documentation
			Use has ceased, but the facility still exists intact; disused.
	enumeration	periodic/intermittent	documentation
			Recurring at intervals
	enumeration	reserved	documentation
			Set apart for some specific use
	enumeration	temporary	documentation
			Meant to last only for a time
	enumeration	private	documentation
			Administered by an individual or corporation, rather than a State or a public body.
	enumeration	mandatory	documentation
			Compulsory; enforced.
	enumeration	extinguished	documentation
			No longer lit
	enumeration	illuminated	documentation
			Lit by floodlights, strip lights, etc.
	enumeration	historic	documentation
			Famous in history; of historical interest
	enumeration	public	documentation
			Belonging to, available to, used or shared by, the community as a whole and not restricted to private use.
	enumeration	synchronised	documentation
			Occur at a time, coincide in point of time, be contemporary or simultaneous
	enumeration	watched	documentation
			Looked at or observed over a period of time especially so as to be aware of any movement or change.
	enumeration	un-watched	documentation
			Usually automatic in operation, without any permanently-stationed personnel to superintend it.
	enumeration	existence doubtful	documentation
			A feature that has been reported but has not been definitely determined to exist.
	enumeration	buoyed	documentation
			Marked by buoys

element **RadioServiceAreaType/timeReference**
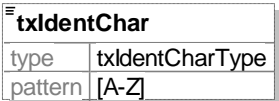
diagram	**timeReference**		
	type timeReferenceType		
type	**timeReferenceType**		
facets	Kind	Value	Annotation
	enumeration	UTC	documentation

	enumeration	LT	Coordinated Universal Time
			documentation
			Local time

element **RadioServiceAreaType/transmissionPower**

diagram	**transmissionPower** type — NonNegative... min/maxIncl — 0.0 The maximum power the radio service uses (or is authorized to use) for radio transmission.
type	**NonNegativeDecimal.1**
facets	Kind Value Annotation minInclusive 0.0 fractionDigits 1
annotation	documentation The maximum power the radio service uses (or is authorized to use) for radio transmission. documentation Remark: The calculation of the power depends on the type of signal. The value encoded must be the actual transmission power, if this is known to be different from the authorized transmission power. Unit: watt; Resolution: 0.1; Reference: 47 CFR 80.215 (19 April 2017), adapted.

element **RadioServiceAreaType/txIdentChar**

diagram	**txIdentChar** type — txIdentCharType pattern — [A-Z] The NAVTEX transmitter identification character is a single unique letter, which is allocated to each transmitter. It is used to identify the broadcasts, which are to be accepted by the receiver, those which are to be rejected, and the time slot for the transmission.
type	**txIdentCharType**
facets	Kind Value Annotation pattern [A-Z]
annotation	documentation The NAVTEX transmitter identification character is a single unique letter, which is allocated to each transmitter. It is used to identify the broadcasts, which are to be accepted by the receiver, those which are to be rejected, and the time slot for the transmission. documentation Remarks: The transmitter identification character should be indicated by a single character (A-Z)

element **RadioServiceAreaType/txTrafficList**

diagram	txTrafficList type xs:boolean Describes whether a station transmits traffic lists. Remarks: True: The radio station transmits traffic lists. False: The radio station does not transmit traffic lists.
type	**xs:boolean**
annotation	documentation Describes whether a station transmits traffic lists. transmits traffic lists. not transmit traffic lists. Remarks: - True: The radio station - False: The radio station does

element **RadioServiceAreaType/theServiceHours**

diagram	

type	**gml:ReferenceType**

element **RadioServiceAreaType/serviceProvider**

diagram	
type	**gml:ReferenceType**

element **RadioServiceAreaType/theContactDetails**

diagram	
	gml:ReferenceType
	attributes
	owns — type: boolean, default: false
	xlink:type — type: xlink:typeType, fixed: simple
	xlink:href — type: xlink:hrefType
	xlink:role — type: xlink:roleType
	xlink:arcrole — type: xlink:arcroleType
	xlink:title — type: xlink:titleAttrType
	xlink:show — type: xlink:showType
	xlink:actuate — type: xlink:actuateType
	nilReason — type: gml:NilReasonType
	theContactDetails type: gml:ReferenceType 0..¥ A pointer to a Contact Details object
type	**gml:ReferenceType**
annotation	documentation A pointer to a Contact Details object

element **RadioServiceAreaType/controlAuthority**

diagram	

gml:ReferenceType

attributes

owns
type boolean
default false

xlink:type
type xlink:typeType
fixed simple

xlink:href
type xlink:hrefType

xlink:role
type xlink:roleType

xlink:arcrole
type xlink:arcroleType

xlink:title
type xlink:titleAttrType

xlink:show
type xlink:showType

xlink:actuate
type xlink:actuateType

nilReason
type gml:NilReasonType

controlAuthority
type gml:ReferenceType
0..¥
The controlling organization or authority for a geographically located service

type	**gml:ReferenceType**
annotation	documentation The controlling organization or authority for a geographically located service

element **RadioServiceAreaType/componentOf**

diagram	
	gml:ReferenceType ⊟ *attributes* **owns** type boolean default false **xlink:type** type xlink:typeType fixed simple **xlink:href** type xlink:hrefType **xlink:role** type xlink:roleType **xlink:arcrole** type xlink:arcroleType **xlink:title** type xlink:titleAttrType **xlink:show** type xlink:showType **xlink:actuate** type xlink:actuateType **nilReason** type gml:NilReasonType **componentOf** type gml:ReferenceType
type	**gml:ReferenceType**

element **RadioServiceAreaType/geometry**

diagram	
	geometry type PointOrSurface 0..¥ TBD. Point geometry is a divergence from the April 2017 model but service areas are not provided for some services in the data sample (the station location is given) and point geometries are used in the NIPWG mapping for these services. **PointOrSurface** **S100:pointProperty** type PointPropertyType **S100:surfaceProperty** type SurfacePropertyType
type	**PointOrSurface**
children	**pointProperty surfaceProperty**
annotation	documentation TBD. Point geometry is a divergence from the April 2017 model but service areas are not provided for some services in the data sample (the station location is given) and point geometries are used in the NIPWG mapping for these services.

complexType **radioStationCommunicationDescriptionType**
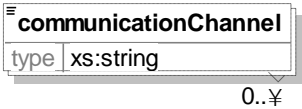
diagram	
children	**categoryOfMaritimeBroadcast communicationChannel signalFrequency transmissionContent**
annotation	documentation Description of the type and content of a communication or broadcast from a radio station. Remark: This complex attribute is not intended for detailed descriptions of a station's radio services. For detailed descriptions of radio service, use the attributes of the associated RadioServiceArea feature.

element **radioStationCommunicationDescriptionType/categoryOfMaritimeBroadcast**

diagram			
type	**categoryOfMaritimeBroadcastType**		
facets	Kind	Value	Annotation
	enumeration	navigational warning	documentation message containing urgent information relevant to safe navigation broadcast to ships in accordance with the provisions of the International Convention for the Safety of Life at Sea, 1974, as amended
	enumeration	meteorological warning	documentation warning of adverse weather conditions
	enumeration	ice report	documentation report of the ice situation and restrictions to shipping
	enumeration	SAR information	documentation broadcast message with information about an ongoing SAR operation
	enumeration	pirate attack warning	documentation warning of possible attack by pirates
	enumeration	meteorological forecast	documentation broadcast message containing meteorological forecast
	enumeration	pilot service message	documentation broadcast message about pilot service
	enumeration	AIS information	documentation broadcast message about AIS information
	enumeration	LORAN message	documentation broadcast message about the LORAN service
	enumeration	SATNAV message	documentation

	enumeration	gale warning	broadcast message about Satellite Navigation service
			documentation
			warning of winds of Beaufort force 8 or 9
	enumeration	storm warning	documentation
			warning of winds of Beaufort force 10 or over
	enumeration	tropical revolving storm warning	documentation
			warning of hurricanes in the North Atlantic and eastern North Pacific, typhoons in the Western Pacific, cyclones in the Indian Ocean and cyclones of similar nature in other regions
	enumeration	NAVAREA warning	documentation
			navigational warning or in-force bulletin promulgated as part of a numbered series by a NAVAREA coordinator (Maritime Safety Information Manual 2009)
	enumeration	coastal warning	documentation
			navigational warning promulgated as part of a numbered series by a National coordinator (Maritime Safety Information Manual 2009)
	enumeration	local warning	documentation
			warning which covers inshore waters, often within the limits of jurisdiction of a harbour or port authority (Maritime Safety Information Manual 2009)
	enumeration	low water level warning/negative tidal surge	documentation
			warning of actual or expected low water level
	enumeration	icing warning	documentation
			warning of accretion of ice on ships
	enumeration	tsunami broadcast	documentation
			broadcasts about tsunamis, including watches, advisories, and other types of messages relating to tsunamis or potential tsunamis

element **radioStationCommunicationDescriptionType/communicationChannel**

diagram	**communicationChannel** type xs:string 0..¥ A channel number assigned to a specific radio frequency, frequencies or frequency band. Remarks: The attribute "communication channel" encodes the various VHF-Channels used for communication.
type	**xs:string**
annotation	documentation A channel number assigned to a specific radio frequency, frequencies or frequency band. Remarks: The attribute "communication channel" encodes the various VHF-Channels used for communication.

element **radioStationCommunicationDescriptionType/signalFrequency**

diagram	**signalFrequency** type | xs:nonNegativeInteger 0..¥ The frequency of a signal.
type	**xs:nonNegativeInteger**
annotation	documentation The frequency of a signal. documentation TBD: Upper bound on multiplcity is a divergence from April 2017 model.

element **radioStationCommunicationDescriptionType/transmissionContent**

diagram	**transmissionContent** type | xs:string Content of transmission.
type	**xs:string**
annotation	documentation Content of transmission. documentation Remark: Other than MSI. Not to be used if CATMAB is populated.

complexType **RadioStationType**
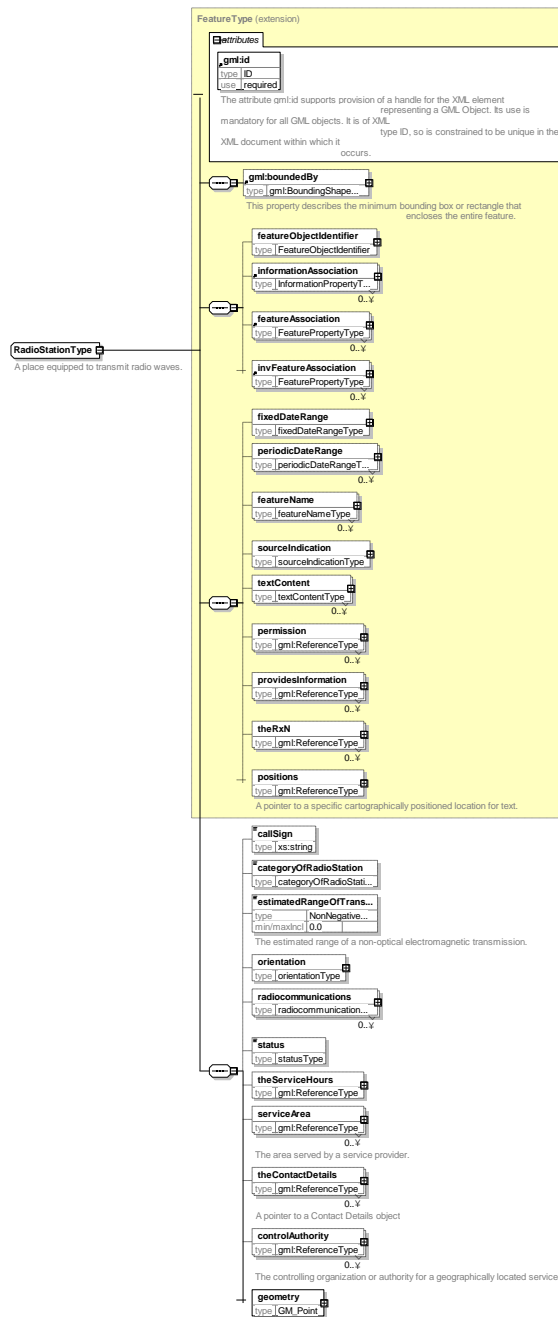
diagram	
type	extension of **FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions callSign categoryOfRadioStation estimatedRangeOfTransmission orientation radiocommunications status theServiceHours serviceArea theContactDetails controlAuthority geometry**
annotation	documentation A place equipped to transmit radio waves. documentation Remarks: Such a station may be either stationary or mobile, and may also be provided with a

	radio receiver. In British terminology, also called 'w/t station'. The transmission of a radio station may serve to provide mariners with a line of position (IHO Chart Specifications, M-4). The object 'radio station' is used to encode the point of transmission of the signal. documentation S-123 remarks: (1) The area in which the radio service can be obtained is described by an RDOSVC object. (2) The S-123 definition differs from the 2016 S-101 definition by omitting the optional attribute communicationChannel (bound to the NPUBs domain complex attribute radioStationCommunicationDescription instead). The NPUBs domain feature also binds attribute orientation to RadioStation.

element **RadioStationType/callSign**

diagram	**callSign** type xs:string
type	**xs:string**

element **RadioStationType/categoryOfRadioStation**
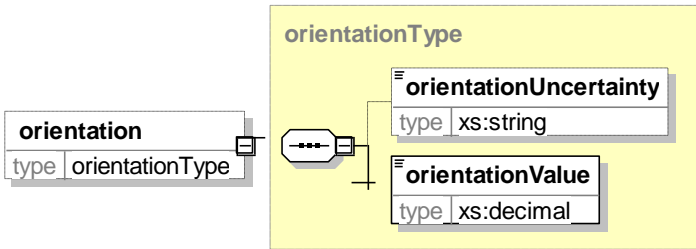
diagram	**categoryOfRadioStation** type categoryOfRadioStati...
type	**categoryOfRadioStationType**
facets	<table><tr><th>Kind</th><th>Value</th><th>Annotation</th></tr><tr><td>enumeration</td><td>radio direction-finding station</td><td>documentation A radio station intended only to determine the direction of other stations by means of transmission from the latter.</td></tr><tr><td>enumeration</td><td>Decca</td><td>documentation The Decca Navigator System is a high-accuracy, short to medium range radio navigation aid intended for coastal and landfall navigation.</td></tr><tr><td>enumeration</td><td>Loran C</td><td>documentation A low frequency electronic position fixing system using pulsed transmissions at 100 Khz.</td></tr><tr><td>enumeration</td><td>Differential GNSS</td><td>documentation A radiobeacon transmitting DGPS correction signals.</td></tr><tr><td>enumeration</td><td>Toran</td><td>documentation An electronic position fixing system used mainly by aircraft.</td></tr><tr><td>enumeration</td><td>Omega</td><td>documentation A long-range radio navigational aid which operates within the VLF frequency band. The system comprises eight land based stations.</td></tr><tr><td>enumeration</td><td>Syledis</td><td>documentation A ranging position fixing system operating at 420-450MHz over a range of up to 400 Km.</td></tr><tr><td>enumeration</td><td>Chaika</td><td>documentation A low frequency electronic position fixing system using pulsed transmissions at 100 Khz.</td></tr><tr><td>enumeration</td><td>facsimile transmission</td><td>documentation facsimile transmission (IHO HYDRO register, 2010-11-14)</td></tr><tr><td>enumeration</td><td>radio telephone</td><td>documentation</td></tr></table>

		station	The equipment needed at one station to carry on two way voice communication by radio waves only.
	enumeration	AIS base station	documentation
			Remark: Not defined in GI Registry (2017-04-20).

element **RadioStationType/estimatedRangeOfTransmission**

diagram	estimatedRangeOfTrans...
	type: NonNegative...
	min/maxIncl: 0.0
	The estimated range of a non-optical electromagnetic transmission.
type	**NonNegativeDecimal**
facets	Kind Value Annotation
	minInclusive 0.0
annotation	documentation
	The estimated range of a non-optical electromagnetic transmission.

element **RadioStationType/orientation**

diagram	
	orientationType — orientationUncertainty (type: xs:string), orientationValue (type: xs:decimal); orientation (type: orientationType)
type	**orientationType**
children	**orientationUncertainty** **orientationValue**

element **RadioStationType/radiocommunications**

diagram	
type	**radiocommunicationsType**
children	**categoryOfCommPref categoryOfRadioMethods categoryOfMaritimeBroadcast communicationChannel contactInstructions facsimileDrumSpeed frequencyPair selectiveCallNumber signalFrequency timeOfObservation timesOfTransmission transmissionContent tmIntervalsByDoW transmissionRegularity**

element **RadioStationType/status**

diagram	
	status type statusType

type	**statusType**		
facets	Kind	Value	Annotation
	enumeration	permanent	documentation
			Intended to last or function indefinitely
	enumeration	occasional	documentation
			Acting on special occasions; happening irregularly
	enumeration	recommended	documentation
			Presented as worthy of confidence, acceptance, use, etc.
	enumeration	not in use	documentation
			Use has ceased, but the facility still exists intact; disused.
	enumeration	periodic/intermittent	documentation
			Recurring at intervals
	enumeration	reserved	documentation
			Set apart for some specific use
	enumeration	temporary	documentation
			Meant to last only for a time
	enumeration	private	documentation
			Administered by an individual or corporation, rather than a State or a public body.
	enumeration	mandatory	documentation
			Compulsory; enforced.
	enumeration	extinguished	documentation
			No longer lit
	enumeration	illuminated	documentation
			Lit by floodlights, strip lights, etc.
	enumeration	historic	documentation
			Famous in history; of historical interest
	enumeration	public	documentation
			Belonging to, available to, used or shared by, the community as a whole and not restricted to private use.
	enumeration	synchronised	documentation
			Occur at a time, coincide in point of time, be contemporary or simultaneous
	enumeration	watched	documentation
			Looked at or observed over a period of time especially so as to be aware of any movement or change.
	enumeration	un-watched	documentation
			Usually automatic in operation, without any permanently-stationed personnel to superintend it.
	enumeration	existence doubtful	documentation
			A feature that has been reported but has not been definitely determined to exist.
	enumeration	buoyed	documentation
			Marked by buoys

element **RadioStationType/theServiceHours**

diagram	
	gml:ReferenceType *attributes* **owns** type — boolean default — false **xlink:type** type — xlink:typeType fixed — simple **xlink:href** type — xlink:hrefType **xlink:role** type — xlink:roleType **xlink:arcrole** type — xlink:arcroleType **xlink:title** type — xlink:titleAttrType **xlink:show** type — xlink:showType **xlink:actuate** type — xlink:actuateType **nilReason** type — gml:NilReasonType **theServiceHours** type — gml:ReferenceType
type	**gml:ReferenceType**

element **RadioStationType/serviceArea**

diagram	
	gml:ReferenceType
	attributes
	owns — type: boolean, default: false
	xlink:type — type: xlink:typeType, fixed: simple
	xlink:href — type: xlink:hrefType
	xlink:role — type: xlink:roleType
	xlink:arcrole — type: xlink:arcroleType
	xlink:title — type: xlink:titleAttrType
	xlink:show — type: xlink:showType
	xlink:actuate — type: xlink:actuateType
	nilReason — type: gml:NilReasonType
	serviceArea — type: gml:ReferenceType, 0..∞ — The area served by a service provider.
type	**gml:ReferenceType**
annotation	documentation The area served by a service provider.

element **RadioStationType/theContactDetails**

diagram	

gml:ReferenceType

attributes

owns
| type | boolean |
| default | false |

xlink:type
| type | xlink:typeType |
| fixed | simple |

xlink:href
| type | xlink:hrefType |

xlink:role
| type | xlink:roleType |

xlink:arcrole
| type | xlink:arcroleType |

xlink:title
| type | xlink:titleAttrType |

xlink:show
| type | xlink:showType |

xlink:actuate
| type | xlink:actuateType |

nilReason
| type | gml:NilReasonType |

theContactDetails
| type | gml:ReferenceType |

0..¥

A pointer to a Contact Details object

type	**gml:ReferenceType**
annotation	documentation A pointer to a Contact Details object

element **RadioStationType/controlAuthority**

diagram	
type	**gml:ReferenceType**
annotation	documentation The controlling organization or authority for a geographically located service

element **RadioStationType/geometry**

diagram	
type	**GM_Point**
children	**pointProperty**

complexType **RecommendationsType**

diagram	
type	extension of **AbstractRXNType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation categoryOfAuthority textContent graphic rxnCode isApplicableTo theOrganisation**
annotation	documentation Recommendations for a related area or facility. documentation Constraint: If Regulations.textContent is populated, there cannot be textualDescription or information attributes directly bound to the Regulations.. A similar constraint applies to the information types Recommendations, Restrictions, and NauticalInformation.

complexType **RegulationsType**

diagram	
type	extension of **AbstractRXNType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation categoryOfAuthority textContent graphic rxnCode isApplicableTo theOrganisation**
annotation	documentation Regulations for a related area or facility. documentation Constraint: If Regulations.textContent is populated, there cannot be textualDescription or information attributes directly bound to the Regulations.. A similar constraint applies to the information types Recommendations, Restrictions, and NauticalInformation.

complexType **RestrictionsType**

diagram	
type	extension of **AbstractRXNType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation categoryOfAuthority textContent graphic rxnCode isApplicableTo theOrganisation**
annotation	documentation Restrictions for a related area or facility. documentation Constraint: If Regulations.textContent is populated, there cannot be textualDescription or information attributes directly bound to the Regulations.. A similar constraint applies to the

information types Recommendations, Restrictions, and NauticalInformation.

complexType **rxnCodeType**

diagram	
children	**categoryOfRxN actionOrActivity headline**
annotation	documentation A summary of the impact of the most common types of regulation, restriction, recommendation and nautical information on a vessel. documentation Remark: This attribute converts the subject, topic, and effects of regulations, etc., from plain text or natural language into a set of categories.

element **rxnCodeType/categoryOfRxN**

diagram	
type	**categoryOfRxNType**

element **rxnCodeType/actionOrActivity**

diagram	
type	**actionOrActivityType**

element **rxnCodeType/headline**

diagram	
type	**xs:string**
annotation	documentation Words set at the head of a passage or page to introduce or categorize

complexType **S100_TruncatedDate**

diagram	
diagram	**S100_TruncatedDate** built in date types from W3C XML schema, implementing S-100 truncated date **gDay** — type xs:gDay **gMonth** — type xs:gMonth **gYear** — type xs:gYear **gMonthDay** — type xs:gMonthDay **gYearMonth** — type xs:gYearMonth **date** — type xs:date
children	**gDay gMonth gYear gMonthDay gYearMonth date**
annotation	documentation built in date types from W3C XML schema, implementing S-100 truncated date

element **S100_TruncatedDate/gDay**

diagram	
diagram	**gDay** type xs:gDay
type	**xs:gDay**

element **S100_TruncatedDate/gMonth**

diagram	
diagram	**gMonth** type xs:gMonth
type	**xs:gMonth**
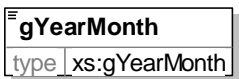
element **S100_TruncatedDate/gYear**

diagram	
diagram	**gYear** type xs:gYear
type	**xs:gYear**

element **S100_TruncatedDate/gMonthDay**

diagram	
diagram	**gMonthDay** type xs:gMonthDay
type	**xs:gMonthDay**
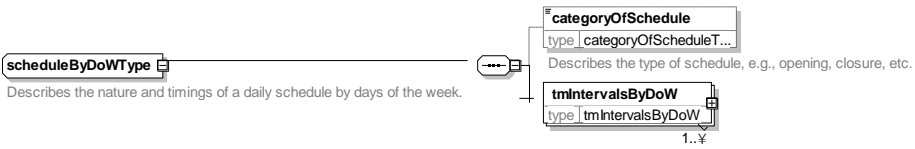
element **S100_TruncatedDate/gYearMonth**

diagram	gYearMonth
	type xs:gYearMonth
type	**xs:gYearMonth**
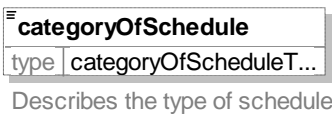
element **S100_TruncatedDate/date**

diagram	date
	type xs:date
type	**xs:date**

complexType **scheduleByDoWType**

diagram	
children	**categoryOfSchedule tmIntervalsByDoW**
annotation	documentation Describes the nature and timings of a daily schedule by days of the week.

element **scheduleByDoWType/categoryOfSchedule**

diagram	categoryOfSchedule
	type categoryOfScheduleT...
	Describes the type of schedule, e.g., opening, closure, etc.
type	**categoryOfScheduleType**
annotation	documentation Describes the type of schedule, e.g., opening, closure, etc.

element **scheduleByDoWType/tmIntervalsByDoW**

diagram	
	tmIntervalsByDoW **dayOfWeek** type dayOfWeekType 0..7 Encodes either range(s) of days or discrete days. **dayOfWeekIsRanges** type xs:boolean Indicates whether the values in dayOfWeek indicate a range of days (true) or discrete days (false). **timeReference** type timeReferenceType Indicates whether the time co-attributes are encoded in UTC or local time (LT). **timeOfDayStart** type xs:time 0..¥ Starting time of day, possibly for a period within the day. Distinction: Time start (TIMSTA) (S-101) which has a format YYYYMMDDThhmmss (mandatory) in the baseline S-101 DCEG as of October 2015. **timeOfDayEnd** type xs:time 0..¥ Ending time of day, possibly for a period within the day. Distinction: Time end (TIMEND) (S-101) which has a format YYYYMMDDThhmmss (mandatory) in the baseline S-101 DCEG as of October 2015. **tmIntervalsByDoW** type tmIntervalsByDoW 1..¥
type	**tmIntervalsByDoW**
children	**dayOfWeek dayOfWeekIsRanges timeReference timeOfDayStart timeOfDayEnd**

complexType **ServiceHoursType**

diagram	
type	extension of **InformationTypeType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation scheduleByDoW information theAuthority_srvHrs partialWorkingDay**
annotation	documentation The time when a service is available and known exceptions.

element **ServiceHoursType/scheduleByDoW**

diagram	
type	**scheduleByDoWType**

children	**categoryOfSchedule tmIntervalsByDoW**

element **ServiceHoursType/information**

diagram	 **informationType** **fileLocator** — type xs:string The string encodes the location of a fragment of text or other information in a support file. **fileReference** — type xs:string The string encodes the file name of a single external text file that contains the text. **information** — type informationType — 0..¥ **headline** — type xs:string Words set at the head of a passage or page to introduce or categorize **language** — type xs:string ISO 639-3 value **text** — type xs:string A non-formatted digital text string.
type	**informationType**
children	**fileLocator fileReference headline language text**

element **ServiceHoursType/theAuthority_srvHrs**

diagram	
	gml:ReferenceType
	□ *attributes*
	owns
	type: boolean
	default: false
	xlink:type
	type: xlink:typeType
	fixed: simple
	xlink:href
	type: xlink:hrefType
	xlink:role
	type: xlink:roleType
	xlink:arcrole
	type: xlink:arcroleType
	xlink:title
	type: xlink:titleAttrType
	xlink:show
	type: xlink:showType
	xlink:actuate
	type: xlink:actuateType
	nilReason
	type: gml:NilReasonType
	theAuthority_srvHrs
	type: gml:ReferenceType
	0..¥
	optional
type	**gml:ReferenceType**
annotation	documentation optional

element **ServiceHoursType/partialWorkingDay**
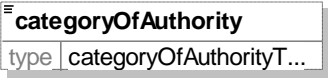
diagram	
type	**gml:ReferenceType**

complexType **sourceIndicationType**

diagram	
children	**categoryOfAuthority country featureName reportedDate source sourceType**
annotation	documentation

	Content of featureName is source authority name

element **sourceIndicationType/categoryOfAuthority**

diagram	
	≡ categoryOfAuthority
	type categoryOfAuthorityT...

type	**categoryOfAuthorityType**

facets	Kind	Value	Annotation
	enumeration	customs	documentation
			The agency or establishment for collecting duties, tolls. (Merriam-Websters online Dictionary 23rd February 2006, amended).
	enumeration	border control	documentation
			The administration to prevent or detect and prosecute violations of rules and regulations at international boundaries (adapted from Merriam-Websters online Dictionary 23rd February 2006).
	enumeration	police	documentation
			The department of government, or civil force, charged with maintaining public order. (Adapted from OED)
	enumeration	port	documentation
			Person or corporation, owners of, or entrusted with or invested with the power of managing a port. May be called a Harbour Board, Port Trust, Port Commission, Harbour Commission, Marine Department (NP 100 8th Edition 14 Oct 2004)
	enumeration	immigration	documentation
			The authority controlling people entering a country.
	enumeration	health	documentation
			The authority with responsibility for checking the validity of the health declaration of a vessel and for declaring free pratique.
	enumeration	coast guard	documentation
			Organisation keeping watch on shipping and coastal waters according to governmental law; normally the authority with reponsibility for search and rescue.
	enumeration	agricultural	documentation
			The authority with responsibility for preventing infection of the agriculture of a country and for the protection of the agricultural interests of a country.
	enumeration	military	documentation
			A military authority which provides control of access to or approval for transit through designated areas or airspace.
	enumeration	private company	documentation
			A private or publicly owned company or commercial enterprise which exercises control of facilities, for example a callibration area.
	enumeration	maritime police	documentation
			A governmental or military force with jurisdiction in territorial waters. Examples could include Gendarmerie Maritime, Carabinierie, and Guardia Civil.
	enumeration	environmental	documentation
			An authority with responsibility for the protection of the environment.
	enumeration	fishery	documentation

| | enumeration | finance | An authority with responsibility for the control of fisheries. documentation an authority with responsibility for the control and movement of money. |
| | enumeration | maritime | documentation A national or regional authority charged with administration of maritime affairs. |

element **sourceIndicationType/country**

diagram	
	country type xs:string
type	**xs:string**

element **sourceIndicationType/featureName**

diagram	
type	**featureNameType**
children	**displayName language name**
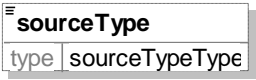
element **sourceIndicationType/reportedDate**

diagram	
type	**S100_TruncatedDate**
children	**gDay gMonth gYear gMonthDay gYearMonth date**

element **sourceIndicationType/source**

diagram	source type xs:string The publication, document, or reference work from which information comes or is acquired.
type	**xs:string**
annotation	documentation The publication, document, or reference work from which information comes or is acquired.

element **sourceIndicationType/sourceType**

diagram	sourceType type sourceTypeType Type of source
type	**sourceTypeType**

facets	Kind Value Annotation
	enumeration law or regulation documentation
	                                 treaty, convention, or international agreement; law or regulation issued by a national or other authority
	enumeration official publication documentation
	                                 publication not having the force of law, issued by an international organisation or a national or local administration

	enumeration	mariner report, confirmed	documentation Reported by mariner(s) and confirmed by another source
	enumeration	mariner report, not confirmed	documentation reported by mariner(s) but not confirmed
	enumeration	industry publications and reports	documentation shipping and other industry publication, including graphics, charts and web sites
	enumeration	remotely sensed images	documentation information obtained from satellite images
	enumeration	photographs	documentation information obtained from photographs
	enumeration	products issued by HO services	documentation information obtained from products issued by Hydropgrahic Offices
	enumeration	news media	documentation information obtained from news media
	enumeration	traffic data	documentation information obtained from the analysis of traffic data
annotation	documentation Type of source		

complexType **SpatialQuality**

diagram	
type	extension of **InformationTypeType**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation categoryOfTemporalVariation horizontalPositionalUncertainty qualityOfHorizontalMeasurement**

element **SpatialQuality/categoryOfTemporalVariation**

diagram	
type	**categoryOfTemporalVariationType**
facets	Kind Value Annotation enumeration extreme event documentation NIPWG: No new hydrographic survey conducted after an

		event (e.g., hurricane, earthquake, volcanic eruption, landslide, etc.) which is considered likely to have resulted in significant change at the location.
		documentation
		In GI Registry: Definition: No new hydrographic survey conducted after an event (e.g. hurricane, earthquake, volcanic eruption, landslide, etc), which is considered likely to have changed the seafloor significantly.
enumeration	likely to change	documentation
		NIPWG: Continuous or frequent change (e.g., river siltation, sand waves, seasonal storms, construction, etc.)
		GI Registry:
		Continuous or frequent change (e.g. river siltation, sand waves, seasonal storms, ice bergs, etc).
enumeration	likely to change but significant shoaling not expected	documentation
		GI Registry: Likely to change but significant shoaling no expected
		[Proposed draft 6/27/2014: Recommended that SNPWG not use this enumerate - ref. E.M. email 6/27/2014.]
enumeration	unlikely to change	documentation
		NIPWG: Significant change at the location is not expected.
		documentation
		GI Registry: Significant change to the seafloor is not expected.
enumeration	unassessed	documentation
		Temporal variation not assessed or cannot be determined

element **SpatialQuality/horizontalPositionalUncertainty**

diagram	
type	**horizontalPositionalUncertainty**
children	**uncertaintyFixed** **uncertaintyVariable**

element **SpatialQuality/qualityOfHorizontalMeasurement**

diagram	
	qualityOfHorizontalMeas... type QUAPOSType
type	**QUAPOSType**
facets	Kind	Value	Annotation

facets			
	Kind	Value	Annotation
	enumeration	surveyed	documentation The position(s) was(were) determined by the operation of making measurements for determining the relative position of points on, above, or beneath the earth's surface. Survey implies a regular, controlled, survey of any date.
	enumeration	unsurveyed	documentation Survey data does not exist or is very poor
	enumeration	inadequately surveyed	documentation Position data is of very poor quality
	enumeration	approximate	documentation A position that is considered to be less than third-order accuracy, but is generally considered to be within 30.5 meters of its correct geographic location. Also, may apply to a feature whose position does not remain fixed.
	enumeration	position doubtful	documentation A feature whose position has been reported but which is considered to be doubtful
	enumeration	unreliable	documentation A feature's position obtained from questionable or unreliable data.
	enumeration	reported (not surveyed)	documentation A feature whose position has been reported and its position confirmed by some means other than a formal survey such as an independent report of the same feature.
	enumeration	reported (not confirmed	documentation A feature whose position has been reported and its position has not been confirmed.
	enumeration	estimated	documentation The most probable position of a feature determined from incomplete data or data of questionable accuracy.
	enumeration	precisely known	documentation A position that is of a known value, such as the position of an anchor berth or other defined feature.
	enumeration	calculated	documentation A position that is computed from data.

complexType **SpatialQualityPoints**

diagram	
type	extension of **SpatialQuality**
children	**informationAssociation invInformationAssociation fixedDateRange periodicDateRange featureName sourceIndication providesInformation categoryOfTemporalVariation horizontalPositionalUncertainty qualityOfHorizontalMeasurement**
annotation	documentation Definition required

complexType **surveyDateRangeType**

diagram	

children	**dateStart dateEnd**
annotation	documentation The complex attribute describes the period of the hydrographic survey, as the time between its sub-attributes.

element **surveyDateRangeType/dateStart**

diagram	
type	**S100_TruncatedDate**
children	**gDay gMonth gYear gMonthDay gYearMonth date**
annotation	documentation The start date or time of the interval.
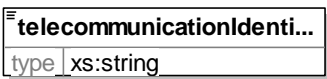
element **surveyDateRangeType/dateEnd**

diagram	
type	**S100_TruncatedDate**
children	**gDay gMonth gYear gMonthDay gYearMonth date**
annotation	documentation The end date or time of the interval.
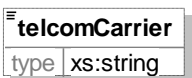
complexType **telecommunicationsType**

diagram	
children	**telecommunicationIdentifier telcomCarrier contactInstructions telecommunicationService categoryOfCommPref scheduleByDoW**
annotation	documentation A means or channel of communication at a distance by electrical, electronic, or electromagnetic means such as telegraphy, telephony, or broadcasting
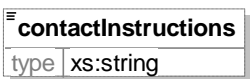
element **telecommunicationsType/telecommunicationIdentifier**

diagram	telecommunicationIdenti...
	type: xs:string
	Identifier used for contact by means of a telecommunications service, such as a telephone number
type	**xs:string**
annotation	documentation
	Identifier used for contact by means of a telecommunications service, such as a telephone number

element **telecommunicationsType/telcomCarrier**

diagram	telcomCarrier
	type: xs:string
	The name of provider or type of carrier for a telecommunications service
type	**xs:string**
annotation	documentation
	The name of provider or type of carrier for a telecommunications service

element **telecommunicationsType/contactInstructions**

diagram	contactInstructions
	type: xs:string
	instructions on how and when to contact an individual or organisation
type	**xs:string**
annotation	documentation
	instructions on how and when to contact an individual or organisation

element **telecommunicationsType/telecommunicationService**

diagram	telecommunicationServi...
	type: telecommunicationSe...
	0..∞
	Type of telecommunications service
type	**telecommunicationServiceType**
annotation	documentation
	Type of telecommunications service

element **telecommunicationsType/categoryOfCommPref**

diagram	categoryOfCommPref
	type: categoryOfCommPre...

type	**categoryOfCommPrefType**

facets	Kind Value Annotation
	enumeration preferred documentation
	            calling the first choice channel or frequency to be used when calling a
	                    radio station
	enumeration alternate documentation
	            calling a channel or frequency to be used for calling a radio station
	                    when the preferred channel or frequency is busy or is suffering
	                    from interference
	enumeration preferred documentation
	            working the first choice channel or frequency to be used when working
	                    with a radio station
	enumeration alternate documentation
	            working a channel or frequency to be used for working with a radio
	                    station when the preferred working channel or frequency is busy
	                    or is suffering from interference

element **telecommunicationsType/scheduleByDoW**

diagram	
type	**scheduleByDoWType**
children	**categoryOfSchedule tmIntervalsByDoW**
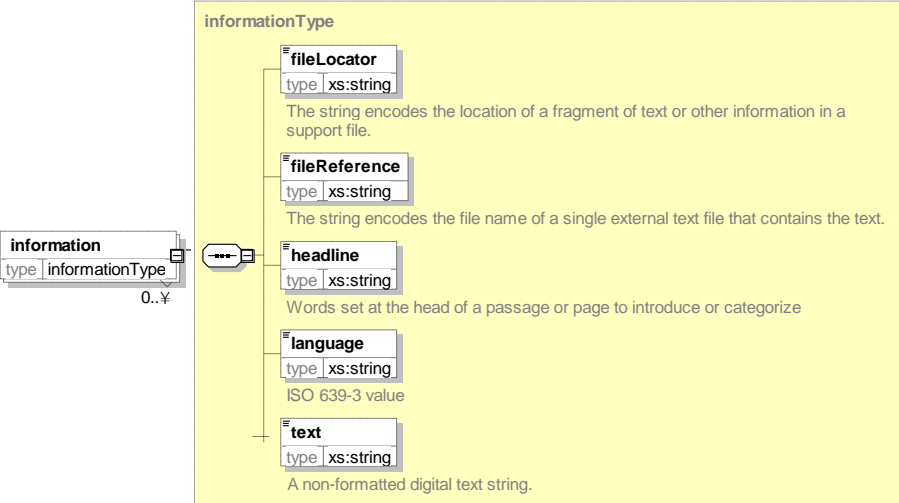
complexType **textContentType**

diagram	
children	**categoryOfText information onlineResource sourceIndication**

annotation	documentation
	Remarks: - Exactly one of sub-attributes onlineResource or information must be completed in one instance of textContent.
	      - Product specifications may restrict the use or content of onlineResource for security. For example, a product specification may forbid populating onlineResource.
	      - Product specification authors must consider whether applications using the data product may be prevented from accessing off-system resources by security policies.

element **textContentType/categoryOfText**

diagram	categoryOfText
	type categoryOfTextType

type	**categoryOfTextType**

facets	Kind	Value	Annotation
	enumeration	abstract or summary	documentation
			A statement summarizing the important points of a text.
	enumeration	extract	documentation
			An excerpt or excerpts from a text.
	enumeration	full text	documentation
			The whole text

element **textContentType/information**

diagram	

informationType

fileLocator
type xs:string
The string encodes the location of a fragment of text or other information in a support file.

fileReference
type xs:string
The string encodes the file name of a single external text file that contains the text.

headline
type xs:string
Words set at the head of a passage or page to introduce or categorize

language
type xs:string
ISO 639-3 value

text
type xs:string
A non-formatted digital text string.

information
type informationType
0..¥

type	**informationType**

children	**fileLocator** **fileReference** **headline** **language** **text**

element **textContentType/onlineResource**

diagram	
type	**onlineResourceType**
children	**linkage protocol applicationProfile nameOfResource onlineDescription onlineFunction protocolRequest**

element **textContentType/sourceIndication**

diagram	
type	**sourceIndicationType**
children	**categoryOfAuthority country featureName reportedDate source sourceType**

complexType **TextPlacement**

diagram	
children	**flipBearing scaleMinimum textJustification text textType identifies geometry**

annotation	documentation
	The Text Placement feature is used in association with the FeatureName attribute or a light description to optimise text positioning in ECDIS.
	documentation
	Remarks: - The Text Placement feature is used by the ECDIS to position the associated text, which has been populated using an attribute(s) for the related feature. This attribute is identified by populating the attribute text type. Alternatively, the text to be displayed may be encoded using the attribute text.
	                              - Only one of the attributes text or text type are allowable for each instance of Text Placement.
	                         - Text Placement should only be associated with features of type point, and used in areas where it is important that text clear navigationally relevant areas, e.g. shipping channels and dredged areas.
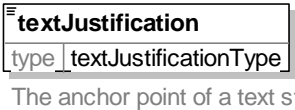
element **TextPlacement/flipBearing**

diagram	
type	**xs:decimal**
annotation	documentation The bearing at which text is re-located to the opposite side of a feature when screen display is oriented away from true north.
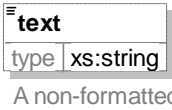
element **TextPlacement/scaleMinimum**

diagram	
type	**xs:integer**
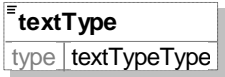
element **TextPlacement/textJustification**

diagram	**textJustification** type textJustificationType The anchor point of a text string.
type	**textJustificationType**

facets	Kind Value Annotation
	enumeration left documentation
	                             The anchor point is at the start of the text string.
	enumeration centred documentation
	                             The anchor point is at the centre of the text string.
	enumeration right documentation
	                             The anchor point is at the end of the text string.

annotation	documentation The anchor point of a text string.

element **TextPlacement/text**

diagram	**text** type xs:string A non-formatted digital text string.
type	**xs:string**
annotation	documentation A non-formatted digital text string. documentation Remarks: The attribute should be used, for example, to hold the information that is shown on paper charts by short cautionary and explanatory notes. Therefore text populated in text must not exceed 300 characters. documentation Text may be in English or in a national language defined by the attribute language. No formatting of text is possible within the sub-attribute text. If formatted text, or text strings exceeding 300 characters, is required, then the attribute file reference must be used.
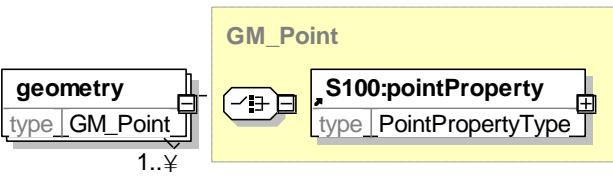
element **TextPlacement/textType**

diagram	**textType** type textTypeType
type	**textTypeType**
facets	Kind Value Annotation enumeration feature name documentation Definition required

element **TextPlacement/identifies**
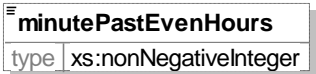
diagram	
type	**gml:ReferenceType**
annotation	documentation Association to feature for which the text is placed

element **TextPlacement/geometry**

diagram	
type	**GM_Point**
children	**pointProperty**

complexType **timeOfObservationType**

diagram	
children	**observationTime** **timeReference**
annotation	documentation The time in the day when a weather or ice observation is made, expressed in UTC or local time. The time of observation normally amplifies the time of transmission of radio-facsimile weather maps or ice charts.

element **timeOfObservationType/observationTime**

diagram	
type	**xs:time**
annotation	documentation The time on each day when observations are made

element **timeOfObservationType/timeReference**

diagram			
type	**timeReferenceType**		
facets	Kind	Value	Annotation
	enumeration	UTC	documentation Coordinated Universal Time
	enumeration	LT	documentation Local time

complexType **timesOfTransmissionType**

diagram	
children	**minutePastEvenHours minutePastEveryHour minutePastOddHours timeReference transmissionTime**

annotation	documentation One or more times in the day when the radio station starts a routine transmission, normally expressed in UTC or local time.
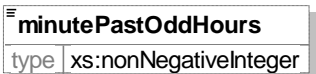
element **timesOfTransmissionType/minutePastEvenHours**

diagram	**minutePastEvenHours** type : xs:nonNegativeInteger The minute past even hours when a routine transmission starts.
type	**xs:nonNegativeInteger**
annotation	documentation The minute past even hours when a routine transmission starts.
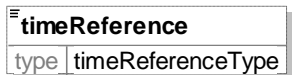
element **timesOfTransmissionType/minutePastEveryHour**

diagram	**minutePastEveryHour** type : xs:nonNegativeInteger The minute past every hour when a routine transmission starts
type	**xs:nonNegativeInteger**
annotation	documentation The minute past every hour when a routine transmission starts
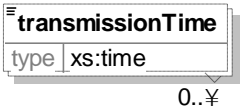
element **timesOfTransmissionType/minutePastOddHours**

diagram	**minutePastOddHours** type : xs:nonNegativeInteger The minute past odd hours when a routine transmission starts.
type	**xs:nonNegativeInteger**
annotation	documentation The minute past odd hours when a routine transmission starts.
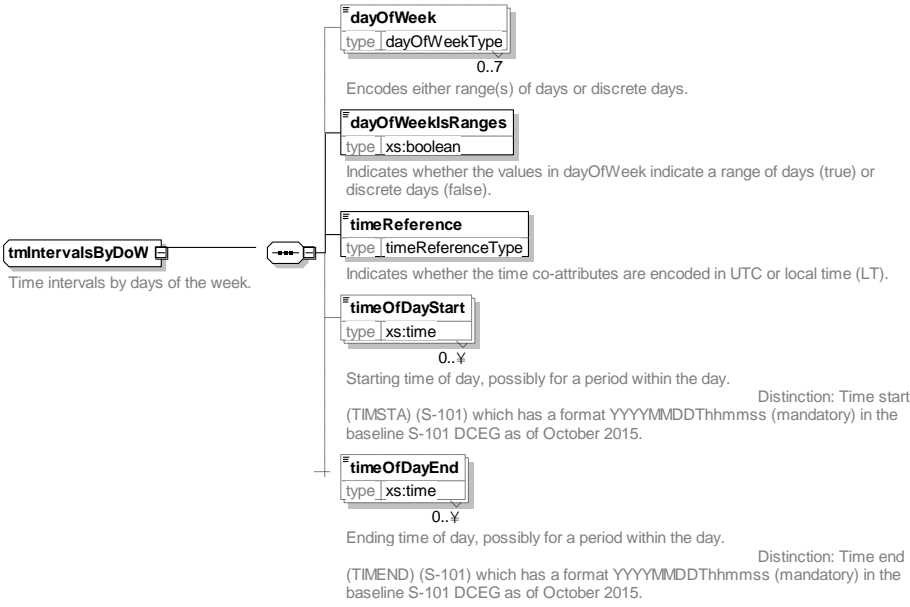
element **timesOfTransmissionType/timeReference**

diagram	**timeReference** type : timeReferenceType
type	**timeReferenceType**

facets	Kind Value Annotation
	enumeration UTC documentation
	                          Coordinated Universal Time
	enumeration LT documentation
	                          Local time

element **timesOfTransmissionType/transmissionTime**

diagram	
	transmissionTime type xs:time 0..¥ The time in the day when scheduled transmissions start.
type	**xs:time**
annotation	documentation The time in the day when scheduled transmissions start.
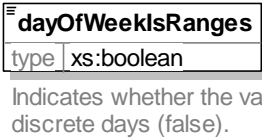
complexType **tmIntervalsByDoW**

diagram	
children	**dayOfWeek dayOfWeekIsRanges timeReference timeOfDayStart timeOfDayEnd**

annotation	documentation
	Time intervals by days of the week.
	documentation
	Remarks:
	       The sub-attribute dayOfWeekIsRanges indicates whether an instance of this attribute encodes a range of days or discrete days. The days or day-range(s) are encoded in sub-attribute dayOfWeek. Multiple ranges are allowed but mixing range with discrete days(s) is not allowed (encode another instance of this attribute instead).
	       An indeterminate range may be indicated with a null value at the appropriate position in the sequence.
	       Examples:
	       - To code the range "Monday through Friday" use the sequence: dayOfWeek=1, dayOfWeek=5 and set dayOfWeekIsRanges=TRUE.
	       - To encode the days Monday, Wednesday, Friday, use the sequence dayOfWeek=1, dayOfWeek=3, dayOfWeek=5 and set dayOfWeekIsRanges=FALSE.
	       - The sequence dayOfWeek=1, dayOfWeek=3, dayOfWeek=5 to indicate Mon-Wed and Thursday is not allowed. Encode the Mon-Wed and Thursday schedules in different instances of this complex attribute.
	       Product specifications may need to allow this attribute to be repeated in order to allow encoding of schedules which vary for different days of the week.
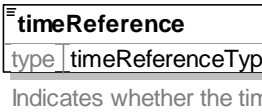
element **tmIntervalsByDoW/dayOfWeek**

diagram	**dayOfWeek** type dayOfWeekType 0..7 Encodes either range(s) of days or discrete days.
type	**dayOfWeekType**

facets	Kind Value Annotation
	enumeration monday documentation
	      monday - the day of the week before Tuesday and following Sunday
	enumeration tuesday documentation
	      the day of the week before Wednesday and following Monday
	enumeration wednesday documentation
	      wednesday - the day of the week before Thursday and following Tuesday
	enumeration thursday documentation
	      thursday - the day of the week before Friday and following Wednesday
	enumeration friday documentation
	      friday - the day of the week before Saturday and following Thursday
	enumeration saturday documentation
	      saturday - the day of the week before Sunday and following Friday (together with Sunday forming part of the weekend)
	enumeration sunday documentation
	      sunday - the day of the week before Monday and following Saturday (together with Saturday forms part of the weekend)

annotation	documentation Encodes either range(s) of days or discrete days.

element **tmIntervalsByDoW/dayOfWeekIsRanges**
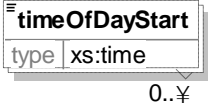
diagram	**dayOfWeekIsRanges** type xs:boolean Indicates whether the values in dayOfWeek indicate a range of days (true) or discrete days (false).
type	**xs:boolean**
annotation	documentation Indicates whether the values in dayOfWeek indicate a range of days (true) or discrete days (false).

element **tmIntervalsByDoW/timeReference**
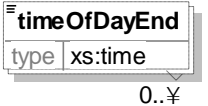
diagram	**timeReference** type timeReferenceType Indicates whether the time co-attributes are encoded in UTC or local time (LT).

type	**timeReferenceType**

facets	Kind Value Annotation
	enumeration UTC documentation
	                             Coordinated Universal Time
	enumeration LT documentation
	                             Local time

annotation	documentation Indicates whether the time co-attributes are encoded in UTC or local time (LT).

element **tmIntervalsByDoW/timeOfDayStart**

diagram	 Starting time of day, possibly for a period within the day. Distinction: Time start (TIMSTA) (S-101) which has a format YYYYMMDDThhmmss (mandatory) in the baseline S-101 DCEG as of October 2015.
type	**xs:time**
annotation	documentation Starting time of day, possibly for a period within the day. Distinction: Time start (TIMSTA) (S-101) which has a format YYYYMMDDThhmmss (mandatory) in the baseline S-101 DCEG as of October 2015.

element **tmIntervalsByDoW/timeOfDayEnd**

diagram	 Ending time of day, possibly for a period within the day. Distinction: Time end (TIMEND) (S-101) which has a format YYYYMMDDThhmmss (mandatory) in the baseline S-101 DCEG as of October 2015.
type	**xs:time**
annotation	documentation Ending time of day, possibly for a period within the day. Distinction: Time end (TIMEND) (S-101) which has a format YYYYMMDDThhmmss (mandatory) in the baseline S-101 DCEG as of October 2015.

complexType **vesselsMeasurementsType**

diagram	
children	**comparisonOperator** **vesselsCharacteristics** **vesselsCharacteristicsValue** **vesselsCharacteristicsUnit**

element **vesselsMeasurementsType/comparisonOperator**

diagram	
type	**comparisonOperatorType**
facets	Kind	Value	Annotation
	enumeration	greater than	documentation
			The value of the left value is greater than that of the right.(http://en.wikipedia.org/wiki/Logical_connective)
	enumeration	greater than or equal to	documentation
			The value of the left expression is greater than or equal to that of the right. (http://en.wikipedia.org/wiki/Logical_connective)
	enumeration	less than	documentation
			The value of the left expression is less than that of the right. (http://en.wikipedia.org/wiki/Logical_connective)
	enumeration	less than or equal to	documentation
			The value of the left expression is less than or equal to that of the right. (http://en.wikipedia.org/wiki/Logical_connective)
	enumeration	equal to	documentation
			The two values are equivalent. (adapted http://en.wikipedia.org/wiki/Logical_connective)
	enumeration	not equal to	documentation
			The two values are not equivalent. (adapted http://en.wikipedia.org/wiki/Logical_connective)

element **vesselsMeasurementsType/vesselsCharacteristics**

diagram	
type	**vesselsCharacteristicsType**
facets	Kind	Value	Annotation
	enumeration	length overall	documentation
			The maximum length of the ship (L.O.A.).

			(http://en.wikipedia.org/wiki/Ship_measurements; 24 July 2010)
enumeration	length at waterline	documentation	The ship's length measured at the waterline (L.W.L.). (http://en.wikipedia.org/wiki/Ship_measurements; 24 July 2010)
enumeration	breadth	documentation	The width or beam of the vessel. (Adapted from http://en.wikipedia.org/wiki/Ship_measurements; 24 July 2010)
enumeration	draught	documentation	The depth of water necessary to float a vessel fully loaded. (http://en.wikipedia.org/wiki/Ship_measurements; 24 July 2010)
enumeration	height	documentation	The height of the highest point of a vessel's structure (e.g. radar aerial, funnel, cranes, masthead) above her waterline.(UKHO NP100/2009)
enumeration	displacement tonnage	documentation	A measurement of the weight of the vessel, usually used for warships. (Merchant ships are usually measured based on the volume of cargo space; see tonnage). Displacement is expressed either in long tons of 2,240 pounds or metric tonnes of 1,000 kg. Since the two units are very close in size (2,240 pounds = 1,016 kg and 1,000 kg = 2,205 pounds), it is common not to distinguish between them. To preserve secrecy, nations sometimes misstate a warship's displacement. (http://en.wikipedia.org/wiki/Ship_measurements; 24 July 2010)
enumeration	displacement tonnage, light	documentation	The weight of the ship excluding cargo, fuel, ballast, stores, passengers, and crew, but with water in the boilers to steaming level. (http://en.wikipedia.org/wiki/Ship_measurements; 24 July 2010)
enumeration	displacement tonnage, loaded	documentation	The weight of the ship including cargo, passengers, fuel, water, stores, dunnage and such other items necessary for use on a voyage, which brings the vessel down to her load draft. (http://en.wikipedia.org/wiki/Ship_measurements; 24 July 2010)
enumeration	deadweight tonnage	documentation	The difference between displacement, light and displacement, loaded. A measure of the ship's total carrying capacity. (http://en.wikipedia.org/wiki/Ship_measurements; 24 July 2010)
enumeration	gross tonnage	documentation	The entire internal cubic capacity of the ship expressed in tons of 100 cubic feet to the ton, except certain spaces with are exempted such as: peak and other tanks for water ballast, open forecastle bridge and poop, access of hatchways, certain light and air spaces, domes of skylights, condenser, anchor gear, steering gear, wheel house, galley and cabin for passengers. (http://en.wikipedia.org/wiki/Ship_measurements; 24 July

	enumeration	net tonnage	documentation
			Obtained from the gross tonnage by deducting crew and navigating spaces and allowances for propulsion machinery.(http://en.wikipedia.org/wiki/Ship_measurements; 24 July 2010)
	enumeration	Panama Canal/Universal Measurement System net tonnage	documentation
			the Panama Canal/Universal Measurement System (PC/UMS) is based on net tonnage, modified for Panama Canal purposes. PC/UMS is based on a mathematical formula to calculate a vessel's total volume; a PC/UMS net ton is equivalent to 100 cubic feet of capacity. (Adapted from http://en.wikipedia.org/wiki/Tonnage 4 Oct 2010)
	enumeration	Suez Canal net tonnage	documentation
			the Suez Canal Net Tonnage (SCNT) is derived with a number of modifications from the former net register tonnage of the Moorsom System and was established by the International Commission of Constantinople in its Protocol of 18 December 1873. It is still in use, as amended by the Rules of Navigation of the Suez Canal Authority, and is registered in the Suez Canal Tonnage Certificate. (Adapted from http://en.wikipedia.org/wiki/Tonnage 4 Oct 2010)
	enumeration	Suez Canal gross tonnage	documentation
			Suez Canal Gross Tonnage (SCGT) is derived with a number of modifications from the former net register tonnage of the Moorsom System and was established by the International Commission of Constantinople in its Protocol of 18 December 1873. It is still in use, as amended by the Rules of Navigation of the Suez Canal Authority, and is registered in the Suez Canal Tonnage Certificate.

element **vesselsMeasurementsType/vesselsCharacteristicsValue**

diagram	vesselsCharacteristicsV...
	type xs:string

type	**xs:string**

element **vesselsMeasurementsType/vesselsCharacteristicsUnit**

diagram	vesselsCharacteristicsU...
	type vesselsCharacteristic...

type	**vesselsCharacteristicsUnitType**
facets	Kind: enumeration Value: metre Annotation: documentation — The metre (or meter) is the base unit of length in the International System of Units (SI). It is defined as the distance travelled by light in vacuum in 1/299,792,458 of a second.

enumeration	foot	documentation
		A foot (plural: feet) is a non-SI unit of length in a number of different systems including English units, Imperial units, and United States customary units. The most commonly used foot today is the international foot. There are three feet in a yard and 12 inches in a foot.
enumeration	metric ton	documentation
		The tonne or metric ton (U.S.), often redundantly referred to as a metric tonne, is a unit of mass equal to 1,000 kg (2,205 lb) or approximately the mass of one cubic metre of water at four degrees Celsius. It is sometimes abbreviated as mt in the United States, but this conflicts with other SI symbols. The tonne is not a unit in the International System of Units (SI), but is accepted for use with the SI. In SI units and prefixes, the tonne is a megagram (Mg). The Imperial and US customary units comparable to the tonne are both spelled ton in English, though they differ in mass. Pronunciation of tonne (the word used in the UK) and ton is usually identical, but is not too confusing unless accuracy is important as the tonne and UK long ton differ by only 1.6%.
enumeration	ton	documentation
		Long ton (weight ton or imperial ton) is the name for the unit called the "ton" in the avoirdupois or Imperial system of measurements, as used in the United Kingdom and several other Commonwealth countries. It has been mostly replaced by the tonne, and in the United States by the short ton. One long ton is equal to 2,240 pounds (1,016 kg) or 35 cubic feet (0.9911 m3) of salt water with a density of 64 lb/ft³ (1.025 g/ml). It has some limited use in the United States, most commonly in measuring the displacement of ships, and was the unit prescribed for warships by the Washington Naval Treaty—for example battleships were limited to a mass of 35,000 long tons (36,000 t; 39,000 ST).
enumeration	short ton	documentation
		The short ton is a unit of weight equal to 2,000 pounds (907.18474 kg). In the United States it is often called simply ton without distinguishing it from the metric ton (tonne, 1,000 kilograms) or the long ton (2,240 pounds / 1,016.0469088 kilograms); rather, the other two are specifically noted. There are, however, some U.S. applications for which unspecified tons normally means long tons (for example, Navy ships) or metric tons (world grain production figures).
		Both the long and short ton are defined as 20 hundredweights, but a hundredweight is 100 pounds (45.359237 kg) in the U.S. system (short or net hundredweight) and 112 pounds (50.80234544 kg) in the Imperial system (long or gross hundredweight).
enumeration	gross ton	documentation
		Gross tonnage (GT) is a function of the volume of all ship's enclosed spaces (from keel to funnel) measured to the outside of the hull framing. There is a sliding

			scale factor. So GT is a kind of capacity-derived index that is used to rank a ship for purposes of determining manning, safety and other statutory requirements and is expressed simply as GT, which is a unitless entity, even though its derivation is tied to the cubic meter unit of volumetric capacity. Tonnage measurements are now governed by an IMO Convention (International Convention on Tonnage Measurement of Ships, 1969 (London-Rules)), which applies to all ships built after July 1982. In accordance with the Convention, the correct term to use now is GT, which is a function of the moulded volume of all enclosed spaces of the ship.
	enumeration	net ton	documentation Net tonnage (NT) is based on a calculation of the volume of all cargo spaces of the ship. It indicates a vessel's earning space and is a function of the moulded volume of all cargo spaces of the ship.
	enumeration	Panama Canal/Universal Measurement System net tonnage	documentation The Panama Canal/Universal Measurement System (PC/UMS) is based on net tonnage, modified for Panama Canal purposes. PC/UMS is based on a mathematical formula to calculate a vessel's total volume; a PC/UMS net ton is equivalent to 100 cubic feet of capacity.
	enumeration	Suez Canal Net Tonnage	documentation The Suez Canal Net Tonnage (SCNT) is derived with a number of modifications from the former net register tonnage of the Moorsom System and was established by the International Commission of Constantinople in its Protocol of 18 December 1873. It is still in use, as amended by the Rules of Navigation of the Suez Canal Authority, and is registered in the Suez Canal Tonnage Certificate.
	enumeration	none	documentation Can be used for net and gross tonnages, including Panama Canal/Universal Measurement System net tonnage and The Suez Canal Net Tonnage.
	enumeration	cubic metres	documentation cubic metres
	enumeration	Suez Canal Gross Tonnage	documentation The Suez Canal Gross Tonnage (SCGT) is derived with a number of modifications from the former net register tonnage of the Moorsom System and was established by the International Commission of Constantinople in its Protocol of 18 December 1873. It is still in use, as amended by the Rules of Navigation of the Suez Canal Authority, and is registered in the Suez Canal Tonnage Certificate.

complexType **WeatherForecastWarningAreaType**

diagram	
type	extension of **FeatureType**
children	**gml:boundedBy featureObjectIdentifier informationAssociation featureAssociation invFeatureAssociation fixedDateRange periodicDateRange featureName sourceIndication textContent permission providesInformation theRxN positions categoryOfFrcstAndWarningArea nationality status serviceProvider controlAuthority componentOf geometry**
annotation	documentation An area for which weather forecasts and warnings are provided for specified periods.
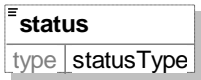
element **WeatherForecastWarningAreaType/categoryOfFrcstAndWarningArea**

diagram	categoryOfFrcstAndWar... type categoryOfFrcstAnd...		
type	**categoryOfFrcstAndWarningAreaType**		
facets	Kind	Value	Annotation
	enumeration	World Meteorological Organization (WMO)	documentation The forecast and warning area defined by WMO
	enumeration	National high seas	documentation The forecast and warning area defined by national authorities covering High Seas
	enumeration	National offshore	documentation The forecast and warning area defined by national authorities covering offshore waters.
	enumeration	National coastal	documentation The forecast and warning area defined by national authorities covering coastal waters.
	enumeration	National inshore	documentation The forecast and warning area defined by national authorities covering inshore waters.
	enumeration	National local	documentation The forecast and warning area defined by national authorities covering local waters.
	enumeration	Ice	documentation The ice forecast area defined by international or national authorities.

element **WeatherForecastWarningAreaType/nationality**

diagram	nationality type xs:string
type	**xs:string**

element **WeatherForecastWarningAreaType/status**

diagram	status type statusType		
type	**statusType**		
facets	Kind	Value	Annotation
	enumeration	permanent	documentation Intended to last or function indefinitely
	enumeration	occasional	documentation Acting on special occasions; happening irregularly
	enumeration	recommended	documentation Presented as worthy of confidence, acceptance, use, etc.
	enumeration	not in use	documentation Use has ceased, but the facility still exists intact; disused.
	enumeration	periodic/intermittent	documentation

			Recurring at intervals
	enumeration	reserved	documentation
			Set apart for some specific use
	enumeration	temporary	documentation
			Meant to last only for a time
	enumeration	private	documentation
			Administered by an individual or corporation, rather than a State or a public body.
	enumeration	mandatory	documentation
			Compulsory; enforced.
	enumeration	extinguished	documentation
			No longer lit
	enumeration	illuminated	documentation
			Lit by floodlights, strip lights, etc.
	enumeration	historic	documentation
			Famous in history; of historical interest
	enumeration	public	documentation
			Belonging to, available to, used or shared by, the community as a whole and not restricted to private use.
	enumeration	synchronised	documentation
			Occur at a time, coincide in point of time, be contemporary or simultaneous
	enumeration	watched	documentation
			Looked at or observed over a period of time especially so as to be aware of any movement or change.
	enumeration	un-watched	documentation
			Usually automatic in operation, without any permanently-stationed personnel to superintend it.
	enumeration	existence doubtful	documentation
			A feature that has been reported but has not been definitely determined to exist.
	enumeration	buoyed	documentation
			Marked by buoys

element **WeatherForecastWarningAreaType/serviceProvider**

diagram	

gml:ReferenceType

□ *attributes*

owns
| type | boolean |
| default | false |

xlink:type
| type | xlink:typeType |
| fixed | simple |

xlink:href
| type | xlink:hrefType |

xlink:role
| type | xlink:roleType |

xlink:arcrole
| type | xlink:arcroleType |

xlink:title
| type | xlink:titleAttrType |

xlink:show
| type | xlink:showType |

xlink:actuate
| type | xlink:actuateType |

nilReason
| type | gml:NilReasonType |

serviceProvider
| type | gml:ReferenceType |

0..¥

TBD: Addition to April 2017 model

type	**gml:ReferenceType**
annotation	documentation TBD: Addition to April 2017 model

element **WeatherForecastWarningAreaType/controlAuthority**

diagram	
	gml:ReferenceType attributes **owns** type boolean default false **xlink:type** type xlink:typeType fixed simple **xlink:href** type xlink:hrefType **xlink:role** type xlink:roleType **xlink:arcrole** type xlink:arcroleType **xlink:title** type xlink:titleAttrType **xlink:show** type xlink:showType **xlink:actuate** type xlink:actuateType **nilReason** type gml:NilReasonType **controlAuthority** type gml:ReferenceType 0..¥ The controlling organization or authority for a geographically located service
type	**gml:ReferenceType**
annotation	documentation The controlling organization or authority for a geographically located service

element **WeatherForecastWarningAreaType/componentOf**

diagram	
	gml:ReferenceType
	⊟ *attributes*
	owns — type: boolean, default: false
	xlink:type — type: xlink:typeType, fixed: simple
	xlink:href — type: xlink:hrefType
	xlink:role — type: xlink:roleType
	xlink:arcrole — type: xlink:arcroleType
	xlink:title — type: xlink:titleAttrType
	xlink:show — type: xlink:showType
	xlink:actuate — type: xlink:actuateType
	nilReason — type: gml:NilReasonType
	componentOf — type: gml:ReferenceType
type	**gml:ReferenceType**

element **WeatherForecastWarningAreaType/geometry**

diagram	
	GM_Surface
	geometry — type: GM_Surface — 1..¥
	S100:surfaceProperty — type: SurfacePropertyType
type	**GM_Surface**
children	**surfaceProperty**

simpleType **actionOrActivityType**

type	union of (restriction of **xs:string**, restriction of **xs:string**)
annotation	documentation

	The action or activity of a vessel

simpleType **cardinalDirectionType**

type	restriction of **xs:string**
facets	Kind Value Annotation
	enumeration N documentation North
	enumeration NNE documentation Northnortheast
	enumeration NE documentation Northeast
	enumeration ENE documentation Eastnortheast
	enumeration E documentation East
	enumeration ESE documentation Eastsoutheast
	enumeration SE documentation Southeast
	enumeration SSE documentation Southsoutheast
	enumeration S documentation South
	enumeration SSW documentation Southsouthwest
	enumeration SW documentation Southwest
	enumeration WSW documentation Westsouthwest
	enumeration W documentation West
	enumeration WNW documentation Westnorthwest
	enumeration NW documentation Northwest
	enumeration NNW documentation Northnorthwest
annotation	documentation Principal and intermediate compass points.

simpleType **categoryOfAuthorityType**

type	restriction of **xs:string**
facets	Kind Value Annotation
	enumeration customs documentation The agency or establishment for collecting duties, tolls. (Merriam-Websters online Dictionary 23rd February 2006, amended).
	enumeration border control documentation The administration to prevent or detect and prosecute violations of rules and regulations at international boundaries (adapted from Merriam-Websters online Dictionary 23rd

				February 2006).
	enumeration	police	documentation	
				The department of government, or civil force, charged with maintaining public order. (Adapted from OED)
	enumeration	port	documentation	
				Person or corporation, owners of, or entrusted with or invested with the power of managing a port. May be called a Harbour Board, Port Trust, Port Commission, Harbour Commission, Marine Department (NP 100 8th Edition 14 Oct 2004)
	enumeration	immigration	documentation	
				The authority controlling people entering a country.
	enumeration	health	documentation	
				The authority with responsibility for checking the validity of the health declaration of a vessel and for declaring free pratique.
	enumeration	coast guard	documentation	
				Organisation keeping watch on shipping and coastal waters according to governmental law; normally the authority with reponsibility for search and rescue.
	enumeration	agricultural	documentation	
				The authority with responsibility for preventing infection of the agriculture of a country and for the protection of the agricultural interests of a country.
	enumeration	military	documentation	
				A military authority which provides control of access to or approval for transit through designated areas or airspace.
	enumeration	private company	documentation	
				A private or publicly owned company or commercial enterprise which exercises control of facilities, for example a callibration area.
	enumeration	maritime police	documentation	
				A governmental or military force with jurisdiction in territorial waters. Examples could include Gendarmerie Maritime, Carabinierie, and Guardia Civil.
	enumeration	environmental	documentation	
				An authority with responsibility for the protection of the environment.
	enumeration	fishery	documentation	
				An authority with responsibility for the control of fisheries.
	enumeration	finance	documentation	
				an authority with responsibility for the control and movement of money.
	enumeration	maritime	documentation	
				A national or regional authority charged with administration of maritime affairs.
annotation	documentation			
	The type of person, government agency or organisation granted powers of managing or controlling access to and/or activity in an area			

simpleType **categoryOfBroadcastCommunicationType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	commercial	documentation

	enumeration	non-commercial	A service operated with the intention of earning money documentation A service without any financial interest
	enumeration	public	documentation A service available for the general community
	enumeration	non-public	documentation A service available for limited and pre-defined customers
annotation	documentation Classification of broadcast or communications based on public availability and commercial/non-commercial nature.		

simpleType **categoryOfCargoType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	bulk	documentation Normally dry cargo which is transported to and from the vessel on conveyors or grabs
	enumeration	container	documentation One of a number of standard sized cargo carrying units, secured using standard corner attachments and bars
	enumeration	general	documentation Break bulk cargo normally loaded by crane
	enumeration	liquid	documentation Any cargo loaded by pipeline
	enumeration	passenger	documentation A fee paying traveller
	enumeration	livestock	documentation Live animals carried in bulk
	enumeration	dangerous or hazardous	documentation Dangerous or hazardous cargo as described by the IMO International Maritime Dangerous Goods code
annotation	documentation Remarks: If item 7 is used, the nature of dangerous or hazardous cargoes can be amplified with category of dangerous or hazardous cargo.		

simpleType **categoryOfCommPrefType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	preferred calling	documentation the first choice channel or frequency to be used when calling a radio station
	enumeration	alternate calling	documentation a channel or frequency to be used for calling a radio station when the preferred channel or frequency is busy or is suffering from interference
	enumeration	preferred working	documentation the first choice channel or frequency to be used when working with a radio station
	enumeration	alternate working	documentation a channel or frequency to be used for working with a radio station when the preferred working channel or frequency is

		busy or is suffering from interference
annotation		documentation Classification of frequencies, VHF channels, telephone numbers, or other means of communication based on preference.

simpleType **categoryOfDangerousOrHazardousCargoType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	IMDG Code Class 1 Div. 1.1	documentation Explosives, Division 1: substances and articles which have a mass explosion hazard
	enumeration	IMDG Code Class 1 Div. 1.2	documentation Explosives, Division 2: substances and articles which have a projection hazard but not a mass explosion hazard
	enumeration	IMDG Code Class 1 Div. 1.3	documentation Explosives, Division 3: substances and articles which have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard
	enumeration	IMDG Code Class 1 Div. 1.4	documentation Explosives, Division 4: substances and articles which present no significant hazard
	enumeration	IMDG Code Class 1 Div. 1.5	documentation Explosives, Division 5: very insensitive substances which have a mass explosion hazard
	enumeration	IMDG Code Class 1 Div. 1.6	documentation Explosives, Division 6: extremely insensitive articles which do not have a mass explosion hazard
	enumeration	IMDG Code Class 2 Div. 2.1	documentation Gases, flammable gases
	enumeration	IMDG Code Class 2 Div. 2.2	documentation Gases, non-flammable, non-toxic gases
	enumeration	IMDG Code Class 2 Div. 2.3	documentation Gases, toxic gases
	enumeration	IMDG Code Class 3	documentation flammable liquids
	enumeration	IMDG Code Class 4 Div. 4.1	documentation flammable solids, self-reactive substances and desensitized explosives
	enumeration	IMDG Code Class 4 Div. 4.2	documentation substances liable to spontaneous combustion
	enumeration	IMDG Code Class 4 Div. 4.3	documentation substances which, in contact with water, emit flammable gases
	enumeration	IMDG Code Class 5 Div. 5.1	documentation oxidizing substances
	enumeration	IMDG Code Class 5 Div. 5.2	documentation organic peroxides
	enumeration	IMDG Code Class 6 Div. 6.1	documentation toxic substances
	enumeration	IMDG Code Class 6. Div. 6.2	documentation infectious substances
	enumeration	IMDG Code Class 7	documentation Radioactive material

	enumeration	IMDG Code Class 8	documentation Corrosive substances
	enumeration	IMDG Code Class 9	documentation Miscellaneous dangerous substances and articles
	enumeration	Harmful Substances in packaged form	documentation Harmful substances are those substances which are identified as marine pollutants in the International Maritime Dangerous Goods Code (IMDG Code). Packaged form is defined as the forms of containment specified for harmful substances in the IMDG Code. (MARPOL (73/78) Annex III)

simpleType **categoryOfFrcstAndWarningAreaType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	World Meteorological Organization (WMO)	documentation The forecast and warning area defined by WMO
	enumeration	National high seas	documentation The forecast and warning area defined by national authorities covering High Seas
	enumeration	National offshore	documentation The forecast and warning area defined by national authorities covering offshore waters.
	enumeration	National coastal	documentation The forecast and warning area defined by national authorities covering coastal waters.
	enumeration	National inshore	documentation The forecast and warning area defined by national authorities covering inshore waters.
	enumeration	National local	documentation The forecast and warning area defined by national authorities covering local waters.
	enumeration	Ice	documentation The ice forecast area defined by international or national authorities.
annotation	documentation Classification of weather forecast and weather warning areas based on source of warnings and forecasts.		

simpleType **categoryOfGMDSSAreaType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	Area A1	documentation Within range of VHF coast stations with continuous DSC alerting available (about 20 – 30 miles)
	enumeration	Area A2	documentation Beyond area A1, but within range of MF coastal stations with continuous DSC alerting available (about l00 miles)
	enumeration	Area A3	documentation Beyond the first two areas, but within coverage of geostationary maritime communication satellites (in practice this means Inmarsat). This covers the area between roughly 70 deg N and 70 deg S.

	enumeration	Area A4	documentation The remaining sea areas. The most important of these is the sea around the North Pole (the area around the South Pole is mostly land). Geostationary satellites, which are positioned above the equator, cannot reach this far.
annotation	documentation Classification of GMDSS areas based on availability of GMDSS services and GMDSS equipment requirements.		

simpleType **categoryOfLandmarkType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	dish aerial	documentation A parabolic aerial for the receipt and transmission of high frequency radio signals. (IHO Dictionary – S-32).
	enumeration	mast	documentation A relatively tall structure usually held vertical by guy lines. (S-57 Edition 3.1, Appendix A – Chapter 2, Page 2.45, November 2000).
	enumeration	tower	documentation A relatively tall, narrow structure that may either stand alone or may form part of another structure. (Defence Geospatial Information Working Group; Feature Data Dictionary Register, 2010).
annotation	documentation Classification of prominent cultural and natural features in the landscape. S-123 Note: Only landmarks of relevance to radiocommunications are encoded in S-123 datasets, e.g., radio masts used for marine broadcasts if their location needs to be shown		

simpleType **categoryOfMaritimeBroadcastType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	navigational warning	documentation message containing urgent information relevant to safe navigation broadcast to ships in accordance with the provisions of the International Convention for the Safety of Life at Sea, 1974, as amended
	enumeration	meteorological warning	documentation warning of adverse weather conditions
	enumeration	ice report	documentation report of the ice situation and restrictions to shipping
	enumeration	SAR information	documentation broadcast message with information about an ongoing SAR operation
	enumeration	pirate attack warning	documentation warning of possible attack by pirates
	enumeration	meteorological forecast	documentation broadcast message containing meteorological forecast
	enumeration	pilot service message	documentation broadcast message about pilot service
	enumeration	AIS information	documentation

	enumeration	LORAN message	documentation
			broadcast message about AIS information
			broadcast message about the LORAN service
	enumeration	SATNAV message	documentation
			broadcast message about Satellite Navigation service
	enumeration	gale warning	documentation
			warning of winds of Beaufort force 8 or 9
	enumeration	storm warning	documentation
			warning of winds of Beaufort force 10 or over
	enumeration	tropical revolving storm warning	documentation
			warning of hurricanes in the North Atlantic and eastern North Pacific, typhoons in the Western Pacific, cyclones in the Indian Ocean and cyclones of similar nature in other regions
	enumeration	NAVAREA warning	documentation
			navigational warning or in-force bulletin promulgated as part of a numbered series by a NAVAREA coordinator (Maritime Safety Information Manual 2009)
	enumeration	coastal warning	documentation
			navigational warning promulgated as part of a numbered series by a National coordinator (Maritime Safety Information Manual 2009)
	enumeration	local warning	documentation
			warning which covers inshore waters, often within the limits of jurisdiction of a harbour or port authority (Maritime Safety Information Manual 2009)
	enumeration	low water level warning/negative tidal surge	documentation
			warning of actual or expected low water level
	enumeration	icing warning	documentation
			warning of accretion of ice on ships
	enumeration	tsunami broadcast	documentation
			broadcasts about tsunamis, including watches, advisories, and other types of messages relating to tsunamis or potential tsunamis
annotation	documentation		
	Classification of maritime broadcast based on the nature of information conveyed.		

simpleType **categoryOfRadioMethodsType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	Low Frequency (LF) voice traffic	documentation
			Frequency in a frequency range between 30 and 300 kHz used for voice traffic
	enumeration	Medium Frequency (MF) voice traffic	documentation
			Frequency in a frequency range between 300 and 3 000kHz used for voice traffic
	enumeration	High Frequency (HF) voice traffic	documentation
			Frequency in a frequency range between 3 and 30 MHz used for voice traffic
	enumeration	Very High Frequency (VHF)	documentation
			Frequency in a frequency range between 30 and 300

		voice traffic	MHz used for voice traffic
enumeration	High Frequency Narrow Band Direct Printing	documentation	
			High Frequency Narrow Band Direct Printing
enumeration	NAVTEX	documentation	
			Narrow-band direct-printing telegraphy system for transmission of maritime safety information.
enumeration	SafetyNET	documentation	
			SafetyNET is an international automatic direct-printing satellite-based service for the promulgation of navigational and meteorological warnings, meteorological forecasts and other urgent safety-related messages - maritime safety information (MSI) - to ships.
enumeration	NBDP Telegraphy	documentation	
			Narrow Band Direct Printing Telegraphy. A communications system consisting of teletypewriters connected to a telephonic network to send and receive wireless signals.
enumeration	facsimile	documentation	
			A method or device for transmitting documents, drawings, photographs, or the like, by means of radio or telephone for exact reproduction elsewhere.
enumeration	NAVIP	documentation	
			A Russian system transmitting navigational information, send by radio and containing information relevant to coastal waters of foreign countries and high seas.
enumeration	Low Frequency (LF) digital traffic	documentation	
			Frequency in a frequency range between 30 and 300 kHz used for digital traffic
enumeration	Medium Frequency (MF) digital traffic	documentation	
			Frequency in a frequency range between 300 and 3000kHz used for digital traffic
enumeration	High Frequency (HF) digital traffic	documentation	
			Frequency in a frequency range between 3 and 30 MHz used for digital traffic
enumeration	Very High Frequency (VHF) digital traffic	documentation	
			Frequency in a frequency range between 30 and 300 MHz used for digital traffic
enumeration	Low Frequency (LF) telegraph traffic	documentation	
			Frequency in a frequency range between 30 and 300 kHz used for telegraph traffic
enumeration	Medium Frequency (MF) telegraph traffic	documentation	
			Frequency in a frequency range between 300 and 3 000kHz used for telegraph traffic
enumeration	High Frequency (HF) telegraph traffic	documentation	
			Frequency in a frequency range between 3 and 30 MHz used for telegraph traffic
enumeration	Medium Frequency (MF) Digital Selective Call traffic	documentation	
			Frequency in a frequency range between 300 and 3000kHz used for Digital Selective Call traffic
enumeration	High Frequency (HF) Digital Selective Call traffic	documentation	
			Frequency in a frequency range between 3 and 30 MHz used for Digital Selective Call traffic
enumeration	Very High	documentation	

		Frequency (VHF) Digital Selective Call traffic	Frequency in a frequency range between 30 and 300 MHz used for Digital Selective Call traffic
annotation	documentation Categories of radiocommunications based on frequency band and radio traffic method.		

simpleType **categoryOfRadioStationType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	radio direction-finding station	documentation A radio station intended only to determine the direction of other stations by means of transmission from the latter.
	enumeration	Decca	documentation The Decca Navigator System is a high-accuracy, short to medium range radio navigation aid intended for coastal and landfall navigation.
	enumeration	Loran C	documentation A low frequency electronic position fixing system using pulsed transmissions at 100 Khz.
	enumeration	Differential GNSS	documentation A radiobeacon transmitting DGPS correction signals.
	enumeration	Toran	documentation An electronic position fixing system used mainly by aircraft.
	enumeration	Omega	documentation A long-range radio navigational aid which operates within the VLF frequency band. The system comprises eight land based stations.
	enumeration	Syledis	documentation A ranging position fixing system operating at 420-450MHz over a range of up to 400 Km.
	enumeration	Chaika	documentation A low frequency electronic position fixing system using pulsed transmissions at 100 Khz.
	enumeration	facsimile transmission	documentation facsimile transmission (IHO HYDRO register, 2010-11-14)
	enumeration	radio telephone station	documentation The equipment needed at one station to carry on two way voice communication by radio waves only.
	enumeration	AIS base station	documentation Remark: Not defined in GI Registry (2017-04-20).
annotation	documentation Classification of radio services offered by a radio station.		

simpleType **categoryOfRelationshipType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	prohibited	documentation use of facility, waterway or service is forbidden
	enumeration	not	documentation

	enumeration	recommended permitted	use of facility, waterway or service is not recommended
			documentation
			use of facility, waterway, or service is permitted but not required
	enumeration	recommended	documentation
			use of facility, waterway, or service is recommended
	enumeration	required	documentation
			use of facility, waterway, or service is required
	enumeration	not required	documentation
			use of facility, waterway, or service is not required
annotation	documentation This attribute expresses the level of insistence for or against an action or activity		

simpleType **categoryOfRxNType**

type	union of (restriction of **xs:string**, restriction of **xs:string**)
annotation	documentation The principal subject matter of regulations, restrictions, recommendations or nautical information

simpleType **categoryOfScheduleType**

type	union of (restriction of **xs:string**, restriction of **xs:string**)
annotation	documentation Describes the type of schedule, e.g., opening, closure, etc.

simpleType **categoryOfTemporalVariationType**

type	restriction of **xs:string**	
facets	Kind	Value	Annotation
	enumeration	extreme event	documentation NIPWG: No new hydrographic survey conducted after an event (e.g., hurricane, earthquake, volcanic eruption, landslide, etc.) which is considered likely to have resulted in significant change at the location. documentation In GI Registry: Definition: No new hydrographic survey conducted after an event (e.g. hurricane, earthquake, volcanic eruption, landslide, etc), which is considered likely to have changed the seafloor significantly.
	enumeration	likely to change	documentation NIPWG: Continuous or frequent change (e.g., river siltation, sand waves, seasonal storms, construction, etc.) GI Registry: Continuous or frequent change (e.g. river siltation, sand waves, seasonal storms, ice bergs, etc).
	enumeration	likely to change but significant shoaling not expected	documentation GI Registry: Likely to change but significant shoaling no expected

		[Proposed draft 6/27/2014: Recommended that SNPWG not use this enumerate - ref. E.M. email 6/27/2014.]
enumeration	unlikely to change	documentation
NIPWG: Significant change at the location is not expected.
documentation
GI Registry: Significant change to the seafloor is not expected.
enumeration	unassessed	documentation
Temporal variation not assessed or cannot be determined
annotation	documentation
An assessment of the likelihood of change within an area since last survey.	

simpleType **categoryOfTextType**

type	restriction of **xs:string**	
facets	Kind	Value	Annotation

facets	Kind	Value	Annotation
	enumeration	abstract or summary	documentation
A statement summarizing the important points of a text.
	enumeration	extract	documentation
An excerpt or excerpts from a text.
	enumeration	full text	documentation
The whole text
annotation	documentation
Classification of completeness of textual information in relation to the source.		

simpleType **categoryOfVesselRegistryType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	domestic	documentation
The vessel is registered or enrolled under the same national flag as the port, harbour, territorial sea, exclusive economic zone, or administrative area in which the object that possesses this attribute applies or is located.
	enumeration	foreign	documentation
The vessel is registered or enrolled under a national flag different from the port, harbour, territorial sea, exclusive economic zone, or other administrative area in which the object that possesses this attribute applies or is located.
annotation	documentation
The locality of vessel registration or enrolment relative to the nationality of a port, territorial sea, administrative area, exclusive zone or other location.		

simpleType **categoryOfVesselType**

type	union of (restriction of **xs:string**, restriction of **xs:string**)

annotation	documentation Classification of vessels by function or use

simpleType **comparisonOperatorType**

type	restriction of **xs:string**

facets	Kind	Value	Annotation
	enumeration	greater than	documentation The value of the left value is greater than that of the right.(http://en.wikipedia.org/wiki/Logical_connective)
	enumeration	greater than or equal to	documentation The value of the left expression is greater than or equal to that of the right. (http://en.wikipedia.org/wiki/Logical_connective)
	enumeration	less than	documentation The value of the left expression is less than that of the right. (http://en.wikipedia.org/wiki/Logical_connective)
	enumeration	less than or equal to	documentation The value of the left expression is less than or equal to that of the right. (http://en.wikipedia.org/wiki/Logical_connective)
	enumeration	equal to	documentation The two values are equivalent. (adapted http://en.wikipedia.org/wiki/Logical_connective)
	enumeration	not equal to	documentation The two values are not equivalent. (adapted http://en.wikipedia.org/wiki/Logical_connective)

annotation	documentation Remarks: The definition of COMPOP provides the relation between the value given in the model and the real ship's value.

simpleType **dataAssessmentType**

type	restriction of **xs:string**

facets	Kind	Value	Annotation
	enumeration	assessed	documentation The quality of the bathymetric data has been assessed.
	enumeration	oceanic	documentation The quality of oceanic bathymetric data has been assessed or is not required.
	enumeration	unassessed	documentation The quality of the bathymetric data has yet to be assessed.

annotation	documentation The categorisation of the assessment level of bathymetric data for an area.

simpleType **dayOfWeekType**

type	restriction of **xs:string**

facets	Kind	Value	Annotation
	enumeration	monday	documentation monday - the day of the week before Tuesday and following Sunday
	enumeration	tuesday	documentation the day of the week before Wednesday and following Monday

	enumeration	wednesday	documentation
			wednesday - the day of the week before Thursday and following Tuesday
	enumeration	thursday	documentation
			thursday - the day of the week before Friday and following Wednesday
	enumeration	friday	documentation
			friday - the day of the week before Saturday and following Thursday
	enumeration	saturday	documentation
			saturday - the day of the week before Sunday and following Friday (together with Sunday forming part of the weekend)
	enumeration	sunday	documentation
			sunday - the day of the week before Monday and following Saturday (together with Saturday forms part of the weekend)

simpleType **Decimal0.0To360.0**

type	restriction of **xs:decimal**		
facets	Kind	Value	Annotation
	minInclusive	0.0	
	maxInclusive	360.0	
	fractionDigits	1	
annotation	documentation		
	Type for value interval [0.0, 360.0]. Also limits value to 1 decimal place.		

simpleType **functionType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	communication	documentation
			Transmitting and/or receiving electronic communication signals. (Defence Geospatial Information Working Group; Feature Data Dictionary Register, 2010).
	enumeration	radio	documentation
			Transmitting and/or receiving radio-frequency electromagnetic waves as a means of communication. (Defence Geospatial Information Working Group; Feature Data Dictionary Register, 2010).
	enumeration	microwave	documentation
			Broadcasting and receiving signals using microwaves. (S-57 Edition 3.1, Appendix A – Chapter 2, Page 2.133, November 2000).
	enumeration	control	documentation
			Used to control the flow of traffic within a specified range of an installation. (Defence Geospatial Information Working Group; Feature Data Dictionary Register, 2010).
	enumeration	sea rescue control	documentation
			A unit responsible for promoting efficient organization of search and rescue services and for coordinating the conduct of search and rescue operations within a search and rescue region. (Defence Geospatial Information Working Group; Feature Data Dictionary Register, 2010).

annotation	documentation A specific role that describes a feature

simpleType **informationConfidenceType**

type	restriction of **xs:string**

facets	Kind Value Annotation
	enumeration virtuallyCertain documentation
	                                   Virtually certain to be experienced by (or available to) an
	                                   individual vessel; will be experienced by nearly all
	                                   vessels. (FAA, adapted.)
	enumeration highLikelihood documentation
	                                   Frequently experienced by (or available to) an individual
	                                   vessel; experienced by a majority of vessels. (FAA,
	                                   adapted.)
	enumeration mediumLikelihood documentation
	                                   Occasionally experienced by (or available to) an
	                                   individual vessel; experienced by (or available to) about
	                                   half of all vessels. (FAA, adapted.)
	enumeration lowLikelihood documentation
	                                   Unlikely, but sometimes (rarely) experienced by (or
	                                   available to) an individual vessel; experienced by (or
	                                   available to) a minority of vessels). (FAA, adapted.)

annotation	documentation The likelihood that a vessel will experience the phenomenon described by a feature, or that the service described by the feature will be available.

simpleType **ISO3166-alpha2**

type	restriction of **xs:string**
facets	Kind Value Annotation pattern \w{2}
annotation	documentation stub for ISO 3166 alpha2 country codes

simpleType **ISO639-2**

type	restriction of **xs:string**
facets	Kind Value Annotation pattern \w{3}
annotation	documentation stub for ISO 639-2 language codes

simpleType **ISO639-3**

type	restriction of **xs:string**
facets	Kind Value Annotation pattern \w{3}
annotation	documentation stub for ISO 639-3 language codes

simpleType **jurisdictionType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	international	documentation
			involving more than one country; covering more than one national area.
	enumeration	national	documentation
			an area administered or controlled by a single nation.
	enumeration	national sub-division	documentation
			an area smaller than the nation in which it lies.
annotation	documentation		
	The jurisdiction applicable to an administrative area.		

simpleType **logicalConnectivesType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	logical conjunction	documentation
			all the conditions described by the other attributes of the object, or sub-attributes of the same complex attribute, are true
	enumeration	logical disjunction	documentation
			at least one of the conditions described by the other attributes of the object, or sub-attributes of the same complex attributes, is true

simpleType **membershipType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	included	documentation
			Vessels with these characteristics are included in the regulation/restriction/recommendation/nautical information.
	enumeration	excluded	documentation
			Vessels with these characteristics are excluded from the regulation/restriction/recommendation/nautical information.
annotation	documentation		
	Definition required		

simpleType **minutesOfHourType**

type	restriction of **xs:duration**		
facets	Kind	Value	Annotation
	minInclusive	PT00M	
	maxInclusive	PT59M	
annotation	documentation		
	Minutes of an hour.		

simpleType **multiplicityOfLightsType**

type	restriction of **xs:positiveInteger**
facets	Kind Value Annotation minInclusive 2
annotation	documentation The number of lights of identical character that exist as a co-located group. Integer (minimum 2).

simpleType **NonNegativeDecimal**

type	restriction of **xs:decimal**
facets	Kind Value Annotation minInclusive 0.0
annotation	documentation Type for decimal values with minimum 0.0.

simpleType **NonNegativeDecimal.1**

type	restriction of **NonNegativeDecimal**
facets	Kind Value Annotation minInclusive 0.0 fractionDigits 1
annotation	documentation Type for decimal values with minimum 0.0 and at most 1 decimal place

simpleType **onlineFunctionType**

type	union of (restriction of **xs:string**, restriction of **xs:string**)
annotation	documentation online search interface for seeking out information about the resource (ISO 19115:2014).

simpleType **operationType**

type	restriction of **xs:string**

facets	Kind Value Annotation
	enumeration largest documentation
	             value The numerically largest value computed from the applicable attributes or sub-attributes
	enumeration smallest documentation
	             value The numerically smallest value computed from the applicable attributes or sub-attributes

annotation	documentation Indicates whether the minimum or maximum value should be used to describe a condition or in application processing documentation Remarks: OPERAT is intended to be used in conjunction with other attributes (or sub-attributes of a complex attribute) to indicate how their values must be combined in order to describe a condition. Null attributes are ignored. documentation

	Example: Complex attribute underkeelAllowance with UKCFIX=2.5, UKCVAR=10.00, OPERAT=1 inicates that the under-keel allowance required is the greater of 2.5 metres or 10% of the ship's draught.

simpleType **QUAPOSType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	surveyed	documentation
			The position(s) was(were) determined by the operation of making measurements for determining the relative position of points on, above, or beneath the earth's surface. Survey implies a regular, controlled, survey of any date.
	enumeration	unsurveyed	documentation
			Survey data does not exist or is very poor
	enumeration	inadequately surveyed	documentation
			Position data is of very poor quality
	enumeration	approximate	documentation
			A position that is considered to be less than third-order accuracy, but is generally considered to be within 30.5 meters of its correct geographic location. Also, may apply to a feature whose position does not remain fixed.
	enumeration	position doubtful	documentation
			A feature whose position has been reported but which is considered to be doubtful
	enumeration	unreliable	documentation
			A feature's position obtained from questionable or unreliable data.
	enumeration	reported (not surveyed)	documentation
			A feature whose position has been reported and its position confirmed by some means other than a formal survey such as an independent report of the same feature.
	enumeration	reported (not confirmed	documentation
			A feature whose position has been reported and its position has not been confirmed.
	enumeration	estimated	documentation
			The most probable position of a feature determined from incomplete data or data of questionable accuracy.
	enumeration	precisely known	documentation
			A position that is of a known value, such as the position of an anchor berth or other defined feature.
	enumeration	calculated	documentation
			A position that is computed from data.
annotation	documentation		
	Definition required		

simpleType **sourceTypeType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	law or regulation	documentation
			treaty, convention, or international agreement; law or regulation issued by a national or other authority

	enumeration	official publication	documentation
			publication not having the force of law, issued by an international organisation or a national or local administration
	enumeration	mariner report, confirmed	documentation
			Reported by mariner(s) and confirmed by another source
	enumeration	mariner report, not confirmed	documentation
			reported by mariner(s) but not confirmed
	enumeration	industry publications and reports	documentation
			shipping and other industry publication, including graphics, charts and web sites
	enumeration	remotely sensed images	documentation
			information obtained from satellite images
	enumeration	photographs	documentation
			information obtained from photographs
	enumeration	products issued by HO services	documentation
			information obtained from products issued by Hydropgrahic Offices
	enumeration	news media	documentation
			information obtained from news media
	enumeration	traffic data	documentation
			information obtained from the analysis of traffic data

simpleType **statusType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	permanent	documentation
			Intended to last or function indefinitely
	enumeration	occasional	documentation
			Acting on special occasions; happening irregularly
	enumeration	recommended	documentation
			Presented as worthy of confidence, acceptance, use, etc.
	enumeration	not in use	documentation
			Use has ceased, but the facility still exists intact; disused.
	enumeration	periodic/intermittent	documentation
			Recurring at intervals
	enumeration	reserved	documentation
			Set apart for some specific use
	enumeration	temporary	documentation
			Meant to last only for a time
	enumeration	private	documentation
			Administered by an individual or corporation, rather than a State or a public body.
	enumeration	mandatory	documentation
			Compulsory; enforced.
	enumeration	extinguished	documentation
			No longer lit
	enumeration	illuminated	documentation
			Lit by floodlights, strip lights, etc.
	enumeration	historic	documentation
			Famous in history; of historical interest

	enumeration	public	documentation
			Belonging to, available to, used or shared by, the community as a whole and not restricted to private use.
	enumeration	synchronised	documentation
			Occur at a time, coincide in point of time, be contemporary or simultaneous
	enumeration	watched	documentation
			Looked at or observed over a period of time especially so as to be aware of any movement or change.
	enumeration	un-watched	documentation
			Usually automatic in operation, without any permanently-stationed personnel to superintend it.
	enumeration	existence doubtful	documentation
			A feature that has been reported but has not been definitely determined to exist.
	enumeration	buoyed	documentation
			Marked by buoys
annotation	documentation Definition required		

simpleType **telecommunicationServiceType**

type	union of (restriction of **xs:string**, restriction of **xs:string**)
annotation	documentation Classification of methods of communication over a distance by electrical or electromagnetic means.

simpleType **textJustificationType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	left	documentation
			The anchor point is at the start of the text string.
	enumeration	centred	documentation
			The anchor point is at the centre of the text string.
	enumeration	right	documentation
			The anchor point is at the end of the text string.
annotation	documentation The anchor point of a text string.		

simpleType **textTypeType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	feature name	documentation
			Definition required
annotation	documentation The attribute from which a text string is derived. documentation (S-122/123) Remark: S-122/123 do not include light features and therefore listed value '2: light characteristic' is omitted from the S-122 application schema.		

simpleType **timeReferenceType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	UTC	documentation
			Coordinated Universal Time
	enumeration	LT	documentation
			Local time

simpleType **transmissionRegularityType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	continuous	documentation
			transmission is made continuously
	enumeration	regular	documentation
			transmission is made regularly according to a schedule
	enumeration	on receipt	documentation
			transmission is made when warning or information is received from another authority
	enumeration	as required	documentation
			transmission is made under specified conditions or when needed
	enumeration	on request	documentation
			transmission is made when requested by a user

simpleType **txIdentCharType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	pattern	[A-Z]	
annotation	documentation		
	Type for NAVTEX transmitter identification character		

simpleType **vesselsCharacteristicsType**

type	restriction of **xs:string**		
facets	Kind	Value	Annotation
	enumeration	length overall	documentation
			The maximum length of the ship (L.O.A.). (http://en.wikipedia.org/wiki/Ship_measurements; 24 July 2010)
	enumeration	length at waterline	documentation
			The ship's length measured at the waterline (L.W.L.). (http://en.wikipedia.org/wiki/Ship_measurements; 24 July 2010)
	enumeration	breadth	documentation
			The width or beam of the vessel. (Adapted from http://en.wikipedia.org/wiki/Ship_measurements; 24 July 2010)
	enumeration	draught	documentation
			The depth of water necessary to float a vessel fully loaded.

		(http://en.wikipedia.org/wiki/Ship_measurements; 24 July 2010)
enumeration	height	documentation
		The height of the highest point of a vessel's structure (e.g. radar aerial, funnel, cranes, masthead) above her waterline.(UKHO NP100/2009)
enumeration	displacement tonnage	documentation
		A measurement of the weight of the vessel, usually used for warships. (Merchant ships are usually measured based on the volume of cargo space; see tonnage). Displacement is expressed either in long tons of 2,240 pounds or metric tonnes of 1,000 kg. Since the two units are very close in size (2,240 pounds = 1,016 kg and 1,000 kg = 2,205 pounds), it is common not to distinguish between them. To preserve secrecy, nations sometimes misstate a warship's displacement. (http://en.wikipedia.org/wiki/Ship_measurements; 24 July 2010)
enumeration	displacement tonnage, light	documentation
		The weight of the ship excluding cargo, fuel, ballast, stores, passengers, and crew, but with water in the boilers to steaming level. (http://en.wikipedia.org/wiki/Ship_measurements; 24 July 2010)
enumeration	displacement tonnage, loaded	documentation
		The weight of the ship including cargo, passengers, fuel, water, stores, dunnage and such other items necessary for use on a voyage, which brings the vessel down to her load draft. (http://en.wikipedia.org/wiki/Ship_measurements; 24 July 2010)
enumeration	deadweight tonnage	documentation
		The difference between displacement, light and displacement, loaded. A measure of the ship's total carrying capacity. (http://en.wikipedia.org/wiki/Ship_measurements; 24 July 2010)
enumeration	gross tonnage	documentation
		The entire internal cubic capacity of the ship expressed in tons of 100 cubic feet to the ton, except certain spaces with are exempted such as: peak and other tanks for water ballast, open forecastle bridge and poop, access of hatchways, certain light and air spaces, domes of skylights, condenser, anchor gear, steering gear, wheel house, galley and cabin for passengers. (http://en.wikipedia.org/wiki/Ship_measurements; 24 July 2010)
enumeration	net tonnage	documentation
		Obtained from the gross tonnage by deducting crew and navigating spaces and allowances for propulsion machinery.(http://en.wikipedia.org/wiki/Ship_measurements; 24 July 2010)
enumeration	Panama Canal/Universal Measurement System net tonnage	documentation
		the Panama Canal/Universal Measurement System (PC/UMS) is based on net tonnage, modified for Panama Canal purposes. PC/UMS is based on a mathematical formula to calculate a vessel's total volume; a PC/UMS net ton is equivalent to 100 cubic feet of capacity.

	Kind	Value	Annotation
			(Adapted from http://en.wikipedia.org/wiki/Tonnage 4 Oct 2010)
	enumeration	Suez Canal net tonnage	documentation
			the Suez Canal Net Tonnage (SCNT) is derived with a number of modifications from the former net register tonnage of the Moorsom System and was established by the International Commission of Constantinople in its Protocol of 18 December 1873. It is still in use, as amended by the Rules of Navigation of the Suez Canal Authority, and is registered in the Suez Canal Tonnage Certificate. (Adapted from http://en.wikipedia.org/wiki/Tonnage 4 Oct 2010)
	enumeration	Suez Canal gross tonnage	documentation
			Suez Canal Gross Tonnage (SCGT) is derived with a number of modifications from the former net register tonnage of the Moorsom System and was established by the International Commission of Constantinople in its Protocol of 18 December 1873. It is still in use, as amended by the Rules of Navigation of the Suez Canal Authority, and is registered in the Suez Canal Tonnage Certificate.

simpleType **vesselsCharacteristicsUnitType**

type	restriction of **xs:string**

facets	Kind	Value	Annotation
	enumeration	metre	documentation
			The metre (or meter) is the base unit of length in the International System of Units (SI). It is defined as the distance travelled by light in vacuum in 1/299,792,458 of a second.
	enumeration	foot	documentation
			A foot (plural: feet) is a non-SI unit of length in a number of different systems including English units, Imperial units, and United States customary units. The most commonly used foot today is the international foot. There are three feet in a yard and 12 inches in a foot.
	enumeration	metric ton	documentation
			The tonne or metric ton (U.S.), often redundantly referred to as a metric tonne, is a unit of mass equal to 1,000 kg (2,205 lb) or approximately the mass of one cubic metre of water at four degrees Celsius. It is sometimes abbreviated as mt in the United States, but this conflicts with other SI symbols. The tonne is not a unit in the International System of Units (SI), but is accepted for use with the SI. In SI units and prefixes, the tonne is a megagram (Mg). The Imperial and US customary units comparable to the tonne are both spelled ton in English, though they differ in mass. Pronunciation of tonne (the word used in the UK) and ton is usually identical, but is not too confusing unless accuracy is important as the tonne and UK long ton differ by only 1.6%.
	enumeration	ton	documentation
			Long ton (weight ton or imperial ton) is the name for the unit called the "ton" in the avoirdupois or Imperial

	enumeration	short ton	system of measurements, as used in the United Kingdom and several other Commonwealth countries. It has been mostly replaced by the tonne, and in the United States by the short ton. One long ton is equal to 2,240 pounds (1,016 kg) or 35 cubic feet (0.9911 m3) of salt water with a density of 64 lb/ft³ (1.025 g/ml). It has some limited use in the United States, most commonly in measuring the displacement of ships, and was the unit prescribed for warships by the Washington Naval Treaty—for example battleships were limited to a mass of 35,000 long tons (36,000 t; 39,000 ST). documentation The short ton is a unit of weight equal to 2,000 pounds (907.18474 kg). In the United States it is often called simply ton without distinguishing it from the metric ton (tonne, 1,000 kilograms) or the long ton (2,240 pounds / 1,016.0469088 kilograms); rather, the other two are specifically noted. There are, however, some U.S. applications for which unspecified tons normally means long tons (for example, Navy ships) or metric tons (world grain production figures). Both the long and short ton are defined as 20 hundredweights, but a hundredweight is 100 pounds (45.359237 kg) in the U.S. system (short or net hundredweight) and 112 pounds (50.80234544 kg) in the Imperial system (long or gross hundredweight).
	enumeration	gross ton	documentation Gross tonnage (GT) is a function of the volume of all ship's enclosed spaces (from keel to funnel) measured to the outside of the hull framing. There is a sliding scale factor. So GT is a kind of capacity-derived index that is used to rank a ship for purposes of determining manning, safety and other statutory requirements and is expressed simply as GT, which is a unitless entity, even though its derivation is tied to the cubic meter unit of volumetric capacity. Tonnage measurements are now governed by an IMO Convention (International Convention on Tonnage Measurement of Ships, 1969 (London-Rules)), which applies to all ships built after July 1982. In accordance with the Convention, the correct term to use now is GT, which is a function of the moulded volume of all enclosed spaces of the ship.
	enumeration	net ton	documentation Net tonnage (NT) is based on a calculation of the volume of all cargo spaces of the ship. It indicates a vessel's earning space and is a function of the moulded volume of all cargo spaces of the ship.
	enumeration	Panama Canal/Universal Measurement System net tonnage	documentation The Panama Canal/Universal Measurement System (PC/UMS) is based on net tonnage, modified for Panama Canal purposes. PC/UMS is based on a mathematical formula to calculate a vessel's total

			volume; a PC/UMS net ton is equivalent to 100 cubic feet of capacity.
	enumeration	Suez Canal Net Tonnage	documentation
			The Suez Canal Net Tonnage (SCNT) is derived with a number of modifications from the former net register tonnage of the Moorsom System and was established by the International Commission of Constantinople in its Protocol of 18 December 1873. It is still in use, as amended by the Rules of Navigation of the Suez Canal Authority, and is registered in the Suez Canal Tonnage Certificate.
	enumeration	none	documentation
			Can be used for net and gross tonnages, including Panama Canal/Universal Measurement System net tonnage and The Suez Canal Net Tonnage.
	enumeration	cubic metres	documentation
			cubic metres
	enumeration	Suez Canal Gross Tonnage	documentation
			The Suez Canal Gross Tonnage (SCGT) is derived with a number of modifications from the former net register tonnage of the Moorsom System and was established by the International Commission of Constantinople in its Protocol of 18 December 1873. It is still in use, as amended by the Rules of Navigation of the Suez Canal Authority, and is registered in the Suez Canal Tonnage Certificate.

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