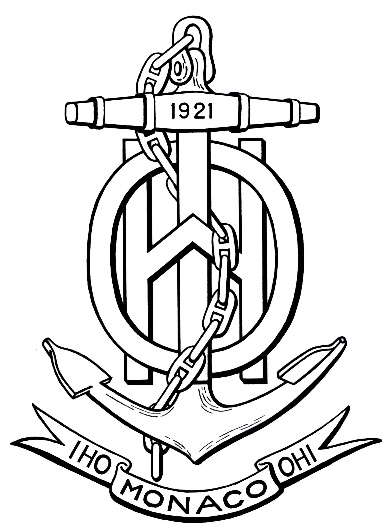
C:\Documents and Settings\julia.powell\My Documents\IHO TSMAD\S100-0 main\IHO S-100 Main Oct 1 2007.doc © ISO/IEC 2007 – All rights reservedISO-IEC\_ 63Complementary elementIntroductory element — Main elementÉlément introductif — Élément central — Élément complémentaireIntroductory element — Main element — Complementary elementE2007-10-2 ISO/IECISO/IEC     2007 ISO/IEC ISO/IEC \_(E).        2Heading 2Heading 1    02 STD Version 2.1c20   4            **INTERNATIONAL HYDROGRAPHIC ORGANIZATION**



**MARITIME LIMITS AND BOUNDARIES**

**PRODUCT SPECIFICATION**

**IHO Publication S-121**

**GML Encoding Description**

**Edition 1.0.0 – June 2020**

Published by the

International Hydrographic Organization

4b quai Antoine 1er

Principauté de Monaco

Tel: (377) 93.10.81.00

Fax: (377) 93.10.81.40

E-mail: [info@iho.int](mailto:info@iho.int)

Web: [www.iho.int](http://www.iho.int)

|  |
| --- |
| © Copyright International Hydrographic Organization 2019 |
| This work is copyright. Apart from any use permitted in accordance with the [Berne Convention for the Protection of Literary and Artistic Works](http://www.wipo.int/treaties/en/ip/berne/trtdocs_wo001.html) (1886), and except in the circumstances described below, no part may be translated, reproduced by any process, adapted, communicated or commercially exploited without prior written permission from the International Hydrographic Organization (IHO). Copyright in some of the material in this publication may be owned by another party and permission for the translation and/or reproduction of that material must be obtained from the owner. |
| This document or partial material from this document may be translated, reproduced or distributed for general information, on no more than a cost recovery basis. Copies may not be sold or distributed for profit or gain without prior written agreement of the IHO Secretariat and any other copyright holders. |
| In the event that this document or partial material from this document is reproduced, translated or distributed under the terms described above, the following statements are to be included: |
| *“Material from IHO publication [reference to extract: Title, Edition] is reproduced with the permission of the IHO Secretariat (Permission No ……./…) acting for the International Hydrographic Organization (IHO), which does not accept responsibility for the correctness of the material as reproduced: in case of doubt, the IHO’s authentic text shall prevail. The incorporation of material sourced from IHO shall not be construed as constituting an endorsement by IHO of this product.”* |
| *“This [document/publication] is a translation of IHO [document/publication] [name]. The IHO has not checked this translation and therefore takes no responsibility for its accuracy. In case of doubt the source version of [name] in [language] should be consulted.”*  The IHO Logo or other identifiers shall not be used in any derived product without prior written permission from the IHO Secretariat. |

Document Control

Changes to this Product Specification are coordinated by the IHO S-121 Project Team (S-121PT) which is a subsidiary group of the S-100 Working Group (S-100WG). New editions will be made available via the IHO web site.

|  |  |  |  |
| --- | --- | --- | --- |
| **Edition Number** | **Date** | **Author** | **Purpose** |
| Draft 1 | June 2020 | J Pritchard | Initial Draft. |

Contents

[SNAG LIST 5](#_Toc43889419)

[1. Introduction 7](#_Toc43889420)

[2. GML Application Schema Details 8](#_Toc43889421)

[Feature Aggregation 8](#_Toc43889422)

[3. Geospatial Features 10](#_Toc43889423)

[Overview. 10](#_Toc43889424)

[Geospatial Feature relationships. 12](#_Toc43889425)

[Element definitions – Geospatial features. 12](#_Toc43889426)

[AbstractGeographicFeatureType 12](#_Toc43889427)

[AbstractLimitType 14](#_Toc43889428)

[AbstractLocationType 14](#_Toc43889429)

[AbstractZoneType 15](#_Toc43889430)

[AdditionalSpatialInformation 15](#_Toc43889431)

[FeatureName 16](#_Toc43889432)

[LocationReference 16](#_Toc43889433)

[CategoryOfLocation 17](#_Toc43889434)

[JurisdictionDomain 18](#_Toc43889435)

[PointType 18](#_Toc43889436)

[ReleasabilityType 19](#_Toc43889437)

[Note 19](#_Toc43889438)

[Note 19](#_Toc43889439)

[Note 20](#_Toc43889440)

[4. LADM 21](#_Toc43889441)

[AbstractRRR 21](#_Toc43889442)

[Basic Administrative Unit 22](#_Toc43889443)

[Governance 24](#_Toc43889444)

[Party 25](#_Toc43889445)

[PartyMembership 26](#_Toc43889446)

[Responsibility 26](#_Toc43889447)

[Restriction 27](#_Toc43889448)

[Right 27](#_Toc43889449)

[CategoryOfResponsibility 28](#_Toc43889450)

[CategoryOfRestriction 28](#_Toc43889451)

[CategoryOfRight 28](#_Toc43889452)

[PartyGroupType 29](#_Toc43889453)

[Text 29](#_Toc43889454)

[5. Source Documentation 30](#_Toc43889455)

[6. GML Encoding Notes 31](#_Toc43889456)

# SNAG LIST

Snag list for the GML Annex documentation.

**For Covering Paper**

* MRN – put in but remains optional. FOID is also included in the standard S-100 Profile DSID element so we can allude to that and make sure it is a viable alternative.
* Aggregations and Relationships. The way in which hierarchies can be built
* Many to many BAU relationships
* GML version 3.2.1 needs to be extracted from the include files.
* Geometry element type is gml: (namespace) for compatibility with OGR tools
* Referenced vs Absolute geometry – needs validation testing.
* Is there anything we need to say about metadata? We certainly need to clarify the position wrt metadata in the S-100 profile (the dataset metadata) and what is currently defined in the GML schema and feature catalogue.
* Some ideas for validation tests that might be part of the main S-121 document (or DCEG?)
* Some notes on filling in DSID and DSSI elements?
* Should startLifespan and endLifespan be wrapped in “FixedDateRange” – this is used in other product specifications and is possible a more coherent way of versioning by date – NIPWG use it a lot in other product specifications. We’ve broken it out of the complex attribute but it could be done either way. The FC is consistent with the schema currently.
* Multi-lingual issues
  + locationText – need to investigate – this could be a better solution for multilingual names.
  + Locale is in the current S-121 model – this isn’t the normal way of achieving multi-lingual content in S-100 but we should try to make a compatible model..

**For Schema document**

* MRN – suitable notes. For the PT, need to understand MRN is optional and actions underway at IHO to resolve issues with it.
* locationText? Could replace featureName
* label? Used? In feature Catalogue.
* Check LADM against model – did we add GovernanceDescription?

**Other.**

* Items to add to feature Catalogue.
  + locationReference
  + textLat
  + textLon
  + categoryOfLocation
  + mrn
  + date\*\*\*\* in LADM features.
* check spelling and order.

**Relationships**

* Multiple BAU->Geospatial relns
* Intermediate Party / Part member.

# Introduction

This document contains details of the IHO S-121 GML Encoding format. In order to reduce complexity and provide a concise guide to the structure of the GML Encoding a subset of all elements within the encoding are provided here alongside any necessary detail and background of the schema itself.

There is a large degree of duplication in the types within the S-121 GML Application Schema so duplicated types are noted, but the repeated detail left out of this document. The schema document itself contains normative definitions for all types and references to the S-100 base schemas.

The GML Application schema for IHO S-121 was developed initially within the Open Geospatial Consortium’s (OGC) Maritime Limits and Boundaries Pilot Project. This pilot project was a collaborative effort between member states and industry and

# GML Application Schema Details

There are three main packages contained within the S-121 GML Schema. These are documented individually within this document, mainly by inclusion of UML diagrams which show the implementation within the GML Application Schema. The three main packages are:

1. The Geospatial features. These geospatial features (i.e. those features with a defined geometry) are derived directly from the feature set identified by the S-121 project team as a subset of those defined within UNCLOS. This set of features is further subdivided into Location (Point primitive), Limit (Curve primitive) and Zone (Surface primitive).
2. LADM features. These information types (in the S-100 sense) and their relationships model the implementation of ISO19152. They are composed of Basic Administrative Units, Governance and Party/Party Member types together with Rights/Restrictions and Responsibilities. A full description of how the LADM is implemented is contained within the main S-121 product specification Application Schema description.
3. Source features. This is a single information type containing simple and complex attributes which model a subset of the ISO19115 fields required for documenting the source of individual features within a particular dataset. These are independent of any dataset metadata that may also be included at the dataset level.

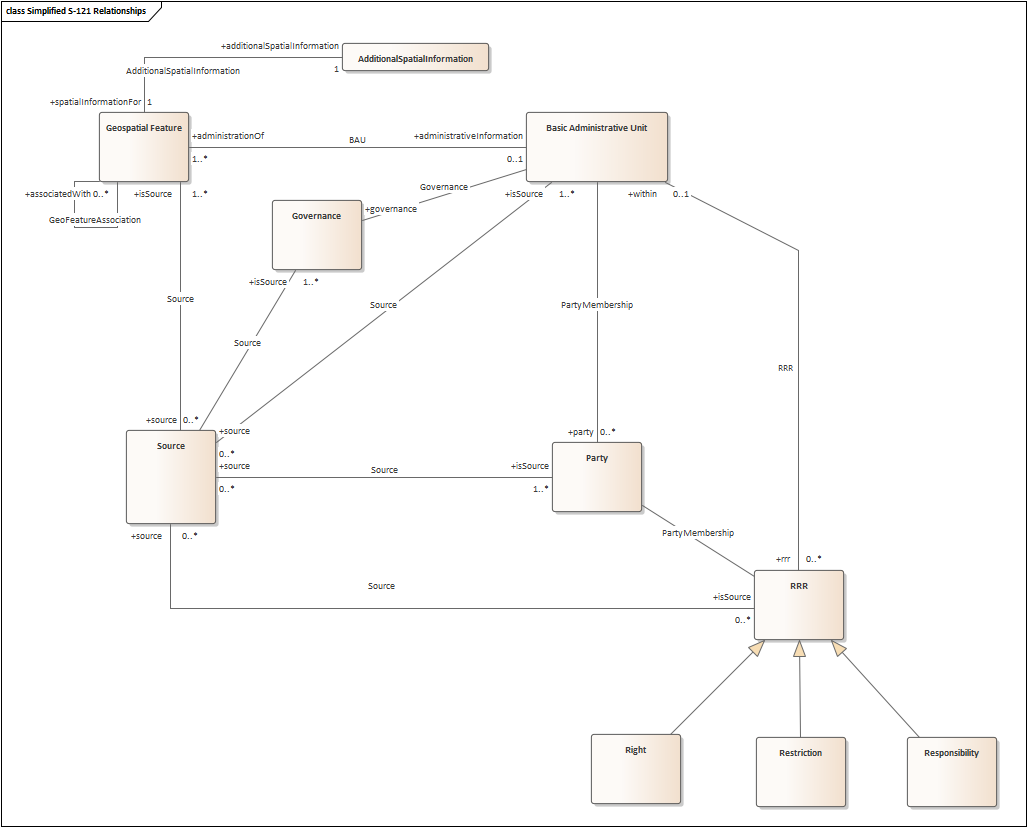


Figure 1: Simplified View of packages and their relationships within the schema (v1)

## Feature Aggregation

Within the GML Schema the S-100 GML profile structure is followed. In order to aggregate S-121 features and information types into datasets a Feature Collection element is defined. This is illustrated in the following diagram:

A close up of a device

Description automatically generated

Figure 2: Dataset Collection type

The dataset collection type is derived from gml:AbstractFeatureType in order to ensure an S-121 dataset is a valid GML document. An S-121 dataset consists of three sections:

1. A metadata element containing s100:DatasetIdentificationInformation and s100:DatasetStructureInformation elements. These are parts of the existing S-100 profile and although derived largely from ENC roots they contain useful metadata elements.
2. Any S-100 geometry elements required. The GML Schema supports the use of both inline geometry (i.e. defined within the feature itself) and geometry by reference. In line with existing S-100 practices, as far as possible elements are defined prior to use and therefore the S-100 geometry elements are defined prior to any feature or information types. These are standard S-100 geometry types from a group defined in the S-100 GML profile. GML identifiers provide a method for unique identifiers to form relationships between geospatial features and referenced geometry.
3. A “members” element containing all feature and information types within the dataset. These are drawn from a group defined in the schema (“Features”) and are not prefixed with “member”/”imember” elements. There is no implicit ordering in the schema between feature types and information types.

# Geospatial Features

An illustration of all the features within the geospatial package are shown in the UML diagram below.



1. GeospatialFeatures

## Overview.

All geospatial features within the GML Application Schema derive from a single AbstractGeographicFeature type illustrated in the following diagram.

A screenshot of a cell phone

Description automatically generated

Figure 3: Base Abstract Geographic feature

The abstractGeographicType contains all the generic elements required for geospatial features. Further supertypes are derived from abstractGeographicType to implement individual features in the three main categories:

1. Point features. Those features with Point geographic primitives. In the UNCLOS context these are baseline points, limit points, boundary points and contributing points. An additional generic “Location” is defined.
2. Curve features. These are features with the S-100 geometry primitive “Curve”. These features represent UNCLOS limits, baselines and boundaries.
3. Zone features. Features with a “Surface” geometry primitive. These represent UNCLOS zones such as Territorial Sea, EEZ etc as well as Internal Waters and High Seas. There is also a generic “Zone” feature defined within the Schema.

The attributes and types are illustrated in the following diagram:

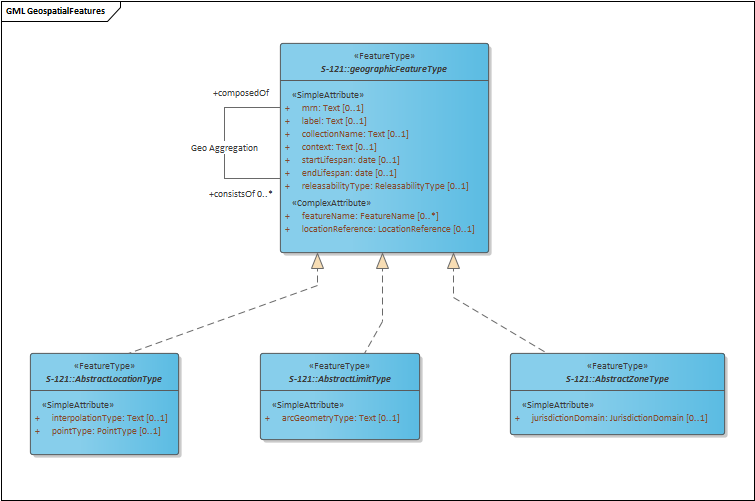


Figure : Geospatial feature hierarchy in the schema

## Geospatial Feature relationships.

The main relationships to note within the geospatial features are as follows:

1. Aggregation of geospatial features. All geospatial features can be aggregated together using consistsOf/composedOf relationships. This allows arbitrary hierarchies to be built within datasets reflecting individual practice of producing states.
2. Association of geospatial features to AdditionalSpatialInformation. Each geospatial feature can have a single inline locationReference element which allows the textual description of a location (or series of locations) and associated reference system. In order to provide for multiple location references, and to allow such references to be shared between multiple geospatial features a relationship to the AddditionalSpatialInformation information type is defined.

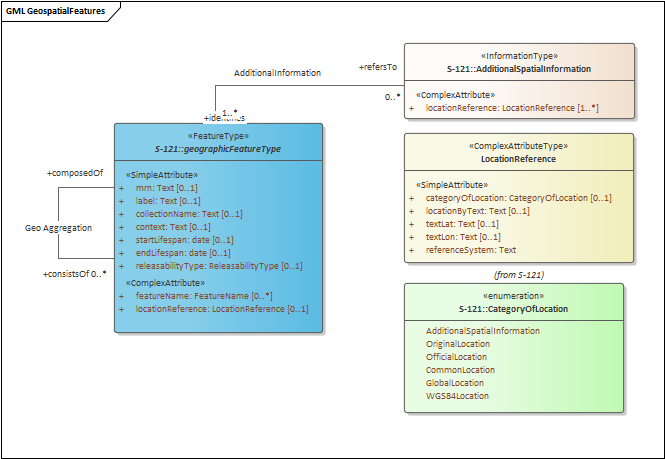


Figure : Relationship of geospatial features to information type AdditionalSpatialInformation.

## Element definitions – Geospatial features.

### AbstractGeographicFeatureType

| ATTRIBUTES |
| --- |
| mrn : Text Public  Multiplicity: ( [0..1], )  MRN has been added to the GML Schema and Feature catalogue. This requires harmonisation with other efforts within the IHO geospatial registry in line with its inclusion within the S-100 framework. MRN in the context of S-121 is "optional" - the option of using the S-100 Profile's FeatureObjectIdentifier element ("foid") is an acceptable alternative as a persistent unique identifier for individual features. |
| label : Text Public  Multiplicity: ( [0..1], ) |
| collectionName : Text Public  Multiplicity: ( [0..1], )  A textual label representing a neutral "Collection" label for the feature. This allows multiple groupings (either by state, function or other criteria) to exist within a single dataset. |
| featureName : FeatureName Public  Multiplicity: ( [0..\*], ) |
| context : Text Public  Multiplicity: ( [0..1], ) |
| startLifespan : date Public  Multiplicity: ( [0..1], ) |
| endLifespan : date Public  Multiplicity: ( [0..1], ) |
| locationReference : LocationReference Public  Multiplicity: ( [0..1], )  An inline locationReference attribute - this allows inclusion of a single textual representation of a location if required. If multiple textual representations are required then they should be specified using an association with the AdditionalSpatialInformation information type. |

| ASSOCIATIONS | |
| --- | --- |
| Association (direction: Unspecified) AdditionalInformation | |
| Source: Public identifies (Class) AbstractGeographicFeatureType «FeatureType»  Cardinality: [1..\*] | Target: Public refersTo (Class) AdditionalSpatialInformation «InformationType»  Cardinality: [0..\*] |
| Association (direction: Unspecified) Geo Aggregation | |
| Source: Public composedOf (Class) AbstractGeographicFeatureType «FeatureType» | Target: Public consistsOf (Class) AbstractGeographicFeatureType «FeatureType»  Cardinality: [0..\*] |
| Association (direction: Unspecified) BAU | |
| Source: Public administrationOf (Class) AbstractGeographicFeatureType «FeatureType»  Cardinality: [0..\*] | Target: Public administrativeInformation (Class) Basic Administrative Unit «InformationType»  Cardinality: [0..\*] |
| Association (direction: Unspecified) Geo Aggregation | |
| Source: Public composedOf (Class) AbstractGeographicFeatureType «FeatureType» | Target: Public consistsOf (Class) AbstractGeographicFeatureType «FeatureType»  Cardinality: [0..\*] |

## AbstractLimitType

| ATTRIBUTES |
| --- |
| interpolationType : Text Public  Multiplicity: ( [0..1], ) |

## AbstractLocationType

| ATTRIBUTES |
| --- |
| interpolationType : Text Public  Multiplicity: ( [0..1], ) |
| pointType : PointType Public  Multiplicity: ( [0..1], ) |

## AbstractZoneType

| ATTRIBUTES |
| --- |
| jurisdictionDomain : JurisdictionDomain Public  Multiplicity: ( [0..1], ) |

## AdditionalSpatialInformation

An information type holding a number of locationReference entries. This can store multiple textual representations of a position and reference system and can be shared between multiple geospatial features as well.

| ATTRIBUTES |
| --- |
| locationReference : LocationReference Public  Multiplicity: ( [1..\*], ) |

| ASSOCIATIONS | |
| --- | --- |
| Association (direction: Unspecified) AdditionalInformation | |
| Source: Public identifies (Class) AbstractGeographicFeatureType «FeatureType»  Cardinality: [1..\*] | Target: Public refersTo (Class) AdditionalSpatialInformation «InformationType»  Cardinality: [0..\*] |

## FeatureName

Class «ComplexAttributeType» in package 'S-121'

A copy of the IHO registry entry for Naming of features. This complex attribute allows for a number of names to be stored alongside a language identifier. The attribute "displayName" is included for compatibility with other featureName uses and could possibly be removed in the future.

| ATTRIBUTES |
| --- |
| displayName : boolean Private |
| Language : Text Private |
| Name : Text Private |

## LocationReference

DataType «ComplexAttributeType» in package 'S-121'

LocationReference

Version 1.0 Phase 1.0 Proposed

kusal created on 19/06/2020. Last modified 19/06/2020

| ATTRIBUTES |
| --- |
| categoryOfLocation : CategoryOfLocation Public  Multiplicity: ( [0..1], ) |
| locationByText : Text Public  Multiplicity: ( [0..1], )  If a location is not described in latitude/longitude form then a textual description of a position (or number of positions) can be described in locationByText |
| textLat : Text Public  Multiplicity: ( [0..1], )  Textual representation of a latitude position. |
| textLon : Text Public  Multiplicity: ( [0..1], )  Textual representation of a longitude. |
| referenceSystem : Text Public  A textual description or reference to the reference system for a textually defined position. this could be a formal datum or description of a datum (historical) |

## CategoryOfLocation

Enumeration in package 'S-121'

| ATTRIBUTES |
| --- |
| AdditionalSpatialInformation : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| OriginalLocation : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| OfficialLocation : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| CommonLocation : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| GlobalLocation : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| WGS84Location : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |

## JurisdictionDomain

Enumeration in package 'S-121'

JurisdictionDomain

Version 1.0 Phase 1.0 Proposed

kusal created on 05/02/2020. Last modified 13/02/2020

| ATTRIBUTES |
| --- |
| Airspace : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| Land Surface : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| Water Surface : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| Water Column : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| Seabed Surface : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| Subsoil : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |

## PointType

Enumeration in package 'S-121'

PointType

Version 1.0 Phase 1.0 Proposed

kusal created on 05/02/2020. Last modified 13/02/2020

| ATTRIBUTES |
| --- |
| defined : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| computed : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |

## ReleasabilityType

Enumeration in package 'S-121'

ReleasabilityType

Version 1.0 Phase 1.0 Proposed

kusal created on 05/02/2020. Last modified 13/02/2020

| ATTRIBUTES |
| --- |
| Official : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| Internal : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| Controlled : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |

## Note

Note in package 'Geo'

All Point Features Derive from this feature types (omitted here for clarity)

* Baseline Point
* Limit Point
* Boundary Point
* Contributing Point

## Note

Note in package 'Geo'

All Line features (baselines, outer limits) derive from this feature type (omitted here for clarity)

* Baseline
* NormalBaseline
* StraightBaseline
* ArchipelagicBaseline
* LowTideElevationBaseline
* MouthOfRiversBaseline
* BayBaseline
* PortBaseline
* ReefBaseline
* Boundary
* InternationalBoundary
* Limit
* OuterLimitOfTheTerritorialSea
* OuterLimitOfTheContiguousZone
* OuterLimitOfTheExclusiveEconomicZone
* OuterLimitOfTheContinentalShelf
* OuterLimitOfTheRoadstead
* ConstructionLine

## Note

Note in package 'Geo'

All Area features (Zones) derive from this feature type (omitted here for clarity)

* Zone
* TerritorialSea
* ContiguousZone
* ExclusiveEconomicZone
* ContinentalShelf
* Roadstead
* InternalWaters
* TheArea
* HighSeas
* ArchipelagicWaters

Strait

# LADM ISO19152 Information Types



1. LADM Features

## AbstractRRR

Class «InformationType» in package 'S-121'

AbstractRRR

Version 1.0 Phase 1.0 Proposed

kusal created on 05/02/2020. Last modified 05/02/2020

| INCOMING STRUCTURAL RELATIONSHIPS |
| --- |
| Generalization from «InformationType» Restriction to «InformationType» AbstractRRR  [ Direction is 'Source -> Destination'. ] |
| Generalization from «InformationType» Right to «InformationType» AbstractRRR  [ Direction is 'Source -> Destination'. ] |
| Generalization from «InformationType» Responsibility to «InformationType» AbstractRRR  [ Direction is 'Source -> Destination'. ] |

| ATTRIBUTES |
| --- |
| rrrDescription : Text Public  Multiplicity: ( [0..1], ) |
| rrrTimespec : Date Public  Multiplicity: ( [0..1], ) |
| rrrShare : Double Public  Multiplicity: ( [0..1], ) |

| ASSOCIATIONS | |
| --- | --- |
| AssociationClass (direction: Unspecified) Membership | |
| Source: Public partyMember (Class) Party «InformationType»  Cardinality: [0..\*] | Target: Public administrationOf (Class) AbstractRRR «InformationType»  Cardinality: [0..\*] |
| Association (direction: Unspecified) RRR | |
| Source: Public administrationBy (Class) Basic Administrative Unit «InformationType»  Cardinality: [0..1] | Target: Public administrationOf (Class) AbstractRRR «InformationType»  Cardinality: [0..\*] |

## Basic Administrative Unit

Class «InformationType» in package 'S-121'

Basic Administrative Unit

Version 1.0 Phase 1.0 Proposed

kusal created on 28/01/2020. Last modified 05/02/2020

| ATTRIBUTES |
| --- |
| basicAdministrativeUnitName : Text Public |
| basicAdministrativeUnitType : Text Public  Multiplicity: ( [0..1], ) |
| basicAdministrativeUnitContext : Text Public  Multiplicity: ( [0..1], ) |

| ASSOCIATIONS | |
| --- | --- |
| AssociationClass (direction: Unspecified) | |
| Source: Public (Class) Basic Administrative Unit «InformationType» | Target: Public (Class) Basic Administrative Unit «InformationType» |
| Association (direction: Unspecified) RRR | |
| Source: Public administrationBy (Class) Basic Administrative Unit «InformationType»  Cardinality: [0..1] | Target: Public administrationOf (Class) AbstractRRR «InformationType»  Cardinality: [0..\*] |
| AssociationClass (direction: Unspecified) | |
| Source: Public (Class) Basic Administrative Unit «InformationType» | Target: Public (Class) Basic Administrative Unit «InformationType» |
| Association (direction: Unspecified) BAU | |
| Source: Public administrationOf (Class) AbstractGeographicFeatureType «FeatureType»  Cardinality: [0..\*] | Target: Public administrativeInformation (Class) Basic Administrative Unit «InformationType»  Cardinality: [0..\*] |
| Association (direction: Unspecified) Governance | |
| Source: Public governanceOf (AssociationClass) Governance «Information Type»  Cardinality: [0..\*] | Target: Public governanceFor (Class) Basic Administrative Unit «InformationType»  Cardinality: [0..\*] |
| Association (direction: Unspecified) PartyMembership | |
| Source: Public party (Class) Party «InformationType»  Cardinality: [0..\*] | Target: Public administrationBy (Class) Basic Administrative Unit «InformationType»  Cardinality: [0..\*] |

## Governance

AssociationClass «Information Type» in package 'S-121'

Governance

Version 1.0 Phase 1.0 Proposed

kusal created on 22/02/2020. Last modified 23/02/2020

| ATTRIBUTES |
| --- |
| label : Text Public |
| referenceNumber : Text Public |
| governanceTitle : Text Public |
| governanceDescription : Text Public |
| releasabilityType : ReleasabilityType Private |
| dateConsidered : date Public |
| dateApproved : date Public |
| dateIntroduced : date Public |
| featureName : FeatureName Public |

| ASSOCIATIONS | |
| --- | --- |
| Association (direction: Unspecified) Governance | |
| Source: Public governanceOf (AssociationClass) Governance «Information Type»  Cardinality: [0..\*] | Target: Public governanceFor (Class) Basic Administrative Unit «InformationType»  Cardinality: [0..\*] |

## Party

Class «InformationType» in package 'S-121'

Party

Version 1.0 Phase 1.0 Proposed

kusal created on 28/01/2020. Last modified 05/02/2020

| ATTRIBUTES |
| --- |
| partyName : int Private |
| partyRole : int Private  Multiplicity: ( [0..1], ) |
| categoryOfParty : int Private  Multiplicity: ( [0..1], ) |
| partyGroupType : PartyGroupType Private |
| partyGroup : boolean Private |

| ASSOCIATIONS | |
| --- | --- |
| Association (direction: Unspecified) | |
| Source: Public (Class) Party «InformationType» | Target: Public (AssociationClass) PartyMember «InformationType» |
| AssociationClass (direction: Unspecified) Membership | |
| Source: Public partyMember (Class) Party «InformationType»  Cardinality: [0..\*] | Target: Public administrationOf (Class) AbstractRRR «InformationType»  Cardinality: [0..\*] |
| AssociationClass (direction: Unspecified) | |
| Source: Public group (Class) Party «InformationType»  Cardinality: [0..\*] | Target: Public member (Class) Party «InformationType»  Cardinality: [1..] |
| Association (direction: Unspecified) PartyMembership | |
| Source: Public party (Class) Party «InformationType»  Cardinality: [0..\*] | Target: Public administrationBy (Class) Basic Administrative Unit «InformationType»  Cardinality: [0..\*] |
| AssociationClass (direction: Unspecified) | |
| Source: Public group (Class) Party «InformationType»  Cardinality: [0..\*] | Target: Public member (Class) Party «InformationType»  Cardinality: [1..] |
| Association (direction: Unspecified) | |
| Source: Public (AssociationClass) PartyMember «InformationType» | Target: Public (Class) Party «InformationType» |

## PartyMembership

AssociationClass «InformationType» in package 'S-121'

PartyMembership

Version 1.0 Phase 1.0 Proposed

kusal created on 23/02/2020. Last modified 23/02/2020

| ATTRIBUTES |
| --- |
| partyMembership : Double Public |

## Responsibility

Class «InformationType» in package 'S-121'

Responsibility

Version 1.0 Phase 1.0 Proposed

kusal created on 28/01/2020. Last modified 05/02/2020

| OUTGOING STRUCTURAL RELATIONSHIPS |
| --- |
| Generalization from «InformationType» Responsibility to «InformationType» AbstractRRR  [ Direction is 'Source -> Destination'. ] |

| ATTRIBUTES |
| --- |
| categoryOfResponsibility : CategoryOfResponsibility Public  Multiplicity: ( [0..1], ) |

## Restriction

Class «InformationType» in package 'S-121'

Restriction

Version 1.0 Phase 1.0 Proposed

kusal created on 28/01/2020. Last modified 05/02/2020

| OUTGOING STRUCTURAL RELATIONSHIPS |
| --- |
| Generalization from «InformationType» Restriction to «InformationType» AbstractRRR  [ Direction is 'Source -> Destination'. ] |

| ATTRIBUTES |
| --- |
| categoryOfRestriction : CategoryOfRestriction Public  Multiplicity: ( [0..1], ) |

## Right

Class «InformationType» in package 'S-121'

Right

Version 1.0 Phase 1.0 Proposed

kusal created on 28/01/2020. Last modified 05/02/2020

| OUTGOING STRUCTURAL RELATIONSHIPS |
| --- |
| Generalization from «InformationType» Right to «InformationType» AbstractRRR  [ Direction is 'Source -> Destination'. ] |

| ATTRIBUTES |
| --- |
| categoryOfRight : CategoryOfRight Public  Multiplicity: ( [0..1], ) |

## CategoryOfResponsibility

Enumeration in package 'S-121'

CategoryOfResponsibility

Version 1.0 Phase 1.0 Proposed

kusal created on 06/02/2020. Last modified 13/02/2020

| ATTRIBUTES |
| --- |
| Maintenance Responsibility : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |

## CategoryOfRestriction

Enumeration in package 'S-121'

CategoryOfRestriction

Version 1.0 Phase 1.0 Proposed

kusal created on 06/02/2020. Last modified 13/02/2020

| ATTRIBUTES |
| --- |
| Access Restriction : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| Jurisdiction Restriction : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| Passage Restriction : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| Resource Restriction : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| Time Based Restriction : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| Use Restriction : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |

## CategoryOfRight

Enumeration in package 'S-121'

CategoryOfRight

Version 1.0 Phase 1.0 Proposed

kusal created on 06/02/2020. Last modified 13/02/2020

| ATTRIBUTES |
| --- |
| Sovereignty : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| Soveriegn Right : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| Access Right : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| Easement Right : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| Harvest Right : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| Contiguous Right : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |

## PartyGroupType

Enumeration in package 'S-121'

PartyGroupType

Version 1.0 Phase 1.0 Proposed

kusal created on 19/02/2020. Last modified 19/02/2020

| ATTRIBUTES |
| --- |
| Agreement : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |
| Association : Public  [ Stereotype is «enum». Is static True. Containment is Not Specified. ] |

## Text

Text in package 'S-121'

Text

Version 8.0 Phase 1.0 Proposed

kusal created on 13/02/2020. Last modified 12/06/2020

Extends

# Source Documentation



TBD – mirrored from GML Schema and Feature Catalogue.

# GML Encoding Notes

This section details the implementation of the S-100 GML Profile used within the S-121 GML Application Schema and notes areas where this may differ from other GML formats in the S-100 ecosystem.

JP\_Notes (also from ER)

1. Use of MRN
2. Relationships
3. DCEG guidance
4. Use of GML 3.2.1
5. Geometry field – interoperability issues
6. References/absolute geometry
7. Members by group, not by inheritance

Structure of a dataset