

# Session 1 – Steps needed for data transformation

## Data Specifications

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**ECOAQUA**  
www.ecoaqua.eu

**EMODnet-INSPIRE technical workshop**  
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Research and Technology to enhance excellence in maritime development under an Ecosystem approach





# Designing of the transformation process theoretical mapping

**Step 1 – Find the Target Application Schema**

**Step 2 – Find the Target INSPIRE Feature type to use**

**Step 3 – Analyze the attributes of the INSPIRE FEATURETYPE**

**Step 4 – Find the useful source data attributes for the mapping**

**Step 5 – Map the source and target attributes**

**Step 6 – Map the source and INSPIRE code list/enumeration values**



# Step 1 – Find the Target Application Schema

## INSPIRE Thematic Scope – which themes could be relevant ?

### Annex I

1. Coordinate reference systems
2. Geographical grid systems
3. Geographical names
4. Administrative units
5. Addresses
6. Cadastral parcels
7. Transport networks
8. Hydrography
9. Protected sites



### Annex II

1. Elevation
2. Land cover
3. Ortho-imagery
4. Geology

### Annex III

1. Statistical units
2. Buildings
3. Soil
4. Land use
5. Human health and safety
6. Utility and governmental services
7. Environmental monitoring facilities
8. Production and industrial facilities
9. Agricultural and aquaculture facilities
10. Population distribution – demography
11. Area management/ restriction/regulation zones & reporting units
12. Natural risk zones
13. Atmospheric conditions
14. Meteorological geographical features
15. Oceanographic geographical features
16. Sea regions
17. Bio-geographical regions
18. Habitats and biotopes
19. Species distribution
20. Energy Resources
21. Mineral resources



# Step 1 – Find the Target Application Schema



## 1.1 Identify INSPIRE theme

- Description of themes at INSPIRE “data spec. corner”
- Read the executive summery
- Compare Technical guidance with Interactive data specification app.
- Download identified Technical Guidance form INSPIRE website (and read it!)
- Identify the application schemas related to the INSPIRE theme
- Understand identified application schemas to identify appropriate one for the source data



# Step 1 – Find the Target Application Schema



- Understand UML models, Feature catalogues, Matching tables to identify the one that is most applicable to source data set
- Use only Technical guidance
- Use “data spec corner” part of the models

**Data Specifications**

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**INSPIRE data models**  
 The INSPIRE Implementing Rules on interoperability of spatial data sets and services and the data specification guidance documents are based on the UML data models developed by the INSPIRE Thematic Working Groups. These data models are managed in a common UML repository, which also stores older revisions of the models.

This page makes different revisions of the INSPIRE UML models available in different formats and views (see below). Each of these revisions corresponds to a specific set of (draft or approved) Data Specification Technical Guidance (TG) documents and/or Implementing Rules.

Revision	Corresponding TG and IRs	Status	Feature catalogue	HTML view	Mapping Tables	EA project / XMI	SVN	GML & code lists
4618	This version corresponds to the content of the Implementing Rules (EU) No 1089/2010, No 102/2011, No 1253/2013 and the latest publicly available version of the data specifications of Annex I, II+III.							
	This distribution contains only those data models that are contained in the amendment to the Implementing Rules for Annex II+III themes, including the updates of the Annex I data themes.	APPROVED	FC	HTML	Mapping	EA / XMI	SVN	Schema repository
	This distribution combines the data models contained in the amendment to the Implementing Rules (see above) and the extended data models contained in the data specification Technical Guidelines (but not in the IRs). Please note that the extended data models not included in the IRs should be	APPROVED (IR models) DRAFT (extended models)	FC	HTML	Mapping Tables	EA / XMI	SVN	Schema repository (IR models) Schema repository (extended)

Print font size

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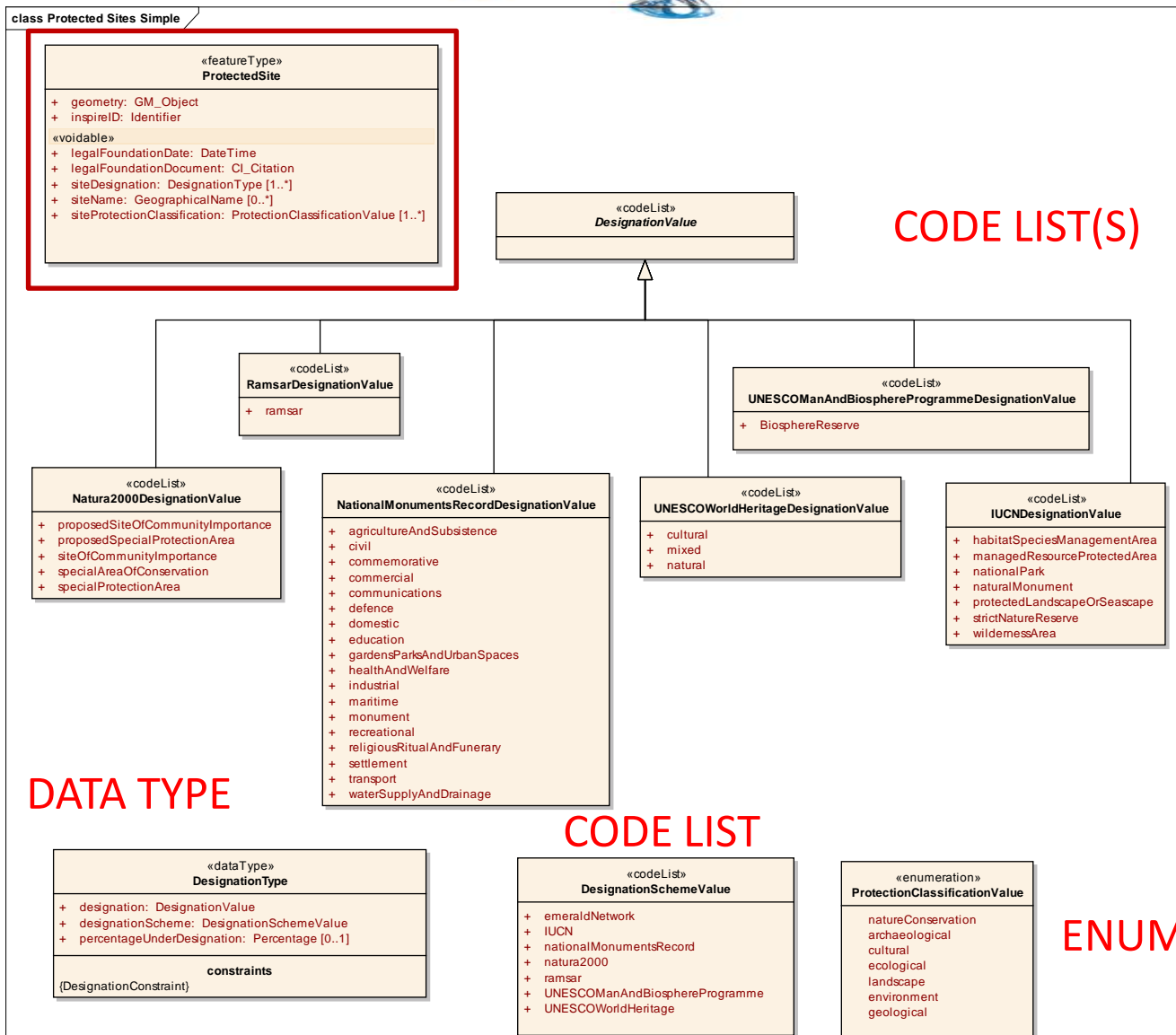
Years: 2011-2014







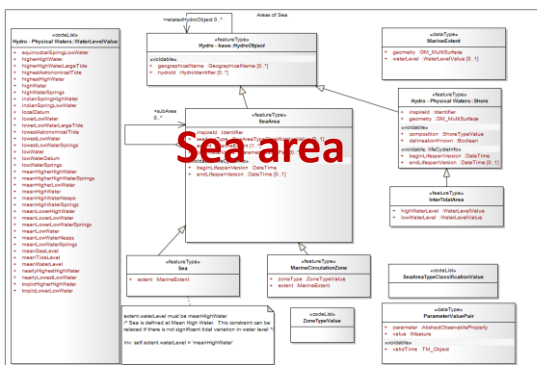
# Step 2 – Find the Target INSPIRE Feature type to use



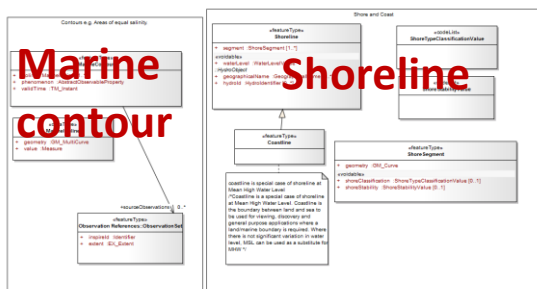


# Step 2 – Find the Target INSPIRE Feature type to use

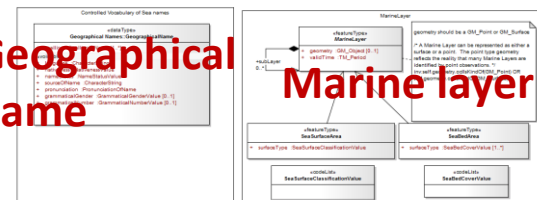
- Feature types need to be analyzed to identify one which is adjusted to source data set
- Analyze attributes of the feature, code lists, enumerations...



(model continues below)



(model continues below)



**Geographical name**





# Alternatively can be used INSPIRE Interactive Data Specification

- Offers INSPIRE data providers two applications to support them in the implementation of the INSPIRE data specifications
- Identifying appropriate INSPIRE theme/application schema/spatial object
- Essential tool for mapping your (EMODnet) data products into INSPIRE data model

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INSPIRE  
European Commission  
Interactive Data Specifications

European Commission > INSPIRE > INSPIRE Interactive Data Specifications > Find your scope

Intro Read/Compare Technical Guidelines **Find your scope** ☆

The application **Find your scope** supports data providers with identification of the INSPIRE spatial data themes and spatial object types that are relevant to the dataset(s) they administer. This application is foreseen to be useful especially in situations when datasets fall under two or more INSPIRE data themes / application schemas content.

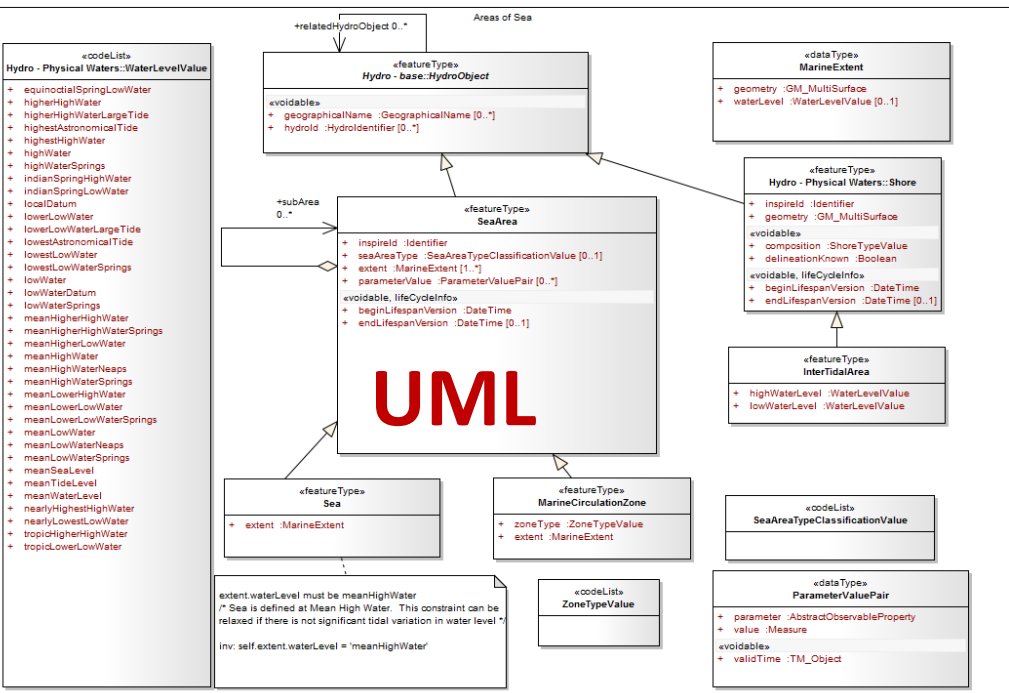
There are two possible ways for "finding your scope":

**INTERACTIVE**  
**DIRECT SEARCH**

**The main result**  
The main outcome of this application is the list of the INSPIRE objects, including their properties – attributes, code lists values etc. which are relevant to one's dataset(s). The final list also includes all associated objects and their properties.



# Step 3 – Analyze the attributes of the INSPIRE FEATURETYPE



Type	Documentation	Attribute Association role Constraint	Attribute Association role Constraint documentation	Vanes/ Enumerations	Multiplicity	Visible/ Non-visible
Sea Area Subtype of: HydroObject Supertype of: SeaArea	Definition -- An area of sea defined according to its physical and chemical characteristics. It may have multiple geometries (extent) to represent different tidal states. -- Description -- A SeaArea is a type of HydroObject as described in the A-chr/xt1 theme Hydrography. It has geometry described by one or more GM_MultiSurfaces. Multiple geometries are allowed to enable a SeaArea to be described according to different tidal states. Typically however, specialisations of SeaArea will restrict the geometry to a particular tidal state or set of tidal states. SeaAreas include named seas such as  and also un-named areas of sea that have particular chemical and physical characteristics. SeaAreas are 2D objects and carry no explicit information about the depth of the sea, this is specified in the INSPIRE Elevation Theme.	inspireId sea Area Type extent parameter Value begin Lifespan Version end Lifespan Version geographical Name - HydroObject hydro Id - HydroObject related Hydro Object - from Hydro Object sub Area - from Sea Area	External object identifier of the spatial object. Type of the sea area according to the classifications in the SeaAreaTypeClassificationValue The extent of the Sea Area at a particular tidal state. A value of some parameter assigned to the SeaArea. E.g. A-chr/xtal Mean Sea Surface Temperature = 12 degrees Celsius Date and time at which this version of the spatial object was inserted or changed in the spatial data set. Date and time at which this version of the spatial object was superseded or retired in the spatial data set. A geographical name that is used to identify a hydrographic object in the real world. It provides a 'key' for implicitly associating different representations of the object. An identifier that is used to identify a hydrographic object in the real world. It provides a 'key' for implicitly associating different representations of the object. -- Definition -- An identify base for hydrographic (including man-made) objects in the real world. -- Description -- NOTE Derived "views" of real-world hydrographic objects are represented through specialisations in other application schemes; all representations of the same real-world object share a common geographic name or hydrographic identifier. -- Definition -- An area of sea defined according to its physical and chemical characteristics. It may have multiple geometries (extent) to represent different tidal states. -- Description -- A SeaArea is a type of HydroObject as described in the A-chr/xt1 theme Hydrography. It has geometry described by one or more GM_MultiSurfaces. Multiple geometries are allowed to enable a SeaArea to be described according to different tidal states. Typically however, specialisations of SeaArea will restrict the geometry to a particular tidal state or set of tidal states. SeaAreas include named seas such as  and also un-named areas of sea that have particular chemical and physical characteristics. SeaAreas are 2D objects and carry no explicit information about the depth of the sea, this is specified in the INSPIRE Elevation Theme.	Identifier SeaAreaTypeClassificationValue MarineExtent ParameterValuePair DateTime GeographicalName HydroIdentifier Hydro Object (See Annex) Sea Area (See Annex)	0..1 1..* 0..* 0..1 0..* 0..* 0..* 0..*	1 voidable voidable voidable voidable voidable voidable voidable

**MATCHING TABLES**

**Data Type: InputOutputAmount**

InputOutputAmount  
Title: amount of input or output  
Definition: Type and, where available, measurable amount of a classified or registered material that enters or leaves a technical and economical unit.  
Description: NOTE Depending on the thematic scope it can refer to different terms as Biomass, Bio-Waste, Fuel, Organic Solvents, Waste Water, Waste for disposal or recovery, Primary Materials, etc.  
Type: Data Type  
Attribute: Name: InputOutput, Title: inputOutput, Definition: A classified or registered type of material or something immaterial, that enters a technical and economical unit according to its function, Description: NOTE Depending on the thematic scope it can contain different values including terms as Biomass, Bio-Waste, Fuel, Organic Solvents, Waste Water, Waste for disposal or recovery, Primary Materials, etc, Visible: false, Multiplicity: 1, Value type: InputOutputValue (code list)  
Attribute: Name: amount, Definition: The amount (such as a volume or mass) of the classified or registered material that enters or leaves a technical and economical unit, Visible: true, Multiplicity: 1, Value type: Measure (data type)

**Data Type: Permission**

Permission  
Title:

**FEATURE CATALOGS**



# Step 4 – Find the useful source data attributes for the mapping

## Step 5 – Map the source and target attributes

Application Schema 'HabitatsAndBiotopes' (version 3.0)							Application Schema <provide name of source schema>													
Type	Documentation	Attribute / Association role	Association / Constraint	Attribute / Association role / Constraint	Values / Enumerations	Multiplicity	Voidable / Non-Voidable	Type	Documentation	Attribute / Association role	Association / Constraint	Attribute / Association role / Constraint	Values / Enumerations	Multiplicity	Voidable / Non-Voidable	Status	Remarks			
HabitatTypeCoverType	-- Name -- habitat type cover type - Habitat type according to an international, national or local habitat classifications scheme. Includes additional information on covered area, covered length, or containing volume.	referenceHabitatTypeId	-- Name -- reference habitat type id	ReferenceHabitatTypeCode	1			HabitatTypeCoverType	code list provided with				code				If Level4 is not populated include Level2			
		referenceHabitatTypeScheme	-- Name -- reference habitat type scheme	ReferenceHabitatTypeScheme	1			HabitatTypeCoverType	Level4											
		referenceHabitatTypeName	-- Name -- reference habitat type name	CharacterString	1			voidable	HabitatTypeCoverType	no association with source data set										
		localHabitatName	-- Name -- local habitat name	LocalNameType	0..1			voidable	HabitatTypeCoverType	Level4_des										
		areaCovered	-- Name -- area covered	Area	0..1			voidable	HabitatTypeCoverType	A simplified classification a	Grouped									
		lengthCovered	-- Name -- length covered	Length	0..1			voidable												
		volumeCovered	-- Name -- volume covered	Volume	0..1			voidable												
HabitatSpeciesType	-- Name -- habitat species type Species which occurs in a certain habitat at the time of mapping.	referenceSpeciesId	-- Name -- reference species id	ReferenceSpeciesCodeValue	1			habitatSpeciesType												
		referenceSpeciesScheme	-- Name -- reference species scheme	ReferenceSpeciesScheme	1			habitatSpeciesType												
		localSpeciesName	-- Name -- local species name	LocalNameType	0..1			voidable	habitatSpeciesType											
Habitat	-- Name -- habitat Geographical areas characterised by specific ecological conditions, processes, structure, and functions that physically support the organisms that live there. Includes terrestrial and aquatic areas distinguished by	inspireId	-- Name -- inspire id	Identifier	0..1			20110209_EUSeaMap_W	Numerical code assigned by	AI/Code				1	non-voidable					
		geometry	-- Name -- geometry	GM_Object	1			20110209_EUSeaMap_W	the_geom											
		habitat	-- Name -- habitat type	HabitatTypeCoverType	1..*				20110209_EUSeaMap_W	habitat										
		habitatSpecies	-- Name -- habitat species	HabitatSpeciesType	0..*			voidable	habitatSpeciesType	no values provided										
HabitatVegetationType	-- Name -- habitat vegetation type Vegetation type which	habitatVegetation	-- Name -- habitat vegetation	HabitatVegetationType	0..*		voidable	HabitatVegetationType	no values provided											
		localVegetationName	-- Name -- local vegetation name	LocalNameType	1															
LocalNameType	-- Name -- local name type Name according to a local classification scheme.	localScheme	-- Name -- local scheme	CharacterString	1															
		localNameCode	-- Name -- local name code	LocalNameCodeValue	1															
		localName	-- Name -- local name	CharacterString	1			voidable												
		qualifierLocalName	-- Name -- qualifier local name	QualifierLocalNameValue	1			voidable												

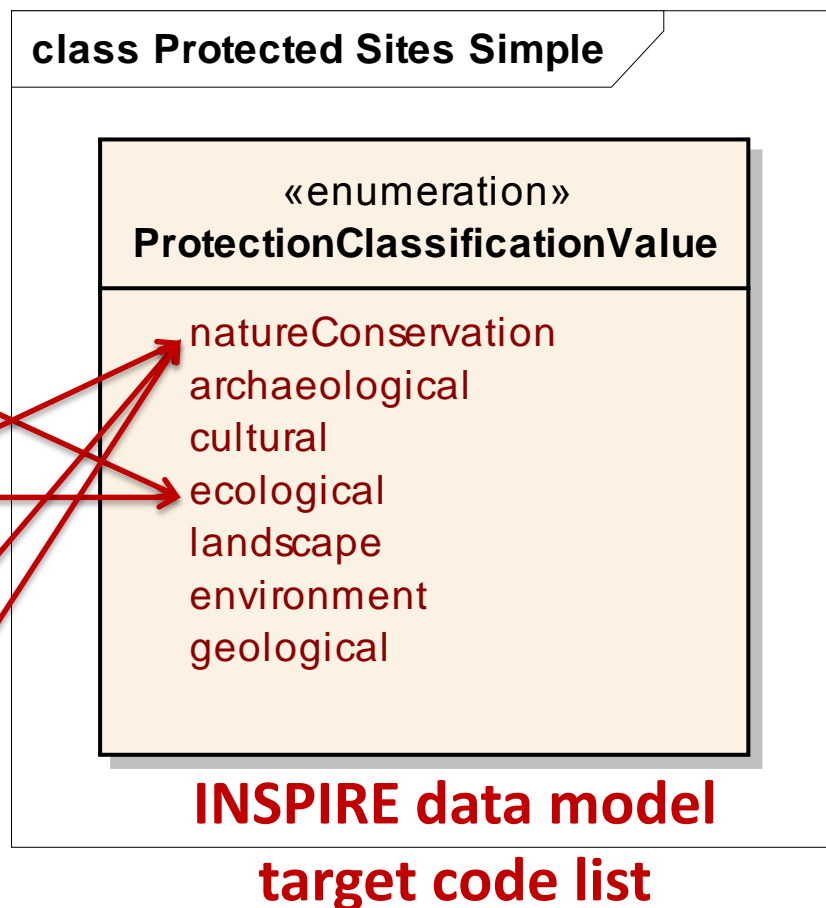
- Mapping the attributes that can be included into INSPIRE Feature
- Using the Matching table for documenting the mapping of source/target data model



# Step 6 – Map the source and INSPIRE code lists/enumeration values

## Source code list

Designation
Biotope Protection Order
Corsican Nature Reserve
Forest Biological Reserve
Land acquired by Conservatoire du Littoral (national seaside and lakeside conservancy)
Regional Nature Park

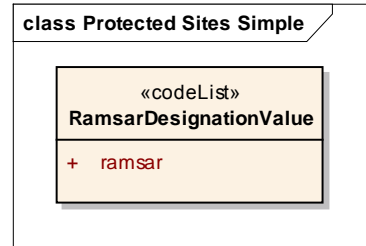
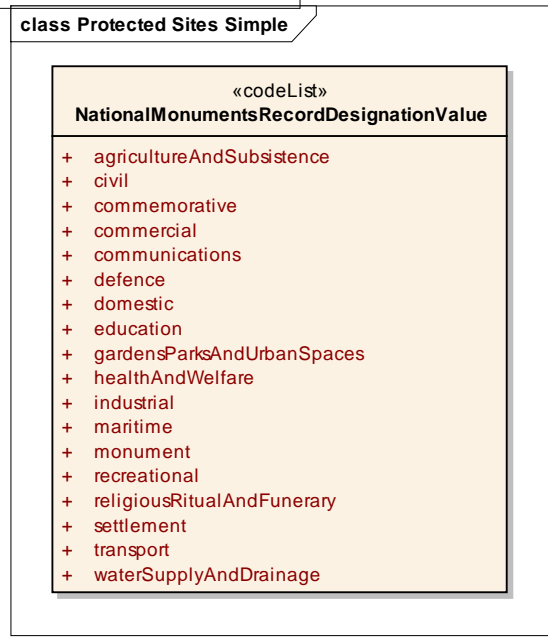
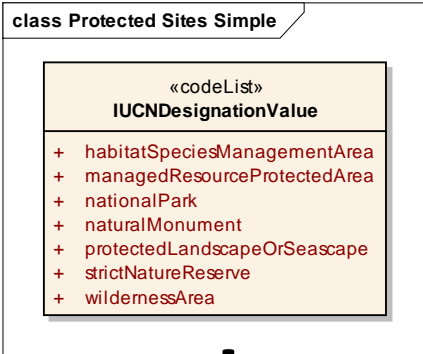
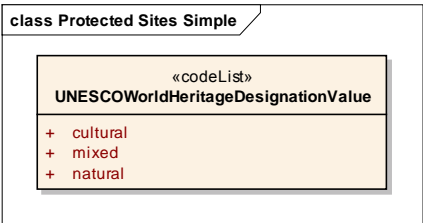
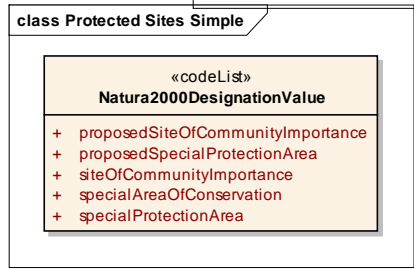
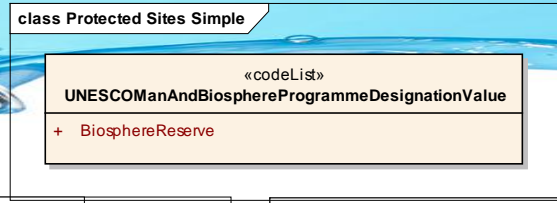




# Not always simple...



DESIGNATE	
old	new
Nature Monument (Category II IUCN)	Nature Monument (Category III IUCN)
National Park	Strict Nature Reserve
Regional Natural Park or Nature Park	Special Nature Reserve
Natural Reserve or Nature Reserve	National Park
Natural Monument	Regional Park and Nature Park
Recreational Area	Natural Monument
Sanctuary of Landscape or Recreational Importance	Protected habitat
Memorial Monument	Landscape with special features
Ornate Natural Monument or Horticultural Garden	Protected species of plants, animals and fungi - strictly protected and protected wild species
Historical Sanctuary	Protected geological and paleontological objects
National Nature Reserve; fifth level of protection	National Nature Reserve
Nature Reserve / Private Nature Reserve; fifth level of protection	Nature Reserve / Private Nature Reserve
National Nature Monument; fifth level of protection	National Nature Monument
Nature Monument / Private Nature Monument; fifth level of protection	Nature Monument / Private Nature Monument
Protected Site / Private Protected Site; fourth level of protection	Protected Site / Private Protected Site
Buffer Zone of a Protected Site; third level of protection	Buffer Zone of a Protected Site



## need to be documented





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# Thank you for your attention

....and patience



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