ANNEX IV

The following Annex IV is added to Regulation (EU) No 1089/2010:

ANNEX IV

Requirements for Spatial Data Themes Listed in Annex III to Directive 2007/2/EC

1. STATISTICAL UNITS

1.1. **Structure of the Spatial Data Theme Statistical Units**

The types specified for the spatial data theme Statistical Units are structured in the following packages:

— Statistical Units Base
— Statistical Units Vector
— Statistical Units Grid

1.2. **Statistical Units Base**

1.2.1. *Spatial object types*

The package Statistical Units Base contains the spatial object type Statistical Unit.

1.2.1.1. Statistical Unit (StatisticalUnit)

Unit for dissemination or use of statistical information.

This type is abstract.

1.3. **Statistical Units Vector**

1.3.1. *Spatial object types*

The package Vector contains the following spatial object types:

— Vector Statistical Unit
— Area Statistical Unit
— Statistical Tesselation
— Evolution

1.3.1.1. Vector Statistical Unit (VectorStatisticalUnit)

Statistical unit represented as a vector geometry (point, line or surface).

This type is a sub-type of StatisticalUnit.
Attributes of the spatial object type VectorStatisticalUnit

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
thematicId	Descriptive unique object identifier applied to spatial	ThematicIdentifier	

	objects in a defined information theme.		
country	The code of the country the object belongs to.	CountryCode	
geographicalName	Possible geographical names of the object.	GeographicalName	
validityPeriod	The period when the statistical unit is supposed to be preferably used and not.	TM_Period	
referencePeriod	The period when the data is supposed to give a picture of the territorial division in statistical units.	TM_Period	
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable

Association roles of the spatial object type VectorStatisticalUnit

Association role	Definition	Type	Voidability
geometry	Geometrical representations of the vector statistical unit.	VectorStatisticalUnitGeometry	
evolutions	All the evolutions the statistical unit has encountered.	Evolution	voidable

Constraints of the spatial object type VectorStatisticalUnit

Vector statistical units with a reference geometry instance of *GM_MultiSurface* must be instances of the specialised class *AreaStatisticalUnit.*

1.3.1.2. Area Statistical Unit (AreaStatisticalUnit)

Vector statistical unit with a surfacic reference geometry.

This type is a sub-type of VectorStatisticalUnit.
Attributes of the spatial object type AreaStatisticalUnit

Attribute	Definition	Type	Voidability
areaValue	The area of the reference geometry.	Area	
landAreaValue	The area of the above-water part.	Area	voidable
livableAreaValue	The area of the livable part.	Area	voidable

Association roles of the spatial object type AreaStatisticalUnit

Association role	Definition	Type	Voidability
administrativeUnit	Administrative units used to build the area statistical unit.	AdministrativeUnit	voidable
lowers	The area statistical units of the next lower level.	AreaStatisticalUnit	voidable
uppers	The area statistical units of the next upper level.	AreaStatisticalUnit	voidable
successors	Successors of the area statistical unit.	AreaStatisticalUnit	voidable
predecessors	Predecessors of the area statistical unit.	AreaStatisticalUnit	voidable
tesselation	The tesselation composed of units.	StatisticalTessellation	voidable

Constraints of the spatial object type AreaStatisticalUnit

The reference geometry of an area statistical units should be a *GM_MultiSurface.*

1.3.1.3. Statistical Tesselation (StatisticalTessellation)

A tesselation composed of area statistical units.
Attributes of the spatial object type StatisticalTessellation

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	

Association roles of the spatial object type StatisticalTessellation

Association role	Definition	Type	Voidability
units	The units composing a tesselation.	AreaStatisticalUnit	voidable

lower	The immediately lower statistical tessellation.	StatisticalTessellation	voidable
upper	The immediately upper statistical tessellation.	StatisticalTessellation	voidable

1.3.1.4. Evolution (Evolution)

Representation of vector statistical unit evolution.
Attributes of the spatial object type Evolution

Attribute	Definition	Type	Voidability
date	The date when the change occured.	DateTime	
evolutionType	The type of evolution.	EvolutionTypeValue	
areaVariation	The area variation during the evolution. This attribute has to be populated only if the type is “change”.	Area	voidable
populationVariation	The population variation during the evolution. This attribute has to be populated only if the type is “change”.	Integer	voidable

Association roles of the spatial object type Evolution

Association role	Definition	Type	Voidability
finalUnitVersions	All the final unit versions concerned by the evolution.	VectorStatisticalUnit	voidable
units	All the units concerned by the evolution.	VectorStatisticalUnit	voidable
initialUnitVersions	All the initial unit versions concerned by the evolution.	VectorStatisticalUnit	voidable

Constraints of the spatial object type Evolution

Evolution representations shall be consistent with the versions of the concerned objects.

An evolution with a typeValue “creation” shall not have any initial unit versions and only one final one.

An evolution with a typeValue “deletion” shall have one initial unit version and no final one.

An evolution with a typeValue “aggregation” shall have at least two initial unit versions (the units to be aggregated) and a single final one (the resulting aggregation).

An evolution with a typeValue “change” shall have one initial unit version and one final one.

An evolution with a typeValue “splitting” shall have a single initial unit version (the unit to split), and at least two final ones (the units resulting from the splitting).

1.3.2. *Data types*

1.3.2.1. Vector Statistical Unit Geometry (VectorStatisticalUnitGeometry)

A geometrical representation for vector statistical units.
Attributes of the data type VectorStatisticalUnitGeometry

Attribute	Definition	Type	Voidability
geometry	The geometry.	GM_Object	
geometryDescriptor	The statistical unit geometry descriptor.	GeometryDescriptor	

1.3.2.2. Geometry Descriptor (GeometryDescriptor)

A descriptor for vector statistical unit geometry.
Attributes of the data type GeometryDescriptor

Attribute	Definition	Type	Voidability
geometryType	The geometry type.	GeometryTypeValue	
mostDetailedScale	The most detailed scale the generalised geometry is supposed to be suitable for (expressed as the inverse of an indicative scale).	Integer	
leastDetailedScale	The least detailed scale the generalised geometry is supposed to be suitable for (expressed as the inverse of an indicative scale).	Integer	

Constraints of the data type GeometryDescriptor

The *mostDetailedScale* and *leastDetailedScale* fields shall be provided only for geometry descriptors with a type *generalisedGeometry*

If provided, *mostDetailedScale* shall be smaller than *leastDetailedScale*

1.3.3. *Code lists*

1.3.3.1. Geometry Type (GeometryTypeValue)

The code values for the geometry types.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.

Values for the code list GeometryTypeValue

Value	Name	Definition
referenceGeometry	reference geometry	The described geometry is the reference geometry.
pointLabel	point label	The described geometry is a point geometry for labeling.
centerOfGravity	center of gravity	The described geometry is a point geometry located at the center of gravity of the unit.
generalisedGeometry	generalised geometry	A generalised geometry of the statistical unit.
other	other	Other kind of geometry type.

1.3.3.2. Evolution Type (EvolutionTypeValue)

The code values for evolution types.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Statistical Units.

1.4. **Statistical Units Grid**

1.4.1. *Spatial object types*

The package Grid contains the following spatial object types:

— Statistical Grid Cell
— Statistical Grid

1.4.1.1. Statistical Grid Cell (StatisticalGridCell)

Unit for dissemination or use of statistical information that is represented as a grid cell.

This type is a sub-type of StatisticalUnit.

Attributes of the spatial object type StatisticalGridCell

Attribute	Definition	Type	Voidability
code	A cell code.	CharacterString	voidable
geographicalPosition	The grid cell lower left corner geographical position.	DirectPosition	voidable

gridPosition	The grid cell position within the grid based on the grid coordinates.	GridPosition	voidable
geometry	The grid cell geometry.	GM_Surface	voidable

Association roles of the spatial object type StatisticalGridCell

Association role	Definition	Type	Voidability
lowers	The immediately lower statistical grid cells.	StatisticalGridCell	voidable
upper	The immediately upper statistical grid cell.	StatisticalGridCell	voidable
grid	The grid made up of cells.	StatisticalGrid	

Constraints of the spatial object type StatisticalGridCell

The cell position shall be within the grid, according to its width and height.

At least one of the attributes code, geographicalPosition, gridPosition or geometry shall be provided.

Where several spatial representations are provided (code, geographicalPosition, gridPosition and geometry), they shall be consistent.

The code shall be composed of:

(1) A coordinate reference system part, represented by the word **CRS**, followed by the EPSG code.

(2) A resolution and position part:
- If the coordinate reference system is projected, the word **RES** followed by the grid resolution in meters and the letter **m**. Then, the letter **N** followed by the northing value in meters, and the letter **E** followed by the easting value in meters.
- If the coordinate reference system is not projected, the word **RES** followed by the grid resolution in degree-minute-second, followed by the word **dms**. Then the word **LON** followed by the longitude value in degree-minute-second, and word **LAT** followed by the latitude value in degree-minute-second.

For both cases, the given position shall be the position of the lower left cell corner.

1.4.1.2. Statistical Grid (StatisticalGrid)

A grid composed of statistical cells.
Attributes of the spatial object type StatisticalGrid

Attribute	Definition	Type	Voidability

inspireId	External object identifier of the spatial object.	Identifier	
EPSGCode	The EPSG code to identify the grid Coordinate Referencing System.	Integer	
resolution	The grid resolution.	StatisticalGridResolution	
origin	The position of the origin point of the grid in the specified coordinate reference system (if defined).	DirectPosition	
width	The grid width, in cell number (if defined).	Integer	
height	The grid height, in cell number (if defined).	Integer	

Association roles of the spatial object type StatisticalGrid

Association role	Definition	Type	Voidability
cells	The cells composing a grid.	StatisticalGridCell	
lower	The immediately lower statistical grid.	StatisticalGrid	voidable
upper	The immediately upper statistical grid.	StatisticalGrid	voidable

Constraints of the spatial object type StatisticalGrid

If the coordinate reference system is a projected one, the resolution shall be a length. Otherwise, it shall be an angle.

1.4.2. *Data types*

1.4.2.1. Grid Position (GridPosition)

A grid cell position within a grid.
Attributes of the data type GridPosition

Attribute	Definition	Type	Voidability
x	The position of the cell on the horizontal axis, starting from the left side, toward the	Integer	

	right, from 0 to the grid width -1.		
y	The position of the cell on the vertical axis, starting from the bottom toward the top, from 0 to the grid height -1.	Integer	

1.4.2.2. Statistical Grid Resolution (StatisticalGridResolution)

A statistical unit resolution value.

This type is a union type.
Attributes of the union type StatisticalGridResolution

Attribute	Definition	Type	Voidability
lengthResolution	A distance resolution.	Length	
angleResolution	An angle resolution.	Angle	

1.5. **Theme-specific Requirements**

(1) At least the geometry of statistical units, for which statistical data are made available under INSPIRE, shall be made available as well. This requirement applies to INSPIRE themes that refer to statistical units.

(2) For pan-European usage, the Equal Area Grid defined in Section 2.2.1 of Annex II shall be used.

(3) Statistical data shall refer to their statistical unit through the unit's external object identifier (inspireId) or thematic identifier (for vector units) or the unit's code (for grid cells).

(4) Statistical data shall refer to a specific version of a statistical unit.

1.6. **Layers**
Layers for the spatial data theme Statistical Units

Layer Name	Layer Title	Spatial object type
SU.VectorStatisticalUnit	Vector statistical units	VectorStatisticalUnit
SU.StatisticalGridCell	Statistical grid cells	StatisticalGridCell

2. BUILDINGS

2.1. **Definitions**

In addition to the definitions set out in Article 2, the following definitions shall apply:

(1) "2D data" means data where the geometry of spatial objects is represented in two-dimensional space.

(2) "2.5D data" means data where the geometry of spatial objects is represented in three-dimensional space with the constraint that, for each (X,Y) position, there is only one Z.

(3) "3D data" means data where the geometry of spatial objects is represented in three-dimensional space.

(4) "building component" means any sub-division or element of a building.

2.2. Structure of the Spatial Data Theme Buildings

The types specified for the spatial data theme Buildings are structured in the following packages:
— Buildings Base
— Buildings 2D
— Buildings 3D

2.3. Buildings Base

2.3.1. *Spatial object types*

The package Buildings Base contains the following spatial object types:
— Abstract Construction
— Abstract Building
— Building
— Building Part

2.3.1.1. Abstract Construction (AbstractConstruction)

Abstract spatial object type grouping the semantic properties of buildings, building parts.

This type is abstract.
Attributes of the spatial object type AbstractConstruction

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
name	Name of the construction.	GeographicalName	voidable
dateOfConstruction	Date of construction.	DateOfEvent	voidable
dateOfDemolition	Date of demolition.	DateOfEvent	voidable
dateOfRenovation	Date of last major renovation.	DateOfEvent	voidable
elevation	Vertically-constrained dimensional property consisting of an absolute measure referenced to a well-defined surface which is commonly taken as origin (geoïd, water level, etc.).	Elevation	voidable

externalReference	Reference to an external information system containing any piece of information related to the spatial object.	ExternalReference	voidable
heightAboveGround	Height above ground.	HeightAboveGround	voidable
conditionOfConstruction	Status of construction.	ConditionOfConstructionValue	voidable
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable

2.3.1.2. Abstract Building (AbstractBuilding)

Abstract spatial object type grouping the common semantic properties of the spatial object types Building and BuildingPart.

This type is a sub-type of AbstractConstruction.

This type is abstract.

Attributes of the spatial object type AbstractBuilding

Attribute	Definition	Type	Voidability
buildingNature	Characteristic of the building that makes it generally of interest for mappings applications. The characteristic may be related to the physical aspect and/ or to the function of the building.	BuildingNatureValue	voidable
currentUse	Activity hosted within the building. This attribute addresses mainly the buildings hosting human activities.	CurrentUse	voidable
numberOfDwellings	Number of dwellings.	Integer	voidable

numberOfBuildingUnits	Number of building units in the building. A BuildingUnit is a subdivision of Building with its own lockable access from the outside or from a common area (i.e. not from another BuildingUnit), which is atomic, functionally independent, and may be separately sold, rented out, inherited, etc.	Integer	voidable
numberOfFloorsAboveGround	Number of floors above ground.	Integer	voidable

2.3.1.3. Building (Building)

A Building is an enclosed construction above and/or underground, used or intended for the shelter of humans, animals or things or for the production of economic goods. A building refers to any structure permanently constructed or erected on its site.

This type is a sub-type of AbstractBuilding.

This type is abstract.

Association roles of the spatial object type Building

Association role	Definition	Type	Voidability
parts	The building parts the building is composed of.	BuildingPart	voidable

2.3.1.4. Building Part (BuildingPart)

A BuildingPart is a sub-division of a Building that might be considered itself as a building.

This type is a sub-type of AbstractBuilding.

This type is abstract.

2.3.2. *Data types*

2.3.2.1. Current Use (CurrentUse)

This data type enables to detail the current use(s).

Attributes of the data type CurrentUse

Attribute	Definition	Type	Voidability
currentUse	The current use.	CurrentUseValue	

percentage	The proportion, given as a percentage, devoted to this current use.	Integer	

Constraints of the data type CurrentUse

The total of all percentages shall be less or equal to 100.

2.3.2.2. Date Of Event (DateOfEvent)

This data type includes the different possible ways to define the date of an event.
Attributes of the data type DateOfEvent

Attribute	Definition	Type	Voidability
anyPoint	A date and time of any point of the event, between its beginning and its end.	DateTime	voidable
beginning	Date and time when the event begun.	DateTime	voidable
end	Date and time when the event ended.	DateTime	voidable

Constraints of the data type DateOfEvent

At least one of the attributes beginning, end or anyPoint shall be supplied.

If provided, the beginning attribute shall not be after the anyPoint attribute and the end attribute, and the anyPoint attribute shall not be after the end attribute.

2.3.2.3. Elevation (Elevation)

This data type includes the elevation value itself and information on how it was measured.
Attributes of the type Elevation

Attribute	Definition	Type	Voidability
elevationReference	Element where the elevation was measured.	ElevationReferenceValue	
elevationValue	Value of the elevation.	DirectPosition	

2.3.2.4. External Reference (ExternalReference)

Reference to an external information system containing any piece of information related to the spatial object.
Attributes of the data type ExternalReference

Attribute	Definition	Type	Voidability

informationSystem	Uniform Resource Identifier of the external information system.	URI	
informationSystemName	The name of the external information system.	PT_FreeText	
reference	Thematic identifier of the spatial object or of any piece of information related to the spatial object.	CharacterString	

2.3.2.5. Height Above Ground (HeightAboveGround)

Vertical distance between a low and a high reference.
Attributes of the data type HeightAboveGround

Attribute	Definition	Type	Voidability
heightReference	Element used as the high reference.	ElevationReferenceValue	voidable
lowReference	Element used as the low reference.	ElevationReferenceValue	voidable
status	The way the height has been captured.	HeightStatusValue	voidable
value	Value of the height above ground.	Length	

Constraints of the data type HeightAboveGround

The value of HeightAboveGround shall be in meters.

2.3.2.6. Building Geometry2D (BuildingGeometry2D)

This data types includes the geometry of the building and metadata information about which element of the building was captured and how.
Attributes of the data type BuildingGeometry2D

Attribute	Definition	Type	Voidability
geometry	2D or 2.5D geometric representation.	GM_Object	
horizontalGeometryEstimatedAccuracy	The estimated absolute positional accuracy of the (X,Y) coordinates of the building geometry, in the INSPIRE official Coordinate Reference System.	Length	voidable

	Absolute positional accuracy is defined as the mean value of the positional uncertainties for a set of positions where the positional uncertainties are defined as the distance between a measured position and what is considered as the corresponding true position.		
horizontalGeometryReference	Element of the building that was captured by (X,Y) coordinates.	HorizontalGeometryReferenceValue	
referenceGeometry	The geometry to be taken into account by view services, for portrayal.	Boolean	
verticalGeometryEstimatedAccuracy	The estimated absolute positional accuracy of the Z coordinates of the building geometry, in the INSPIRE official Coordinate Reference System. Absolute positional accuracy is defined as the mean value of the positional uncertainties for a set of positions where the positional uncertainties are defined as the distance between a measured position and what is considered as the corresponding true position.	Length	voidable
verticalGeometryReference	Element of the building that was captured by vertical coordinates.	ElevationReferenceValue	

Constraints of the data type BuildingGeometry2D

Geometry shall be of type GM_Point or GM_Surface or GM_MultiSurface.

The value of horizontalGeometryEstimatedAccuracy shall be given in meters.

For exactly one item of BuildingGeometry, the value of the attribute referenceGeometry shall be “true”.

The value of verticalGeometryEstimatedAccuracy shall be given in meters.

2.3.3. *Code lists*

2.3.3.1. Building Nature (BuildingNatureValue)

Values indicating the nature of a building.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.
Values for the code list BuildingNatureValue

Value	Name	Definition
arch	arch	A man-made structure in the form of an arch.
bunker	bunker	A facility, partly underground, intended for or used by the military either for location of command/ control centers or for troop encampment.
canopy	canopy	An overhead roof providing shelter to things below. Canopies may be free standing frameworks over which a covering is attached or may be linked or suspended to the outside of a building.
caveBuilding	cave building	A space hosting human or economic activity which is usually enclosed within rock with the addition of man-made exterior walls and which may contain structures comparable to the interior structures of freestanding buildings.
chapel	chapel	A Christian place of worship, usually smaller than a church.
castle	castle	A large ornate or fortified building usually constructed

		for the purpose of a private residence or security.
church	church	Building or structure whose primary aim is to facilitate the religious practice of a Christian community.
dam	dam	A permanent barrier across a watercourse used to impound water or to control its flow.
greenhouse	greenhouse	A building that is often constructed primarily of transparent material (for example: glass), in which temperature and humidity can be controlled for the cultivation and/or protection of plants.
lighthouse	lighthouse	A tower designed to emit light from a system of lamps and lenses.
mosque	mosque	Building or structure whose primary aim is to facilitate the religious practice of a Muslim community.
shed	shed	A building of light construction, which usually has one or more open sides, that is typically used for storage.
silo	silo	A large storage structure, generally cylindrical, used for storing loose materials.
stadium	stadium	A place or venue for sports, concerts or other events and consists of a field or stage either partly or completely surrounded by a structure designed to allow spectators to stand or sit and view the event.
storageTank	storage tank	A container usually for holding liquids and compressed gases.
synagogue	synagogue	Building or structure whose primary aim is to facilitate the religious practice of

		a Jewish or Samaritan community.
temple	temple	Building or structure whose primary aim is to facilitate religious practices.
tower	tower	A relatively tall, narrow structure that may either stand alone or may form part of another structure.
windmill	windmill	A building which converts the energy of the wind into rotational motion by means of adjustable sails or blades.
windTurbine	wind turbine	A tower and associated equipment that generates electrical power from wind.

2.3.3.2. Condition Of Construction (ConditionOfConstructionValue)

Values indicating the condition of a construction.

The allowed values for this code list comprise only the values specified in the table below.
Values for the code list ConditionOfConstructionValue

Value	Name	Definition
declined	declined	The construction cannot be used under normal conditions, though its main elements (walls, roof) are still present.
demolished	demolished	The construction has been demolished. There are no more visible remains.
functional	functional	The construction is functional.
projected	projected	The construction is being designed. Construction has not yet started.
ruin	ruin	The construction has been partly demolished and some main elements (roof, walls) have been destroyed. There are some visible remains of the construction.
underConstruction	under construction	The construction is under construction and not yet functional. This applies only

		to the initial construction of the construction and not to maintenance work.

2.3.3.3. Current Use (CurrentUseValue)

Values indicating the current use.

The allowed values for this code list comprise the values specified in the table below and narrower values defined by data providers.

This code list is hierarchical.
Values for the code list CurrentUseValue

Value	Name	Definition	Parent value
residential	residential	The building (or building component) is used for residential purpose.	
individualResidence	individual residence	The building (or building component) hosts only one dwelling.	residential
collectiveResidence	collective residence	The building (or building component) hosts more than one dwelling.	residential
twoDwellings	two dwellings	The building (or building component) hosts two dwellings.	collectiveResidence
moreThanTwoDwellings	more than two dwellings	The building (or building component) hosts at least 3 dwellings.	collectiveResidence
residenceForCommunities	residence for communities	The building (or building component) hosts a residence for communities.	residential
agriculture	agriculture	The building (or building component) is used for agricultural activities.	
industrial	industrial	The building (or building component) is used for secondary sector activities (industrial).	

commerceAndServices	commerce and services	The building (or building component) is used for any service activities. This value addresses the buildings and building components dedicated to tertiary sector activities (commercial and services).	
office	office	The building (or building component) hosts offices.	commerceAndServices
trade	trade	The building (or building component) hosts trade activities.	commerceAndServices
publicServices	public services	The building (or building component) hosts public services. Public services are tertiary services provided for the benefit of the citizens.	commerceAndServices
ancillary	ancillary	A building (or building component) of small size that is used only in connection with another larger building (or building component) and generally does not inherit the same function and characteristics as the building (or building component) it is linked to.	

2.3.3.4. Elevation Reference (ElevationReferenceValue)

List of possible elements considered to capture a vertical geometry.

The allowed values for this code list comprise only the values specified in the table below.
Values for the code list ElevationReferenceValue

Value	Name	Definition

aboveGroundEnvelope	above ground envelope	The elevation has been captured at the level of the maximum extent of the above ground envelope of the construction.
bottomOfConstruction	bottom of construction	The elevation has been captured at the bottom of the usable part of the construction.
entrancePoint	entrance point	The elevation has been captured at the entrance of the construction, generally the bottom of entrance door.
generalEave	general eave	The elevation has been captured at eave level, anywhere between the lowest and the highest eave levels of the construction.
generalGround	general ground	The elevation has been captured at ground level, anywhere between the lowest and the highest ground points of the construction.
generalRoof	general roof	The elevation has been captured at roof level, anywhere between the lowest edge roof level and the top of the construction.
generalRoofEdge	general roof edge	The elevation has been captured at roof edge level, anywhere between the lowest and the highest roof edges of the construction.
highestEave	highest eave	The elevation has been captured at the highest eave level of the construction.
highestGroundPoint	highest ground point	The elevation has been captured at the highest ground point of the construction.
highestPoint	highest point	The elevation has been captured at the highest point of the construction, including the installations, such as chimneys and antennas.
highestRoofEdge	highest roof edge	The elevation has been captured at the highest

		roof edge level of the construction.
lowestEave	lowest eave	The elevation has been captured at the lowest eave level of the construction.
lowestFloorAboveGround	lowest floor above ground	The elevation has been captured at the level of the lowest floor above ground.
lowestGroundPoint	lowest ground point	The elevation has been captured at the lowest ground point level of the construction.
lowestRoofEdge	lowest roof edge	The elevation has been captured at the lowest roof edge level of the construction.
topOfConstruction	top of construction	The elevation has been captured at the top level of the construction.

2.3.3.5. Height Status (HeightStatusValue)

Values indicating the method used to capture a height.

The allowed values for this code list comprise only the values specified in the table below.
Values for the code list HeightStatusValue

Value	Name	Definition
estimated	estimated	The height has been estimated and not measured.
measured	measured	The height has been (directly or indirectly) measured.

2.3.3.6. Horizontal Geometry Reference (HorizontalGeometryReferenceValue)

Values indicating the element considered to capture a horizontal geometry.

The allowed values for this code list comprise only the values specified in the table below.
Values for the code list HorizontalGeometryReferenceValue

Value	Name	Definition
aboveGroundEnvelope	above ground envelope	The building horizontal geometry has been captured using the above ground envelope of the building, i.e. the maximum extent of the building above ground.

combined	combined	The building horizontal geometry has been obtained from the combination of the geometries of its building parts with the geometries of the building parts using different horizontal geometry references.
entrancePoint	entrance point	The building geometry is represented by a point located at the entrance of the building.
envelope	envelope	The building horizontal geometry has been captured using the whole envelope of the building, i.e. the maximum extent of the building above and under ground.
footPrint	foot print	The building horizontal geometry has been captured using the footprint of the building, i.e. its extent at ground level.
lowestFloorAboveGround	lowest floor above ground	The building horizontal geometry has been captured using the lowest floor above ground of the building.
pointInsideBuilding	point inside building	The building horizontal geometry is represented by a point located within the building.
pointInsideCadastralParcel	point inside cadastral parcel	The building horizontal geometry is represented by a point located within the parcel the building belongs to.
roofEdge	roof edge	The building horizontal geometry has been captured using the roof edges of the building.

2.4. **Buildings 2D**

2.4.1. *Spatial object types*

The package Buildings 2D contains the following spatial object types:

— Building

— Building Part

2.4.1.1. Building (Building)

A Building is an enclosed construction above and/or underground, used or intended for the shelter of humans, animals or things or for the production of economic goods. A building refers to any structure permanently constructed or erected on its site.

This type is a sub-type of Building of the Buildings Base package.
Attributes of the spatial object type Building

Attribute	Definition	Type	Voidability
geometry2D	2D or 2,5D geometric representation of the building.	BuildingGeometry2D	

Constraints of the spatial object type Building

Exactly one geometry2D attribute shall be a reference geometry, i.e. a geometry2D with a referenceGeometry attribute set to “true”.

The parts of the building shall be represented using the BuildingPart type of the Buildings2D package.

2.4.1.2. Building Part (BuildingPart)

A BuildingPart is a sub-division of a Building that might be considered itself as a building.

This type is a sub-type of BuildingPart of the Buildings Base package.
Attributes of the spatial object type BuildingPart

Attribute	Definition	Type	Voidability
geometry2D	2D or 2,5D geometric representation of the building part.	BuildingGeometry2D	

Constraints of the spatial object type BuildingPart

Exactly one geometry2D attribute must be a reference geometry, i.e. the referenceGeometry attribute must be “true”.

2.5. **Buildings 3D**

2.5.1. *Spatial object types*

The package Buildings 3D contains the following spatial object types:
— Building
— Building Part

2.5.1.1. Building (Building)

A Building is an enclosed construction above and/or underground, used or intended for the shelter of humans, animals or things or for the production of economic goods. A building refers to any structure permanently constructed or erected on its site.

This type is a sub-type of Building in the Buildings Base package.

Attributes of the spatial object type Building

Attribute	Definition	Type	Voidability
geometry2D	2D or 2,5D geometric representation.	BuildingGeometry2D	voidable
geometry3DLoD1	3D geometric representation at level of detail (LoD) 1, consisting of the generalized representation of the outer boundary by vertical lateral surfaces and horizontal base polygons.	BuildingGeometry3DL~~oD~~1	
geometry3DLoD2	3D geometric representation at level of detail (LoD) 2, consisting of the generalized representation of the outer boundary by vertical lateral surfaces and a prototypical roof shape or cover (from a defined list of roof shapes)	BuildingGeometry3DL~~oD~~2	
geometry3DLoD3	3D geometric representation at level of detail (LoD) 3, consisting of the detailed representation of the outer boundary (including protrusions, facade elements and window recesses) as well as of the roof shape (including dormers, chimneys).	BuildingGeometry3DL~~oD~~	
geometry3DLoD4	3D geometric representation at level of detail (LoD) 4, consisting of the detailed representation of the outer	BuildingGeometry3DL~~oD~~	

	boundary (including protrusions, facade elements, and window recesses) as well as of the roof shape (including dormers, chimneys).		

Constraints of the spatial object type Building

If a Building does not have any BuildingParts, at least the geometry3DLoD1 or geometry3DLoD2 or geometry3DLoD3 or geometry3DLoD4 attributes shall be provided.

The parts of the building shall be represented using the BuildingPart type of the Buildings3D package.

2.5.1.2. Building Part (BuildingPart)

A BuildingPart is a sub-division of a Building that might be considered itself as a building.

This type is a sub-type of BuildingPart in the Buildings Base package.
Attributes of the spatial object type BuildingPart

Attribute	Definition	Type	Voidability
geometry2D	2D or 2,5D geometric representation.	BuildingGeometry2D	voidable
geometry3DLoD1	3D geometric representation at level of detail (LoD) 1, consisting of the generalized representation of the outer boundary by vertical lateral surfaces and horizontal base polygons.	BuildingGeometry3DLo~~D~~1	
geometry3DLoD2	3D geometric representation at level of detail (LoD) 2, consisting of the generalized representation of the outer boundary by vertical lateral surfaces and a prototypical roof shape or cover (from a defined list of roof shapes).	BuildingGeometry3DLo~~D~~2	
geometry3DLoD3	3D geometric representation	BuildingGeometry3DLo~~D~~	

	at level of detail (LoD) 3, consisting of the detailed representation of the outer boundary (including protrusions, facade elements and window recesses) as well as of the roof shape (including dormers, chimneys).		
geometry3DLoD4	3D geometric representation at level of detail (LoD) 4, consisting of the detailed representation of the outer boundary (including protrusions, facade elements, and window recesses) as well as of the roof shape (including dormers, chimneys).	BuildingGeometry3DLo~~D~~	

Constraints of the spatial object type BuildingPart

At least one of the geometry3DLoD1 or geometry3DLoD2 or geometry3DLoD3 or geometry3DLoD4 attributes shall be provided.

2.5.2. *Data types*

2.5.2.1. Building Geometry3D LoD (BuildingGeometry3DLoD)

Data type grouping the 3D geometry of a building or building part and the metadata information attached to this geometry.

Attributes of the data type BuildingGeometry3DLoD

Attribute	Definition	Type	Voidability
geometryMultiSurface	Representation of the outer boundary by a MultiSurface, which may - in contrast to a solid representation - not be topologically clean. In particular, the ground surface may be missing.	GM_MultiSurface	

geometrySolid	Representation of the outer boundary by a solid.	GM_Solid	
terrainIntersection	Line or multi-line where the spatial object (Building, BuildingPart,.) touches the terrain representation.	GM_MultiCurve	voidable
horizontalGeometryEstimatedAccuracy	The estimated absolute positional accuracy of the (X,Y) coordinates of the geometry, in the INSPIRE official Coordinate Reference System. Absolute positional accuracy is defined as the mean value of the positional uncertainties for a set of positions where the positional uncertainties are defined as the distance between a measured position and what is considered as the corresponding true position.	Length	voidable
verticalGeometryEstimatedAccuracy	The estimated absolute positional accuracy of the Z-coordinate of the geometry, in the INSPIRE official Coordinate Reference System. Absolute positional accuracy is defined as the mean value of the positional uncertainties for a set of positions where the positional uncertainties are defined as the distance between a measured position	Length	voidable

	and what is considered as the corresponding true position.		
verticalGeometryReferenceBottom	Height level to which the lower height of the model (Z-value of the lower horizontal polygon) refers to.	ElevationReferenceValue	

Constraints of the data type BuildingGeometry3DLoD

Either the geometryMultiSurface or the geometrySolid attribute shall be provided.

2.5.2.2. Building Geometry3D LoD1 (BuildingGeometry3DLoD1)

Data type grouping the specific metadata attached to the 3D geometry, when provided by a LoD1 representation.

This type is a sub-type of BuildingGeometry3DLoD.
Attributes of the data type BuildingGeometry3DLoD1

Attribute	Definition	Type	Voidability
horizontalGeometryReference	Element captured by the (X,Y) coordinates of the LoD1 MultiSurface or Solid geometry.	HorizontalGeometryReferenceValue	
verticalGeometryReferenceTop	Height level to which the upper height of the model (Z-value of the upper horizontal polygon) refers to.	ElevationReferenceValue	

Constraints of the data type BuildingGeometry3DLoD1

The horizontalGeometryReference attribute shall not take the value entrancePoint, pointInsideBuilding or pointInsideCadastralParcel.

2.5.2.3. Building Geometry3D LoD2 (BuildingGeometry3DLoD2)

Data type grouping the specific metadata attached to the 3D geometry, when provided by a LoD2 representation.

This type is a sub-type of BuildingGeometry3DLoD.
Attributes of the data type BuildingGeometry3DLoD2

Attribute	Definition	Type	Voidability
horizontalGeometryReference	Element captured by the coordinates (X,Y) of the LoD2 MultiSurface or Solid geometry.	HorizontalGeometryReferenceValue	

Constraints of the data type BuildingGeometry3DLoD2

The horizontalGeometryReference attribute shall not take the value entrancePoint, pointInsideBuilding or pointInsideCadastralParcel.

2.6. **Theme-specific Requirements**

(1) By way of derogation from article 12(1), the value domain of spatial properties used in the *Buildings 3D* package shall not be restricted.

2.7. **Layers**

Layers for the spatial data theme Buildings

Layer Name	Layer Title	Spatial object type
BU.Building	Buildings	Building (of the Buildings 2D package)
BU.BuildingPart	Building Parts	BuildingPart (of the Buildings 2D package)

No layers are defined for the Buildings 3D package.

3. SOIL

3.1. **Spatial object types**

The following spatial object types are specified for the spatial data theme Soil:

— Derived Soil Profile
— Observed Soil Profile
— Profile Element
— Soil Body
— Soil Derived Object
— Soil Horizon
— Soil Layer
— Soil Plot
— Soil Profile
— Soil Site
— Soil Theme Coverage
— Soil Theme Descriptive Coverage

3.1.1. *Derived Soil Profile (DerivedSoilProfile)*

A non-point-located soil profile that serves as a reference profile for a specific soil type in a certain geographical area.

This type is a sub-type of SoilProfile.

Association roles of the spatial object type DerivedSoilProfile

Association role	Definition	Type	Voidability
isDerivedFrom	Link to one or more observed soil profiles from which this	ObservedSoilProfile	voidable

	profile has been derived.		

3.1.2. *Observed Soil Profile (ObservedSoilProfile)*

A representation of a soil profile found on a specific location which is described on the basis of observations in a trial pit or with a borehole.

This type is a sub-type of SoilProfile.
Association roles of the spatial object type ObservedSoilProfile

Association role	Definition	Type	Voidability
location	The location of an observed profile is the soilplot.	SoilPlot	

3.1.3. *Profile Element (ProfileElement)*

An abstract spatial object type grouping soil layers and / or horizons for functional/operational aims.

This type is abstract.
Attributes of the spatial object type ProfileElement

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
particleSizeFraction	Mineral part of the soil, fractioned on the basis of size (diameter), limits of the particles. It indicates how much of the mineral soil material is composed of soil particles of the specified size range.	ParticleSizeFractionType	voidable
profileElementDepthRange	Upper and lower depth of the profile element (layer or horizon) measured from the surface (0 cm) of a soil profile (in cm).	RangeType	
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable

endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable

Association roles of the spatial object type ProfileElement

Association role	Definition	Type	Voidability
isPartOf	Link to the soil profile which the profile element constitutes.	SoilProfile	
profileElementObservation	Observation of a soil property for characterizing the profile element (layer or horizon).	OM_Observation	voidable

Constraints of the spatial object type ProfileElement

To fill the featureOfInterest property of the profile element observations of a ProfileElement object, that same ProfileElement object shall be used.

The observedProperty of the profile element observation shall be specified using a value from the ProfileElementParameterNameValue code list.

The result of the profile element observation shall be of one of the following types: Number; RangeType; CharacterString.

3.1.4. *Soil Body (SoilBody)*

Part of the soil cover that is delineated and that is homogeneous with regard to certain soil properties and/or spatial patterns.

Attributes of the spatial object type SoilBody

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
geometry	The geometry defining the boundary of the Soil Body.	GM_MultiSurface	
soilBodyLabel	Label to identify the soil body according to the specified reference framework (metadata).	CharacterString	voidable
beginLifespanVersion	Date and time at which this version of the spatial object was	DateTime	voidable

	inserted or changed in the spatial data set.		
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable

Association roles of the spatial object type SoilBody

Association role	Definition	Type	Voidability
isDescribedBy	Link to a derived soil profile that characterizes the soil body, possibly in combination with other derived soil profiles. The association has additional properties as defined in the association class DerivedProfilePresenceInSoilBody.	DerivedSoilProfile	voidable

3.1.5. *Soil Derived Object (SoilDerivedObject)*

A spatial object type for representing spatial objects with soil-related property derived from one or more soil and possibly other non soil properties.

Attributes of the spatial object type SoilDerivedObject

Attribute	Definition	Type	Voidability
geometry	The geometry defining the soil derived object.	GM_Object	
inspireId	External object identifier of the spatial object.	Identifier	

Association roles of the spatial object type SoilDerivedObject

Association role	Definition	Type	Voidability
isBasedOnSoilDerivedObject	Link to a soil derived object on whose properties the derived value is based.	SoilDerivedObject	voidable
isBasedOnObservedSoilProfile	Link to an observed soil profile on whose properties the derived value is based.	ObservedSoilProfile	voidable

isBasedOnSoilBody	Link to a soil body on whose properties the derived value is based.	SoilBody	voidable
soilDerivedObjectObservation	Observation of a soil property for characterizing the soil derived object.	OM_Observation	voidable

Constraints of the spatial object type SoilDerivedObject

To fill the featureOfInterest property of the soil derived object observation, the same SoilDerivedObject object shall be used.

The observedProperty of the soil derived object observation shall be specified using a value from the SoilDerivedObjectParameterNameValue code list.

The result of the soil derived object observation shall be of one of the following types: Number; RangeType; CharacterString.

3.1.6. *Soil Horizon (SoilHorizon)*

Domain of a soil with a certain vertical extension, more or less parallel to the surface and homogeneous for most morphological and analytical characteristics, developed in a parent material layer through pedogenic processes or made up of in-situ sedimented organic residues of up-growing plants (peat).

This type is a sub-type of ProfileElement.
Attributes of the spatial object type SoilHorizon

Attribute	Definition	Type	Voidability
FAOHorizonNotation	Designation of the soil horizon.	FAOHorizonNotationType	voidable
otherHorizonNotation	Designation of the soil horizon according to a specific classification system.	OtherHorizonNotationType	voidable

3.1.7. *Soil Layer (SoilLayer)*

Domain of a soil with a certain vertical extension developed through non-pedogenic processes, displaying a change in structure and/or composition to possibly over- or underlying adjacent domains, or a grouping of soil horizons or other sub-domains with a special purpose.

This type is a sub-type of ProfileElement.
Attributes of the spatial object type SoilLayer

Attribute	Definition	Type	Voidability
layerType	Assignation of a layer according to the	LayerTypeValue	

	concept that fits its kind.		
layerRockType	Type of the material in which the layer developed.	LithologyValue	voidable
layerGenesisProcess	Last non-pedogenic process (geologic or anthropogenic) that coined the material composition and internal structure of the layer.	EventProcessValue	voidable
layerGenesisEnvironment	Setting in which the last non-pedogenic process (geologic or anthropogenic) that coined the material composition and internal structure of the layer took place.	EventEnvironmentValue	voidable
layerGenesisProcessState	Indication whether the process specified in layerGenesisProcess is on-going or ceased in the past.	LayerGenesisProcessStateValue	voidable

Constraints of the spatial object type SoilLayer

The attributes layerGenesisProcess, layerGenesisEnvironment, layerGenesisProcessState and layerRockType shall only be provided where the layerType is of the value “geogenic”.

3.1.8. *Soil Plot (SoilPlot)*

A spot where a specific soil investigation is carried out.
Attributes of the spatial object type SoilPlot

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
soilPlotLocation	A reference to a location on the earth; it can be a point location identified by coordinates or a description of the location using text or an identifier.	Location	

soilPlotType	Gives information on what kind of plot the observation of the soil is made on.	SoilPlotTypeValue	
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable

Association roles of the spatial object type SoilPlot

Association role	Definition	Type	Voidability
locatedOn	Link to the soil site on which the soil plot is located or to which the soil plot is belonging.	SoilSite	voidable
observedProfile	Link to the observed soil profile for which the soil plot provides location information.	ObservedSoilProfile	voidable

3.1.9. *Soil Profile (SoilProfile)*

A description of the soil that is characterized by a vertical succession of profile elements.

This type is abstract.

Attributes of the spatial object type SoilProfile

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
WRBSoilName	Identification of the soil profile.	WRBSoilNameType	voidable
otherSoilName	Identification of the soil profile according to a specific classification scheme.	OtherSoilNameType	voidable
localIdentifier	Unique identifier of the soil profile given	CharacterString	voidable

	by the data provider of the data set.		
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable
validFrom	The time when the phenomenon started to exist in the real world.	DateTime	voidable
validTo	The time from which the phenomenon no longer exists in the real world.	DateTime	voidable

Association roles of the spatial object type SoilProfile

Association role	Definition	Type	Voidability
isDescribedBy	The profile elements (layers and/or horizons) constituting the soil profile.	ProfileElement	voidable
soilProfileObservation	Observation of a soil property for characterizing the soil profile.	OM_Observation	voidable

Constraints of the spatial object type SoilProfile

To fill the featureOfInterest property of the soil profile observations of a SoilProfile object, that same SoilProfile object shall be used.

The observedProperty of the soil profile observation shall be specified using a value from the SoilProfileParameterNameValue code list.

The result of the soil profile observation shall be of one of the following types: Number; RangeType; CharacterString.

3.1.10. *Soil Site (SoilSite)*

An area within a larger survey, study or monitored area, where a specific soil investigation is carried out.

Attributes of the spatial object type SoilSite

Attribute	Definition	Type	Voidability

inspireId	External object identifier of the spatial object.	Identifier	
geometry	The geometry defining the soil site.	GM_Object	
soilInvestigationPurpose	Indication why a survey was conducted.	SoilInvestigationPurposeValue	
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable
validFrom	The time when the phenomenon started to exist in the real world.	DateTime	voidable
validTo	The time from which the phenomenon no longer exists in the real world.	DateTime	voidable

Association roles of the spatial object type SoilSite

Association role	Definition	Type	Voidability
isObservedOnLocation	Link to a location(s) where the soil site has been investigated.	SoilPlot	voidable
soilSiteObservation	Observation of a soil property for characterizing the soil site.	OM_Observation	voidable

Constraints of the spatial object type SoilSite

To fill the featureOfInterest property of the soil site observations of a SoilSite object, that same SoilSite object shall be used.

The observedProperty of the soil site observation shall be specified using a value from the SoilSiteParameterNameValue code list.

The result of the soil site observation shall be of one of the following types: Number; RangeType; CharacterString.

The result of the soil site observation shall be of type SoilObservationResult.

3.1.11. *Soil Theme Coverage (SoilThemeCoverage)*

A spatial object type that holds values for a property based on one or more soil and possibly non soil parameters within its spatial, temporal or spatiotemporal domain.

This type is a sub-type of RectifiedGridCoverage.
Attributes of the spatial object type SoilThemeCoverage

Attribute	Definition	Type	Voidability
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	
domainExtent	The attribute domainExtent shall contain the extent of the spatiotemporal domain of the coverage. Extents may be specified in both space and time.	EX_Extent	
validTimeFrom	The ValidTime specifies the time window for which measurements have been captured to calculate the thematic soil property relevant for that period. The start time defines when the period began.	Date	voidable
validTimeTo	The ValidTime specifies the time window for which measurements have been captured to calculate the thematic soil property relevant for that period. The end time defines when the period stopped.	Date	voidable

soilThemeParameter	A soil-related property (soil theme) that is represented by this coverage.	SoilThemeParameterType	

Association roles of the spatial object type SoilThemeCoverage

Association role	Definition	Type	Voidability
isDescribedBy	This association allows for a certain SoilThemeCoverage to have a related Coverage which does not have a meaning without the base coverage.	SoilThemeDescriptiveCoverage	voidable

Constraints of the spatial object type SoilThemeCoverage

The rangeSet values shall be of one of the following types: Number; RangeType; CharacterString.

3.1.12. *Soil Theme Descriptive Coverage (SoilThemeDescriptiveCoverage)*

A spatial object type that is associated to the soil theme coverage and holds additional information on values of a property of the soil theme coverage.

This type is a sub-type of RectifiedGridCoverage.

Attributes of the spatial object type SoilThemeDescriptiveCoverage

Attribute	Definition	Type	Voidability
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	
domainExtent	The attribute domainExtent shall contain the extent of the spatiotemporal domain of the coverage. Extents may be specified in both space and time.	EX_Extent	
soilThemeDescriptiveParameter	A descriptive property for the soil-	SoilThemeDescriptiveParameterType	

	related property (soil theme) that is represented by its associated SoilThemeCoverage.		

Association roles of the spatial object type SoilThemeDescriptiveCoverage

Association role	Definition	Type	Voidability
isDescribing	This association allows for a certain SoilThemeCoverage to have a related Coverage which does not have a meaning without the base coverage.	SoilThemeCoverage	

Constraints of the spatial object type SoilThemeDescriptiveCoverage

The rangeSet values shall be of one of the following types: Number; RangeType; CharacterString.

3.2. **Data types**

3.2.1. *Derived Profile Presence In Soil Body (DerivedProfilePresenceInSoilBody)*

Data type indicating the percentage range (expressed by a lower and upper boundary) occupied by the derived profile in the soil body.

This type is an association class.
Attributes of the data type DerivedProfilePresenceInSoilBody

Attribute	Definition	Type	Voidability
derivedProfilePercentageRange	Range that defines the minimum and maximum percentage of the area of the soil body represented by a specific derived soil profile.	RangeType	voidable

3.2.2. *FAO Horizon Notation Type (FAOHorizonNotationType)*

A classification of a horizon according to the Horizon classification system specified in *Guidelines for soil description, 4th edition*, Food and Agriculture Organization of the United Nations, Rome, 2006.
Attributes of the data type FAOHorizonNotationType

Attribute	Definition	Type	Voidability
FAOHorizonDiscontinuity	Number used to indicate a	Integer	

	discontinuity in the horizon notation.		
FAOHorizonMaster	Symbol of the master part of the horizon notation.	FAOHorizonMasterValue	
FAOPrime	A prime and double prime may be used to connotate the master horizon symbol of the lower of two (prime) or three (double prime) horizons having identical Arabic-numeral prefixes and letter combinations.	FAOPrimeValue	
FAOHorizonSubordinate	Designations of subordinate distinctions and features within the master horizons and layers are based on profile characteristics observable in the field and are applied during the description of the soil at the site.	FAOHorizonSubordinateValue	
FAOHorizonVertical	Order number of the vertical subdivision in the horizon notation.	Integer	
isOriginalClassification	Boolean value to indicate whether the FAO horizon notation was the original notation to describe the horizon.	Boolean	

3.2.3. *Other Horizon Notation Type (OtherHorizonNotationType)*

A classification of a soil horizon according to a specific classification system.
Attributes of the data type OtherHorizonNotationType

Attribute	Definition	Type	Voidability
horizonNotation	Notation characterizing the soil horizon according to a specified classification system.	OtherHorizonNotationTypeValue	

isOriginalClassification	Boolean value to indicate whether the specified horizon notation system was the original notation system to describe the horizon.	Boolean	

3.2.4. *Other Soil Name Type (OtherSoilNameType)*

An identification of the soil profile according to a specific classification scheme.
Attributes of the data type OtherSoilNameType

Attribute	Definition	Type	Voidability
soilName	Name of the soil profile according to a specific classification scheme.	OtherSoilNameTypeValue	
isOriginalClassification	Boolean value to indicate whether the specified classification scheme was the original classification scheme to describe the profile.	Boolean	

3.2.5. *Particle Size Fraction Type (ParticleSizeFractionType)*

Share of the soil that is composed of mineral soil particles of the size within the size range specified.
Attributes of the data type ParticleSizeFractionType

Attribute	Definition	Type	Voidability
fractionContent	Percentage of the defined fraction.	Number	
fractionParticleSizeRange	Upper and lower limit of the particle size of the defined fraction (expressed in µm).	RangeType	

3.2.6. *Range Type (RangeType)*

A range value defined by an upper limit and a lower limit.
Attributes of the data type RangeType

Attribute	Definition	Type	Voidability

upperValue	Value defining the upper limit of a specific property.	Real	
lowerValue	Value defining the lower limit of a specific property.	Real	
uom	The unit of measure that is used to express the values of the range.	UnitOfMeasure	

Constraints of the data type RangeType

At least one of the values shall not be empty.

3.2.7. *Soil Theme Descriptive Parameter Type (SoilThemeDescriptiveParameterType)*

A data type providing a descriptive property for the soil-related property (soil theme) that is represented by its associated SoilThemeCoverage.
Attributes of the data type SoilThemeDescriptiveParameterType

Attribute	Definition	Type	Voidability
soilThemeDescriptiveParameterName	Name of the parameter to provide extra information on the values of the related SoilThemeCoverage.	CharacterString	
uom	The unit of measure that is used to express the soilThemeDescriptiveParameter.	UnitOfMeasure	

3.2.8. *Soil Theme Parameter Type (SoilThemeParameterType)*

A soil-related property (soil theme) that is represented by this coverage. It is composed of a parameter name coming from a code list SoilDerivedObjectParameterNameValue and a Unit of Measure used for expressing that parameter.
Attributes of the data type SoilThemeParameterType

Attribute	Definition	Type	Voidability
soilThemeParameterName	Name of the parameter represented by the soilThemeCoverage.	SoilDerivedObjectParameterNameValue	
uom	the unit of measure that is used to express the soilThemeParameter.	UnitOfMeasure	

3.2.9. *WRB Qualifier Group Type (WRBQualifierGroupType)*

A data type to define the group of a qualifier and its possible specifier(s), its place and position with regard to the World Reference Base (WRB) Reference Soil Group (RSG) it belongs to according to *World reference base for soil resources 2006*, *first update 2007*, World Soil Resources Reports No. 103, Food and Agriculture Organization of the United Nations, Rome, 2007.

Attributes of the data type WRBQualifierGroupType

Attribute	Definition	Type	Voidability
qualifierPlace	Attribute to indicate the placement of the Qualifier with regard to the WRB reference soil group (RSG). The placement can be in front of the RSG i.e. “prefix” or it can be behind the RSG i.e. “suffix”.	WRBQualifierPlaceValue	
qualifierPosition	Number to indicate the position of a qualifier with regard to the WRB reference soil group (RSG) it belongs to and with regard to its placement to that (RSG) i.e. as a prefix or a suffix.	Integer	
WRBqualifier	Name element of WRB, second level of classification.	WRBQualifierValue	
WRBspecifier	Code that indicates the degree of expression of a qualifier or the depth range to which the qualifier applies.	WRBSpecifierValue	

3.2.10. *WRB Soil Name Type (WRBSoilNameType)*

An identification of the soil profile according to the *World reference base for soil resources 2006, first update 2007*, World Soil Resources Reports No. 103, Food and Agriculture Organization of the United Nations, Rome, 2007.

Attributes of the data type WRBSoilNameType

Attribute	Definition	Type	Voidability

WRBQualifierGroup	The group of a qualifier and its possible specifier(s), its place and position with regard to the WRBReferenceSoilGroup it belongs to.	WRBQualifierGroupType	
WRBReferenceSoilGroup	First level of classification of the World Reference Base for Soil Resources.	WRBReferenceSoilGroupValue	
isOriginalClassification	Boolean value to indicate whether the WRB classification system was the original classification system to describe the soil profile.	Boolean	

Association roles of the data type WRBSoilNameType

Association role	Definition	Type	Voidability
over	An association to indicate that in the WRB classification a soil profile covers another developed, older soil.	WRBSoilNameType	

3.3. Code lists

3.3.1. *FAO Horizon Master (FAOHorizonMasterValue)*

A code list of the master part of the horizon designation.

The allowed values for this code list comprise only the values specified in *Guidelines for soil description, 4th edition*, Food and Agriculture Organization of the United Nations, Rome, 2006, pp. 67-77.

3.3.2. *FAO Horizon Subordinate (FAOHorizonSubordinateValue)*

A code list of designations of subordinate distinctions and features within the master horizons and layers which are based on profile characteristics observable in the field and are applied during the description of the soil at the site.

The allowed values for this code list comprise only the values specified in *Guidelines for soil description, 4th edition*, Food and Agriculture Organization of the United Nations, Rome, 2006, pp. 67-77.

3.3.3. *FAO Prime (FAOPrimeValue)*

A prime and double prime may be used to connotate the master horizon symbol of the lower of two (prime) or three (double prime) horizons having identical Arabic-numeral prefixes and letter combinations.

The allowed values for this code list comprise only the values specified in *Guidelines for soil description, 4th edition*, Food and Agriculture Organization of the United Nations, Rome, 2006, pp. 67-77.

3.3.4. *Other Horizon Notation Type (OtherHorizonNotationTypeValue)*

A classification of a soil horizon according to a specific classification system.

The allowed values for this code list comprise any values defined by data providers.

3.3.5. *Other Soil Name Type (OtherSoilNameTypeValue)*

An identification of the soil profile according to a specific classification scheme.

The allowed values for this coded list comprise any values defined by data providers.

3.3.6. *Layer Genesis Process State (LayerGenesisProcessStateValue)*

An indication whether the process specified in layerGenesisProcess is ongoing or has ceased.

The allowed values for this code list comprise only the values specified in the table below.
Values for the code list LayerGenesisProcessStateValue

Value	Name	Definition
ongoing	on-going	The process has started in the past and is still active.
terminated	terminated	The process is no longer active.

3.3.7. *Layer Type (LayerTypeValue)*

A classification of a layer according to the concept that fits the purpose.

The allowed values for this code list comprise only the values specified in the table below.
Values for the code list LayerTypeValue

Value	Name	Definition
depthInterval	depth interval	Fixed depth range where soil is described and/or samples are taken.
geogenic	geogenic	Domain of the soil profile composed of material resulting from the same, non-pedogenic process, e.g. sedimentation, that might display an unconformity to possible over- or underlying adjacent domains.

subSoil	subsoil	Natural soil material below the topsoil and overlying the unweathered parent material.
topSoil	topsoil	Upper part of a natural soil that is generally dark coloured and has a higher content of organic matter and nutrients when compared to the (mineral) horizons below excluding the humus layer.

3.3.8. *Profile Element Parameter Name (ProfileElementParameterNameValue)*

Properties that can be observed to characterize the profile element.

The allowed values for this code list comprise the values specified in the table below and narrower values defined by data providers.

This code list is hierarchical.
Values for the code list ProfileElementParameterNameValue

Value	Name	Definition	Parent value
chemicalParameter	chemical parameter	Chemical parameters observed to characterize the profile element.	
physicalParameter	physical parameter	Physical parameters observed to characterize the profile element.	
biologicalParameter	biological parameter	Biological parameters observed to characterize the profile element.	
organicCarbonContent	organic carbon content	Portion of the soil measured as carbon in organic forms, excluding living macro and mesofauna and living plant tissue.	chemicalParameter
nitrogenContent	nitrogen content	total nitrogen content in the soil, including both the organic and inorganic forms.	chemicalParameter
pHValue	pH value	pH value of the profile element.	chemicalParameter

cadmiumContent	cadmium content	Cadmium content of the profile element.	chemicalParameter
chromiumContent	chromium content	Chromium content of the profile element.	chemicalParameter
copperContent	copper content	Copper content of the profile element.	chemicalParameter
leadContent	lead content	Lead content of the profile element.	chemicalParameter
mercuryContent	mercury content	Mercury content of the profile element.	chemicalParameter
nickelContent	nickel content	Nickel content of the profile element.	chemicalParameter

3.3.9. *Soil Derived Object Parameter Name (SoilDerivedObjectParameterNameValue)*

Soil-related properties that can be derived from soil and other data.

The allowed values for this code list comprise the values specified in the table below and narrower values defined by data providers.

This code list is hierarchical.
Values for the code list SoilDerivedObjectParameterNameValue

Value	Name	Definition	Parent value
chemicalParameter	chemical parameter	Chemical parameters that can be derived from other soil data.	
physicalParameter	physical parameter	Physical parameters that can be derived from other soil data.	
biologicalParameter	biological parameter	Biological parameters that can be derived from other soil data.	
potentialRootDepth	potential root depth	Potential depth of the soil profile where roots develop (in cm).	physicalParameter
availableWaterCapacity	available water capacity	Amount of water that a soil can store that is usable by plants, based on the potential root depth.	physicalParameter
carbonStock	carbon stock	The total mass of carbon in soil for a given depth.	chemicalParameters

waterDrainage	water drainage	Natural water drainage class of the soil profile.	physicalParameter
organicCarbonContent	organic carbon content	Portion of the soil measured as carbon in organic form, excluding living macro and mesofauna and living plant tissue.	chemicalParameter
nitrogenContent	nitrogen content	Total nitrogen content in the soil, including both the organic and inorganic forms.	chemicalParameter
pHValue	pH value	pH value of the soil derived object.	chemicalParameter
cadmiumContent	cadmium content	Cadmium content of the soil derived object.	chemicalParameter
chromiumContent	chromium content	Chromium content of the soil derived object.	chemicalParameter
copperContent	copper content	Copper content of the soil derived object.	chemicalParameter
leadContent	lead content	Lead content of the soil derived object.	chemicalParameter
mercuryContent	mercury content	Mercury content of the soil derived object.	chemicalParameter
nickelContent	nickel content	Nickel content of the soil derived object.	chemicalParameter
zincContent	zinc content	Zinc content of the soil derived object.	chemicalParameter

3.3.10. *Soil Investigation Purpose (SoilInvestigationPurposeValue)*

A code list of possible values indicating the reasons for conducting a survey.

The allowed values for this code list comprise only the values specified in the table below.
Values for the code list SoilInvestigationPurposeValue

Value	Name	Definition
generalSoilSurvey	general soil survey	Soil characterisation with unbiased selection of investigation location.

specificSoilSurvey	specific soil survey	Investigation of soil properties at locations biased by a specific purpose.

3.3.11. *Soil Plot Type (SoilPlotTypeValue)*

A code list of terms specifying on what kind of plot the observation of the soil is made.

The allowed values for this code list comprise only the values specified in the table below.
Values for the code list SoilPlotTypeValue

Value	Name	Definition
borehole	borehole	Penetration into the sub-surface with removal of soil/ rock material by using, for instance, a hollow tube-shaped tool, in order to carry out profile descriptions, sampling and/or field tests.
sample	sample	Exacavation where soil material is removed as a soil sample without doing any soil profile description.
trialPit	trial pit	Excavation or other exposition of the soil prepared to carry out profile descriptions, sampling and/or field tests.

3.3.12. *Soil Profile Parameter Name (SoilProfileParameterNameValue)*

Properties that can be observed to characterize the soil profile.

The allowed values for this code list comprise the values specified in the table below and narrower values defined by data providers.

This code list is hierarchical.
Values for the code list SoilProfileParameterNameValue

Value	Name	Definition	Parent value
chemicalParameter	chemical parameter	Chemical parameters observed to characterize the soil profile.	
physicalParameter	physical parameter	Physical parameters observed to characterize the soil profile.	

biologicalParameter	biological parameter	Biological parameters observed to characterize the soil profile.	
potentialRootDepth	potential root depth	Potential depth of the soil profile where roots develop (in cm).	physicalParameter
availableWaterCapacity	available water capacity	Amount of water that a soil can store that is usable by plants, based on the potential root depth.	physicalParameter
carbonStock	carbon stock	The total mass of carbon in soil for a given depth.	chemicalParameters
waterDrainage	water drainage	Natural internal water drainage class of the soil profile.	physicalParameter

3.3.13. *Soil Site Parameter Name (SoilSiteParameterNameValue)*

Properties that can be observed to characterize the soil site.

The allowed values for this code list comprise the values specified in the table below and narrower values defined by data providers.

Values for the code list SoilSiteParameterNameValue

Value	Name	Definition
chemicalParameter	chemical parameter	Chemical parameters observed to characterize the soil site.
physicalParameter	physical parameter	Physical parameters observed to characterize the soil site.
biologicalParameter	biological parameter	Biological parameters observed to characterize the soil site.

3.3.14. *WRB Qualifier Place (WRBQualifierPlaceValue)*

A code list of values indicating the placement of the Qualifier with regard to the WRB reference soil group (RSG). The placement can be in front of the RSG i.e. “prefix” or it can be behind the RSG i.e. “suffix”.

The allowed values for this code list comprise only the values “prefix” and “suffix”, according to the naming rules specified in *World reference base for soil resources 2006, first update 2007*, World Soil Resources Reports No. 103, Food and Agriculture Organization of the United Nations, Rome, 2007.

3.3.15. *WRB Qualifiers (WRBQualifierValue)*

A code list of possible qualifiers of the World Reference Base for Soil Resources.

The allowed values for this code list comprise only the values specified in *World reference base for soil resources 2006, first update 2007*, World Soil Resources Reports No. 103, Food and Agriculture Organization of the United Nations, Rome, 2007.

3.3.16. *WRB Reference Soil Group (RSG) (WRBReferenceSoilGroupValue)*

A code list of possible reference soil groups (i.e. first level of classification of the World Reference Base for Soil Resources).

The allowed values for this code list comprise only the values specified in *World reference base for soil resources 2006, first update 2007*, World Soil Resources Reports No. 103, Food and Agriculture Organization of the United Nations, Rome, 2007.

3.3.17. *WRB Specifiers (WRBSpecifierValue)*

A code list of possible specifiers.

The allowed values for this code list comprise only the values specified in *World reference base for soil resources 2006, first update 2007*, World Soil Resources Reports No. 103, Food and Agriculture Organization of the United Nations, Rome, 2007.

3.4. **Theme-specific Requirements**

(1) The values of the first level hierarchical code lists ProfileElementParameterNameValue, SoilDerivedObjectParameterNameValue, SoilProfileParameterNameValue, SoilSiteParameterNameValue (chemicalParameter, biologicalParameter, physicalParameter) serve only the purpose of structuring; onlythe lower-level values shall be used.

(2) When an additional descriptive parameter for the soil derived object is needed, the parameter attribute of the OM_Observation spatial object type shall be used.

(3) Only one Other Horizon Notation Type classification shall be used for a dataset.

(4) Only one Other Soil Name Type classification shall be used for a dataset.

3.5. **Layers**

Layers for the spatial data theme Soil

Layer Name	Layer Title	Spatial object type
SO.SoilBody	Soils	SoilBody
SO.ObservedSoilProfile	Observed Soil Profiles	ObservedSoilProfile, SoilPlot
SO.SoilSite	Soil Sites	SoilSite
SO. <CodeListValue>[a]	<human readable name>	SoilDerivedObject (basePhenomenon: SoilDerivedObjectParameterNameValue)
Example: SO. OrganicCarbonContent	Example: Organic Carbon Content	

a One layer shall be made available for each code list value, in accordance with Art. 14(3).

b One layer shall be made available for each code list value, in accordance with Art. 14(3).

SO.<CodeListValue>Coverage[a]	<human readable name>[b]	SoilThemeCoverage (soilThemeParameter / soilThemeParameterName: SoilDerivedObjectParameterNameValue)
Example: SO. OrganicCarbonContentCoverage	Example: Organic Carbon Content Coverage	

a One layer shall be made available for each code list value, in accordance with Art. 14(3).

b One layer shall be made available for each code list value, in accordance with Art. 14(3).

4. LAND USE

4.1. **Definitions**

In addition to the definitions set out in Article 2, the following definition shall apply:

(1) "existing land use" means an objective depiction of the use and functions of a territory as it has been and effectively still is in real life.

(2) "gridded existing land use" means an objective depiction as a regular orthorectified grid (image) of the use and functions of a territory as it has been and effectively still is in real life.

(3) "Hierarchical INSPIRE Land Use Classification System (HILUCS)" means a multi-level classification system for Land Use whose use is mandatory at the most appropriate level.

(4) "minimum unit of interest" means the smallest polygonal area for the land use objects taken into consideration in the data set.

(5) "planned land use" means spatial plans, defined by spatial planning authorities, depicting the possible utilization of the land in the future.

(6) "sampled existing land use" means an objective depiction of the use and functions of a territory [as it has been and effectively still is] in real life as observed in sampled location.

(7) "zoning" means a partition where the planned land use is depicted, making explicit the rights and prohibitions regarding new constructions that apply within each partition element.

4.2. **Structure of the Spatial Data Theme Land Use**

The types specified for the spatial data theme Land Use are structured in the following packages:
— Land Use Nomenclature
— Existing land use
— Gridded existing land use
— Sampled existing land use
— Planned land use

4.3. **Land Use Nomenclature**

4.3.1. *Data types*

4.3.1.1. HILUCS Percentage (HILUCSPercentage)

Percentage of land use object that is covered by this HILUCS presence.
Attributes of the data type HILUCSPercentage

Attribute	Definition	Type	Voidability
hilucsValue	HILUCS category for this HILUCS percentage.	HILUCSValue	
percentage	Percentage of land use object that is covered by this HILUCS presence.	Integer	

4.3.1.2. HILUCS Presence (HILUCSPresence)

Presence of one or several HILUCS values in an area, indicated either as the percentage covered for each value or as the values listed in their order of importance.

This type is a union type.
Attributes of the union type HILUCSPresence

Attribute	Definition	Type	Voidability
orderedList	ordered list of land use value presence	HILUCSValue	
percentageList	list of percentage of land use value	HILUCSPercentage	

4.3.1.3. Specific Percentage (SpecificPercentage)

Percentage of a land use object that is covered by a specific presence.
Attributes of the data type SpecificPercentage

Attribute	Definition	Type	Voidability
specificValue	Specific value category for this specific percentage.	LandUseClassificationValue	
percentage	Percentage of a land use object that is covered by this specific presence.	Integer	

4.3.1.4. Specific Presence (SpecificPresence)

Presence of one or several land use classification values in an area according to the code list provided by the data provider, indicated either as the percentage covered for each value or as the values listed in their order of importance.

This type is a union type.
Attributes of the union type SpecificPresence

Attribute	Definition	Type	Voidability

orderedList	ordered list of land use value	LandUseClassificationValue	
percentageList	list of percentage of land use value	SpecificPercentage	

4.3.2. *Code lists*

4.3.2.1. HILUCS (HILUCSValue)

List of land use categories to be used in INSPIRE Land Use.

The allowed values for this code list comprise only the values specified in the table below.

This code list is hierarchical.
Values for the code list HILUCSValue

Value	Name	Definition	Parent value
1_PrimaryProduction	primary production	Areas where the manufacturing industries aggregate, package, purify or process the primary products close to the primary producers are included, especially if the raw material is unsuitable for sale or difficult to transport long distances.	
1_1_Agriculture	agriculture	Production of crop (plants, fungi, etc.) and animal products for food, for sale, own consumption or industrial purposes. It includes plants for biofuels and growing of crops in open fields as well as in greenhouses. Also set-aside fallow land in the crop rotation belongs to this class. The preparation of products for the primary markets is included, field construction (e.g. agricultural land terracing, drainage, preparing rice	1_PrimaryProduction

		paddies etc.) as well as landscape care and maintenance.	
1_1_1_CommercialAgriculturalProduction	commercial agricultural production	Arable land, permanent crops and grasslands in agricultural use (both sown and natural grassland). The products can be used for human or animal feed or bio-energy production.	1_1_Agriculture
1_1_2_FarmingInfrastructure	farming infrastructure	Farm dwellings, animal husbandry infrastructure (animal dwellings and processing infrastructure linked to farms), manure storage and other farming infrastructure (e.g. buildings linked to plant handling and processing in farms).	1_1_Agriculture
1_1_3_AgriculturalProductionForOwnConsumption	agricultural production for own consumption	Production of plants or animals for own consumption (kitchen gardens, private animal sheds etc.)	1_1_Agriculture
1_2_Forestry	forestry	Production of round wood and other wood based primary products. Besides the production of timber, forestry activities result in products that undergo little processing, such as firewood, charcoal and round wood used in an unprocessed form (e.g. pit-props, pulpwood etc.). Forest tree nurseries, storage and transport areas linked to logging, trees and woody plants for bio fuels are also included. These	1_PrimaryProduction

		activities can be carried out in natural or planted forests.	
1_2_1_ForestryBasedOnShortRotation	Short rotation forestry	Forestry areas where the rotation period of a tree generation is 50 years or less, after which the forest is regenerated naturally or artificially with planting or seeding. Tree plantations (pulp-wood production) and wood used for biomass production also belong to this class.	1_2_Forestry
1_2_2_ForestryBasedOnIntermediateOrLongRotation	Forestry based on intermediate or long rotation	Forestry areas where the rotation period of a tree generation is over 50 years after which the forest is regenerated naturally or artificially with planting or seeding.	1_2_Forestry
1_2_3_ForestryBasedOnContinuousCover	Forestry based on continuous cover	Forestry areas where forest management and regeneration is based on continuous growing of trees.	1_2_Forestry
1_3_MiningAndQuarrying	mining and quarrying	Mining and quarrying in the form of the extraction of minerals and materials occurring naturally as solids (coal, ores, gravel, sand, salt), liquids (petroleum), gases (natural gas) or biomass (peat). Extraction can be achieved by different methods such as underground or surface mining or extraction, well operation etc.	1_PrimaryProduction
1_3_1_MiningOfEnergyProducingMaterials	Mining of energy producing materials	Mining and extraction of	1_3_MiningAndQuarrying

		coal, lignite, peat, petroleum, natural gas, uranium and thorium.	
1_3_2_MiningOfMetalOres	Mining of metal ores	Mining of iron and other non-ferrous metal ores (except uranium and thorium).	1_3_MiningAndQuarrying
1_3_3_OtherMiningAndQuarrying	Other mining and quarrying	Quarrying of stone, sand, clay, chemical, fertilizer minerals, the production of salt and other mining and quarrying.	1_3_MiningAndQuarrying
1_4_AquacultureAndFishing	aquaculture and fishing	Professional fishing and aquaculture.	1_PrimaryProduction
1_4_1_Aquaculture	aquaculture	Fish hatcheries and managed grow-out sites.	1_4_AquacultureAndFishing
1_4_2_ProfessionalFishing	professional fishing	Water areas used for professional fishing.	1_4_AquacultureAndFishing
1_5_OtherPrimaryProduction	other primary production	Professional hunting, gathering of wild growing non-wood forestry products, husbandry of migratory animals and any other primary production not included in the values 1_1_Agriculture, 1_2_Forestry, 1_3_MiningAndQuarrying, 1_4_AquacultureAndFishing or any of their narrower values.	1_PrimaryProduction
1_5_1_Hunting	hunting	Professional hunting. The areas can be fenced or open.	1_5_OtherPrimaryProduction
1_5_2_ManagementOfMigratoryAnimals	Management of migratory animals	Keeping and feeding migratory animals such as reindeer and deer.	1_5_OtherPrimaryProduction
1_5_3_PickingOfNaturalProducts	Picking of natural products	Picking up natural non wood based products such as non-	1_5_OtherPrimaryProduction

		cultivated berries, mosses, lichen etc.) for commercial purposes	
2_SecondaryProduction	secondary production	Industrial and manufacturing activities which take the output of the primary sector and manufacture finished goods and intermediate products for other business. It also includes the storage and transport areas linked directly to manufacturing activities. The branches of industries covered by this class are the processing of food, textile, leather, wood and wood product, pulp, paper, publishing, printing, recording, petroleum and other fuels, chemicals, chemical products, man-made fibers, rubber and plastic products, non metallic mineral products, basic metals and metal products, fabricated metal product, machinery and equipment, electrical and optical equipments, transport equipment and furniture.	
2_1_RawIndustry	raw industry	Industrial activities transforming the output primary sector into manufactured raw products.	2_SecondaryProduction
2_1_1_ManufacturingOfTextileProducts	manufacturing of textile products	Preparation and spinning of textile fibres, sewing	2_1_RawIndustry

		threads, textile weaving, tanning and dressing of leather.	
2_1_2_ManufacturingOfWoodAndWoodBasedProducts	Manufacturing of wood and wood based products	Sawmilling and planning of wood, manufacturing of veneer sheets, plywood, laming boards, fibre boards, carpentry and joinery, cork, straw and plaiting products.	2_1_RawIndustry
2_1_3_ManufacturingOfPulpPaperAndPaperProducts	Manufacturing of pulp paper and paper products	Manufacturing of pulp, paper, paperboard, paper based sanitary goods, wallpapers.	2_1_RawIndustry
2_1_4_ManufacturingOfCokeRefinedPetroleumProductsAndNuclearFuel	Manufacturing of coke refined petroleum products and nuclear fuel	Manufacturing coke, refined petroleum and processing of nuclear fuel.	2_1_RawIndustry
2_1_5_ManufacturingOfChemicalsChemicalProductsManMadeFibers	Manufacturing chemicals chemical products man made fibers	Manufacturing of basic chemicals, agro-chemicals, paints, pharmaceuticals, soap, detergents, glues, other chemical products and man-made fibers.	2_1_RawIndustry
2_1_6_ManufacturingOfBasicMetalsAndFabricatedMetals	Manufacturing of basic metals and fabricate metals	Manufacturing, processing and casting of iron, steel and basic precious and non-ferrous metals. It also includes the manufacturing of metal products.	2_1_RawIndustry
2_1_7_ManufacturingOfNonMetallicMineralProducts	Manufacturing of non-metallic mineral products	Manufacturing glass, bricks, ceramics, concrete, cement, lime, plaster, cutting and shaping of stone and other non-metallic mineral products.	2_1_RawIndustry

2_1_8_ManufacturingOfRubberPlasticProducts	Manufacturing of rubber plastic products	Manufacturing of tyres, tubes, plastic packing good and other rubber and plastic products.	2_1_RawIndustry
2_1_9_ManufacturingOfOtherRawMaterials	Manufacturing of other raw materials	Production of raw materials not included in any other of the narrower values of 2_1_RawIndustry.	2_1_RawIndustry
2_2_HeavyEndProductIndustry	Heavy end product industry	Activities transforming raw manufactured products into heavy manufactured products.	2_SecondaryProduction
2_2_1_ManufacturingOfMachinery	Manufacturing of machinery	Manufacturing of production, agricultural, forestry and other machinery (excluding aircrafts and vehicles), weapons, ammunition and domestic appliances.	2_2_HeavyEndProductIndustry
2_2_2_ManufacturingOfVehiclesAndTransportEquipment	Manufacturing of vehicles and transport equipment	Manufacturing of motor vehicles, aircrafts, spacecrafts, ships, boats, railway and tramway equipment, motorcycles, bicycles and other transport equipment.	2_2_HeavyEndProductIndustry
2_2_3_ManufacturingOfOtherHeavyEndProducts	Manufacturing of other heavy end products	Production of other heavy end products not included in any other of the narrower values of 2_2_HeavyEndProductIndustry.	2_2_HeavyEndProductIndustry
2_3_LightEndProductIndustry	Light end product industry	Activities transforming raw manufactured products into light manufactured products.	2_SecondaryProduction

2_3_1_ManufacturingOfFoodBeverages	Manufacturing of food beverages and tobacco products	Manufacturing of meat, fish, fruit and vegetables, oils and fats or derived products, dairy products, grain mill and starch products, prepared animal feeds, other food products, beverages and tobacco products.	2_3_LightEndProductIndustry
2_3_2_ManufacturingOfClothesAndLeather	Manufacturing of clothes and leather	Manufacturing of wearing apparel, leather clothes, dressing, accessories, dyeing of fur and manufacturing of fur products, luggage, bags, saddlery and footwear.	2_3_LightEndProductIndustry
2_3_3_PublishingAndPrinting	Publishing and printing	Publishing and printing of books, newspapers, journals and the publishing and reproduction of sound recordings.	2_3_LightEndProductIndustry
2_3_4_ManufacturingOfElectricalAndOpticalEquipment	Manufacturing of electrical and optical equipment	Manufacturing of office machinery, computers, motors, generators, electricity distribution and control apparatus, wires and cables, accumulators, batteries, lamps, radios, TVs, phones, electronic valves and tubes, medical, precision and optical instruments, watches and other electrical and optical equipment.	2_3_LightEndProductIndustry
2_3_5_ManufacturingOfOtherLightEndProducts	Manufacturing of other light end products	Manufacturing of furniture, jewellery, musical instruments, sports goods, games, toys and other miscellaneous products.	2_3_LightEndProductIndustry

2_4_EnergyProduction	energy production	Production of energy.	2_SecondaryProduction
2_4_1_NuclearBasedEnergyProduction	nuclear based energy production	Nuclear power plants.	2_4_EnergyProduction
2_4_2_FossilFuelBasedEnergyProduction	fossil fuel based energy production	Power plants using fossil fuels (coal, oil, natural gas, peat and other fossil fuels).	2_4_EnergyProduction
2_4_3_BiomassBasedEnergyProduction	biomass based energy production	Combustion power plants using biomass based fuels (wood and other plant based solid and liquid fuels, biogas and other biofuels).	2_4_EnergyProduction
2_4_4_RenewableEnergyProduction	renewable energy production	Hydro-, solar, wind, thermal (aero, geo and hydro), tidal, wave etc. energy and other renewable energy (except biomass energy, which is covered by the value 2_4_3_BiomassBasedEnergyProduction).	2_4_EnergyProduction
2_5_OtherIndustry	other industry	Production of other industrial products not included in any other of the narrower values of 2_SecondaryProduction.	2_SecondaryProduction
3_TertiaryProduction	tertiary production	Services that are products for other businesses and consumers both private and public services. It encompasses whole sale and retail trade, repair services, hotels and restaurants, financial services, real estate, business services, rental services, public administration, defence and social security, education, health and social work and other	

		community, social and personal services.	
3_1_CommercialServices	commercial services	Provision of commercial services.	3_TertiaryProduction
3_1_1_WholesaleAndRetailTradeAndRepairOfVehiclesAndPersonalAndHouseholdGoods	wholesale and retail trade and repair of vehicles and personal and household goods	Wholesale and retail sale of motor vehicles, fuel, agricultural raw materials, live animals, ores, metals, chemicals, timber, machinery, ships, furniture, household goods, textiles, food, beverages, tobacco products, pharmaceutical products, second hand goods, other products, waste and scrap. This class also includes the repair of vehicles, personal and household goods.	3_1_CommercialServices
3_1_2_RealEstateServices	real estate services	Provision of real estate and renting services.	3_1_CommercialServices
3_1_3_AccommodationAndFoodServices	accommodation and food services	Hotel, holiday village, camping site, restaurant, bar and canteen services.	3_1_CommercialServices
3_1_4_OtherCommercialServices	other commercial services	Other commercial services not included in any other of the narrower values of 3_1_CommercialServices, such as beauty and wellbeing services.	3_1_CommercialServices
3_2_FinancialProfessionalAndInformationServices	financial, professional and information services	Provision of financial, professional or information services.	3_TertiaryProduction
3_2_1_FinancialAndInsuranceServices	financial and insurance services	Provision of banking, credit, insurance, and other financial services.	3_2_FinancialProfessionalAndInformationS
3_2_2_ProfessionalTechnicalAndScientificServices	professional, technical and scientific services	IT consulting, data processing,	3_2_FinancialProfessionalAndInformationS

		research and development, legal, accountancy, business management, architectural, engineering, advertising, testing, investigation, consulting, and other professional services.	
3_2_3_InformationAndCommunicationServices	Information and communication services	Publishing, sound recording, TV-programme, motion picture, radio broadcasting, post and telecommunication, computer and data processing services.	3_2_FinancialProfessionalAndInformationS
3_2_4_AdministrativeAndSupportServices	Administrative and support services	Travel agency, rental, cleaning, security and other administrative and support services.	3_2_FinancialProfessionalAndInformationS
3_2_5_OtherFinancialProfessionalAndInformationServices	Other financial, professional and information services	Other financial, professional and information services not included in any other of the narrower values of 3_2_FinancialProfessionalAndInformationServices.	3_2_FinancialProfessionalAndInformationS
3_3_CommunityServices	community services	Provision of services for the community.	3_TertiaryProduction
3_3_1_PublicAdministrationDefenceAndSocialSecurityServices	public administration, defence and social security services	Provision of generic administrative, defence, justice, public security, fire and compulsory social security services.	3_3_CommunityServices
3_3_2_EducationalServices	educational services	Provision of primary, secondary, higher, adult and other educational services.	3_3_CommunityServices
3_3_3_HealthAndSocialServices	health and social services	Provision of human and animal health and social work services.	3_3_CommunityServices
3_3_4_ReligiousServices	religious services	Provision of religious services.	3_3_CommunityServices

3_3_5_OtherCommunityServices	other community services	Other community services e.g. cemeteries.	3_3_CommunityServices
3_4_CulturalEntertainmentAndRecreationalServices	cultural and entertainment and recreational services	Provision of cultural, entertainment or recreational services.	3_TertiaryProduction
3_4_1_CulturalServices	cultural services	Provision of artistic, library, museum, zoos, botanical gardens, historical sites and other cultural services.	3_4_CulturalEntertainmentAndRecreationa
3_4_2_EntertainmentServices	entertainment services	Amusement parks, theme parks, betting and gambling activities and other entertainment services.	3_4_CulturalEntertainmentAndRecreationa
3_4_3_SportsInfrastructure	sports infrastructure	Sports infrastructure, such as stadiums, sports halls, swimming pools, fitness facilities, ski resorts, golf courses and other sports infrastructure.	3_4_CulturalEntertainmentAndRecreationa
3_4_4_OpenAirRecreationalAreas	open air recreational areas	Open air recreational areas, e.g. urban parks, playgrounds, national parks, and natural areas used for recreational purposes.	3_4_CulturalEntertainmentAndRecreationa
3_4_5_OtherRecreationalServices	other recreational services	Other recreational services not included in any of the other narrower values of 3_4_CulturalEntertainmentAndRecreationalServices.	3_4_CulturalEntertainmentAndRecreationa
3_5_OtherServices	other services	Provision of other services not included in any of the other narrower values of 3_TertiaryProduction.	3_TertiaryProduction
4_TransportNetworksLogisticsAndUtilities	transport networks logistics and utilities	Basic infrastructure and networks of the society. All the other sectors are using the infrastructure and networks to	

		produce the goods and services and they are also vital for residential areas. It includes water supply, collection, treatment and recycling of sewage and waste, transport, networks, storage and communication.	
4_1_TransportNetworks	transport networks	Infrastructure related to transport.	4_TransportNetworksLogisticsAndUtilities
4_1_1_RoadTransport	road transport	Areas used for road transport, e.g. roads, parking areas, service stations.	4_1_TransportNetworks
4_1_2_RailwayTransport	railway transport	Areas used for rail transport, e.g. rails, railway stations and yards etc.	4_1_TransportNetworks
4_1_3_AirTransport	air transport	Areas used for air transport, e.g. airports and related services.	4_1_TransportNetworks
4_1_4_WaterTransport	water transport	Areas used for water transport, e.g. ports, rivers, docks and related services.	4_1_TransportNetworks
4_1_5_OtherTransportNetwork	other transport network	Areas used for other transport not included in any of the other narrower values of 4_1_TransportNetworks.	4_1_TransportNetworks
4_2_LogisticalAndStorageServices	logistical and storage services	Areas used for separate (not linked directly to industries) storage services and logistical services.	4_TransportNetworksLogisticsAndUtilities
4_3_Utilities	utilities	Infrastructure related to utilities.	4_TransportNetworksLogisticsAndUtilities
4_3_1_ElectricityGasAndThermalPowerDistributionServices	electricity, gas and thermal power distribution services	Areas used for distribution of electricity, gas and thermal energy, including the pipelines used for transporting oil and gas.	4_3_Utilities

4_3_2_WaterAndSewageInfrastructure	water and sewage infrastructure	Areas used for the extraction, collection, purification storage and distribution of water, collection and treatment of sewage (including the pipelines).	4_3_Utilities
4_3_3_WasteTreatment	waste treatment	Areas used for the collection, treatment and recycling of waste.	4_3_Utilities
4_3_4_OtherUtilities	other utilities	Areas used for other utilities not included in any of the other narrower values of 4_3_Utilities.	4_3_Utilities
5_ResidentialUse	residential use	Areas used dominantly for housing of people. The forms of housing vary significantly between, and through, residential areas. These areas include single family housing, multi-family residential, or mobile homes in cities, towns and rural districts if they are not linked to primary production. It permits high density land use and low density uses. This class also includes residential areas mixed with other non-conflicting uses and other residential areas.	
5_1_PermanentResidentialUse	permanent residential use	Residential areas dominated by detached houses surrounded by gardens and/or yards, a mix of single houses, semi-detached houses, terraced houses, town	5_ResidentialUse

		houses, row houses and blocks of flats used as permanent residence.	
5_2_ResidentialUseWithOtherCompatibleUses	residential use with other compatible uses	Residential areas mixed with other non-conflicting uses (e.g. various services, light industries etc.).	5_ResidentialUse
5_3_OtherResidentialUse	other residential use	Areas dominantly used for temporary dwellings (camps of migrant people), holiday residences (summer cottages), etc.	5_ResidentialUse
6_OtherUses	other uses	Areas not included in the values 1_PrimaryProduction, 2_SecondaryProduction 3_TertiaryProduction 4_TransportNetworksLogisticsAndUtilities, 5_ResidentialUse or any of their narrower values, or areas under construction.	
6_1_TransitionalAreas	transitional areas	Areas under construction. This class is used only for existing land use and not for planned land use.	6_OtherUses
6_2_AbandonedAreas	abandoned areas	Abandoned agricultural, residential and industrial, transport and basic infrastructure areas. The area belongs to the abandoned class if it is not in use and can no longer be used for the original purpose without major reparation or renovation work.	6_OtherUses
6_3_NaturalAreasNotInOtherEconomicUse	natural areas not in other economic use	Areas which are in natural state and not	6_OtherUses

		in other economic use.	
6_3_1_LandAreasNotInOtherEconomicUse	Other areas not in other economic use	Areas which are in natural state, e.g. woodland, shrubland, grassland, wetland, bare land, which are not in any other socio-economic use. This includes the areas with a planning status “natural area”. Protected areas can belong to this class or, if other uses are present, also to other classes. Protected areas are always tagged with a supplementary regulation status “protected area”.	6_3_NaturalAreasNotInOtherEconomicUse
6_3_2_WaterAreasNotInOtherEconomicUse	Water areas not in other economic use	Water areas which are not in any other socio-economic use.	6_3_NaturalAreasNotInOtherEconomicUse
6_4_AreasWhereAnyUseAllowed	areas where any use allowed	Areas where any use is allowed in the Planned land use (PLU).	6_OtherUses
6_5_AreasWithoutAnySpecifiedPlannedUse	areas without any specified planned use	Areas where no use is specified in the Planned land use (PLU), e.g. areas outside the scope of the plan.	6_OtherUses
6_6_NotKnownUse	not known use	Areas where the land use is unknown.	6_OtherUses

4.3.2.2. Land Use Classification (LandUseClassificationValue)

List of land use categories to be used in INSPIRE Land Use and agreed at a national or local level.

The allowed values for this code list comprise any values defined by data providers.

4.4. **Existing Land Use**

4.4.1. *Spatial object types*

The package existing land use contains the following spatial object types:

— Existing Land Use Data Set

— Existing Land Use Object

4.4.1.1. Existing Land Use Data Set (ExistingLandUseDataSet)

An existing land use data set is a collection of areas for which information on existing (present or past) land uses is provided.

Attributes of the spatial object type ExistingLandUseDataSet

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
extent	Boundary of the geometrical union of all the instances of the spatial object typeExistingLandUseObject.	GM_MultiSurface	
name	Human readable name of the data set.	CharacterString	
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable
validFrom	The time when the existing land use data set started to exist in the real world.	DateTime	voidable
validTo	The time from which this existing land use data set no longer exists in the real world.	DateTime	voidable

Association roles of the spatial object type ExistingLandUseDataSet

Association role	Definition	Type	Voidability
member	Reference to the LandUseObjects which belong to this ExistingLandUseDataSet	ExistingLandUseObject	

4.4.1.2. Existing Land Use Object (ExistingLandUseObject)

An existing land use object describes the land use of an area having a homogeneous combination of land use types.

Attributes of the spatial object type ExistingLandUseObject

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
geometry	Geometric representation of spatial area covered by this object.	GM_MultiSurface	
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
hilucsPresence	Actual presence of a land use category according to HILUCS within the object.	HILUCSPresence	voidable
hilucsLandUse	Land use HILUCS classes that are present in this existing land use object.	HILUCSValue	
specificLandUse	Land Use Category according to the nomenclature specific to this data set.	LandUseClassificationValue	voidable
specificPresence	Actual presence of a land use category within the object.	SpecificPresence	voidable
observationDate	The observation date associated to a description.	Date	voidable
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable
validFrom	The time when the phenomenon started to exist in the real world.	DateTime	voidable
validTo	The time from which the phenomenon no	DateTime	voidable

	longer exists in the real world.		

Association roles of the spatial object type ExistingLandUseObject

Association role	Definition	Type	Voidability
dataSet	Existing land use data set to which this land use object belongs.	ExistingLandUseDataSet	

4.5. Gridded Land Use

4.5.1. *Spatial object types*

The package gridded land use contains the spatial object type Existing Land Use Grid.

4.5.1.1. Existing Land Use Grid (ExistingLandUseGrid)

An existing land use grid is a collection of pixels for which information on existing (present or past) land use is provided. The HILUCS system shall be used for classification.

This type is a sub-type of RectifiedGridCoverage.
Attributes of the spatial object type ExistingLandUseGrid

Attribute	Definition	Type	Voidability
name	Human readable name of the data set.	CharacterString	
inspireId	External object identifier of the spatial object.	Identifier	
extent	Contains the extent of the data set.	EX_Extent	
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable
validFrom	First date at which this grid is a valid representation of reality.	DateTime	voidable
validTo	The time from which the grid is no longer	DateTime	voidable

	a valid representation of reality.		

Constraints of the spatial object type ExistingLandUseGrid

The rangeSet values shall be of type CategoryOrNilReason.

Range is based on either HILUCS or on a specific land use classification system defined by the data provider.

4.6. **Sampled Land Use**

4.6.1. *Spatial object types*

The package sampled land use contains the following spatial object types:

— Existing Land Use Sample

— Sampled Existing Land Use Data Set

4.6.1.1. Existing Land Use Sample (ExistingLandUseSample)

Description of the existing land use that is present at the specific location.
Attributes of the spatial object type ExistingLandUseSample

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
location	Location where the land use sample is taken.	GM_Point	
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
hilucsLandUse	Land use HILUCS classes that are present in this existing land use sample.	HILUCSValue	
hilucsPresence	Actual presence of a land use category according to HILUCS within the object.	HILUCSPresence	voidable
specificLandUse	Land Use Category according to the nomenclature specific to this data set.	LandUseClassificationValue	voidable
observationDate	The observation date associated to a description.	Date	voidable

specificPresence	Actual presence of a land use category within the object.	SpecificPresence	voidable
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable
validFrom	The time when the phenomenon started to exist in the real world.	DateTime	voidable
validTo	The time from which the phenomenon no longer exists in the real world.	DateTime	voidable

Association roles of the spatial object type ExistingLandUseSample

Association role	Definition	Type	Voidability
dataset	Data set to which this sample belongs.	SampledExistingLandUseDataSet	

4.6.1.2. Sampled Existing Land Use Data Set (SampledExistingLandUseDataSet)

A sampled existing land use data set is a collection of locations for which information on existing (present or past) land uses is provided.

Attributes of the spatial object type SampledExistingLandUseDataSet

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
extent	The convex hull of all the instances of the spatial object type ExistingLandUseSample.	GM_MultiSurface	
name	Human readable name of the data set.	CharacterString	
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifespanVersion	Date and time at which this version of the spatial object was	DateTime	voidable

	superseded or retired in the spatial data set.		
validFrom	First date at which this data set is valid in reality.	DateTime	voidable
validTo	The time from which the data set no longer exists in the real world.	DateTime	voidable

Association roles of the spatial object type SampledExistingLandUseDataSet

Association role	Definition	Type	Voidability
member	Reference to the members of the sampled existing land use data set.	ExistingLandUseSample	

4.7. Planned Land Use

4.7.1. *Spatial object types*

The package planned land use contains the following spatial object types:
— Official Documentation
— Spatial Plan
— Supplementary Regulation
— Zoning Element

4.7.1.1. Official Documentation (OfficialDocumentation)

The official documentation that composes the spatial plan; it may be composed of the applicable legislation, the regulations, cartographic elements, descriptive elements that may be associated with the complete spatial plan, a zoning element or a supplementary regulation. In some Member States the actual textual regulation will be part of the data set (and can be put in the regulationText attribute), in other Member States the text will not be part of the data set and will be referenced via a reference to a document or a legal act. At least one of the three voidable values shall be provided.

Attributes of the spatial object type OfficialDocumentation

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
legislationCitation	Reference to the document that contains the text of the regulation.	LegislationCitation	voidable
regulationText	Text of the regulation.	CharacterString	voidable

planDocument	Citation of scanned plans and structural drawings, which may be geo-referenced or not.	DocumentCitation	voidable

Constraints of the spatial object type OfficialDocumentation

At least one of the attributes legislationCitation, regulationText or planDocument shall be populated with a non-void value.

4.7.1.2. Spatial Plan (SpatialPlan)

A set of documents that indicates a strategic direction for the development of a given geographic area, states the policies, priorities, programmes and land allocations that will implement the strategic direction and influences the distribution of people and activities in spaces of various scales. Spatial plans may be developed for urban planning, regional planning, environmental planning, landscape planning, national spatial plans, or spatial planning at the Union level.
Attributes of the spatial object type SpatialPlan

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
extent	Geometrical union of all the instances of the spatial object typesZoningElement and SupplementaryRegulation. When a SpatialPlan is only composed of a document, the attribute extent is the border of the cartographic image that contains the land use information (i.e. the land use map extent).	GM_MultiSurface	
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
officialTitle	Official title of the spatial plan.	CharacterString	
levelOfSpatialPlan	Level of the administrative units covered by the plan.	LevelOfSpatialPlanValue	

endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable
validFrom	First date at which this spatial plan is valid in reality.	DateTime	voidable
validTo	The time from which the spatial plan no longer exists in the real world.	DateTime	voidable
alternativeTitle	Alternative (unofficial) title of the spatial plan.	CharacterString	voidable
planTypeName	Name of the type of plan that the Member State has given to the plan.	PlanTypeNameValue	
processStepGeneral	General indication of the step of the planning process that the plan is undergoing.	ProcessStepGeneralValue	voidable
backgroundMap	Identification of the background map that has been used for constructing this plan.	BackgroundMapValue	voidable
ordinance	Reference to relevant administrative ordinance.	OrdinanceValue	voidable

Association roles of the spatial object type SpatialPlan

Association role	Definition	Type	Voidability
officialDocument	Link to the official documents that relate to the spatial plan.	OfficialDocumentation	voidable
member	Reference to the ZoningElements which belong to this SpatialPlan	ZoningElement	
restriction	Links to supplementary regulations providing information and/or	SupplementaryRegulation	

	limitations on the use of land/water that supplements the zoning as part of this spatial plan.		

4.7.1.3. Supplementary Regulation (SupplementaryRegulation)

A spatial object (point, line or polygon) of a spatial plan that provides supplementary information and/or limitation on the use of land/water, necessary for spatial planning reasons or to formalise external rules defined in legal text.

Attributes of the spatial object type SupplementaryRegulation

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
geometry	Geometry of the piece of land on which the supplementary regulation applies.	GM_Object	
validFrom	First date at which this version of this supplementary regulation is valid in reality.	DateTime	voidable
validTo	The date from which the supplementary regulation is no longer valid.	DateTime	voidable
regulationNature	Legal nature of the land use regulation.	RegulationNatureValue	
specificSupplementaryRegulation	Reference to a category of supplementary regulation provided in a specific nomenclature of supplementary regulations provided by the data provider.	SpecificSupplementaryRegulationValue	voidable
supplementaryRegulation	Code of the supplementary regulation from the hierarchical supplementary regulation code	SupplementaryRegulationValue	

	list agreed at the European level.		
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable
processStepGeneral	General indication of the step of the planning process that the supplementary regulation is undergoing.	ProcessStepGeneralValue	voidable
backgroundMap	Identification of the background map that has been used for constructing the supplementary regulation.	BackgroundMapValue	voidable
dimensioningIndication	Specifications about the dimensioning that are added to the dimensioning of the zoning elements that overlap the geometry of the supplementary regulation.	DimensioningIndicationValue	voidable
inheritedFromOtherPlans	Indication whether the supplementary regulation is inherited from another spatial plan.	Boolean	voidable
specificRegulationNature	Legal nature of the land use regulation from a national perspective.	CharacterString	voidable
name	Official name of the supplementary regulation	CharacterString	voidable

Association roles of the spatial object type SupplementaryRegulation

Association role	Definition	Type	Voidability

officialDocument	Link to the textual regulations that correspond to this supplementary regulation.	OfficialDocumentation	voidable
plan	Link to the plan this supplementary regulation is part of.	SpatialPlan	

4.7.1.4. Zoning Element (ZoningElement)

A spatial object which is homogeneous regarding the permitted uses of land based on zoning which separate one set of land uses from another.

Attributes of the spatial object type ZoningElement

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
geometry	Geometry of this zoning element.	GM_MultiSurface	
validFrom	The date when the phenomenon started to exist in the real world.	DateTime	voidable
validTo	The time from which the phenomenon no longer exists in the real world.	DateTime	voidable
hilucsLandUse	Land use class that is dominant in this land use object.	HILUCSValue	
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
hilucsPresence	Actual presence of a land use category within the object.	HILUCSPresence	voidable
specificLandUse	Land Use Category according to the nomenclature specific to this data set.	LandUseClassificationValue	voidable

specificPresence	Actual presence of a land use category within the object.	SpecificPresence	voidable
regulationNature	Legal nature of the land use indication.	RegulationNatureValue	
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable
processStepGeneral	General indication of the step of the planning process that the zoning element is undergoing.	ProcessStepGeneralValue	voidable
backgroundMap	Identification of the background map that has been used for constructing this zoning element.	BackgroundMapValue	voidable
dimensioningIndication	Specifications about the dimensioning of the urban developments.	DimensioningIndicationValue	voidable

Association roles of the spatial object type ZoningElement

Association role	Definition	Type	Voidability
plan	SpatialPlan which this ZoningElement belongs to.	SpatialPlan	
officialDocument	Textual Regulation that is part of this zoning element.	OfficialDocumentation	voidable

4.7.2. *Data types*

4.7.2.1. Background Map (BackgroundMapValue)

Information regarding the map that has been used as a background in the definition of a spatial plan, a zoning element or a supplementary regulation.
Attributes of the data type BackgroundMapValue

Attribute	Definition	Type	Voidability
backgroundMapDate	Date of the background map used.	DateTime	

backgroundMapReference	Reference to the background map that has been used.	CharacterString	
backgroudMapURI	URI referring to service that provides background map.	URI	voidable

4.7.2.2. Character-valued Dimensioning Indication (DimensioningIndicationCharacterValue)

Dimensioning indication whose value is of type CharacterString.

This type is a sub-type of DimensioningIndicationValue.
Attributes of the data type DimensioningIndicationCharacterValue

Attribute	Definition	Type	Voidability
value	Value of the dimension indications.	CharacterString	

4.7.2.3. Integer-valued Dimensioning Indication (DimensioningIndicationIntegerValue)

Dimensioning indication whose value is of type integer.

This type is a sub-type of DimensioningIndicationValue.
Attributes of the data type DimensioningIndicationIntegerValue

Attribute	Definition	Type	Voidability
value	Value of the dimension indications.	Integer	

4.7.2.4. Measure-valued Dimensioning Indication (DimensioningIndicationMeasureValue)

Dimensioning indication whose value is a measure.

This type is a sub-type of DimensioningIndicationValue.
Attributes of the data type DimensioningIndicationMeasureValue

Attribute	Definition	Type	Voidability
value	Value of the dimension indications.	Measure	

4.7.2.5. Real-valued Dimensioning Indication (DimensioningIndicationRealValue)

Dimensioning indication whose value is a floating point number.

This type is a sub-type of DimensioningIndicationValue.
Attributes of the data type DimensioningIndicationRealValue

Attribute	Definition	Type	Voidability
value	Value of the dimension indications.	Real	

4.7.2.6. Dimensioning Indication (DimensioningIndicationValue)

Specifications about the dimensioning of the urban developments.
Attributes of the data type DimensioningIndicationValue

Attribute	Definition	Type	Voidability
indicationReference	Description of the dimension indication.	CharacterString	

4.7.2.7. Ordinance (OrdinanceValue)

Reference to administrative ordinance. Ordinance is a regulation/rule that is adopted by an authority that is legally mandated to take such ordinance.
Attributes of the data type OrdinanceValue

Attribute	Definition	Type	Voidability
ordinanceDate	Date of the relevant administrative ordinance.	DateTime	
ordinanceReference	Reference to relevant administrative ordinance.	CharacterString	

4.7.3. *Code lists*

4.7.3.1. Level Of Spatial Plan (LevelOfSpatialPlanValue)

Territorial hierarchy of plan.

The allowed values for this code list comprise only the values specified in the table below.
Values for the code list LevelOfSpatialPlanValue

Value	Name	Definition
infraLocal	infra-local	A plan that covers only part of a municipality.
local	local	Plan at municipal level, corresponding to the lower level of administration equivalent to LAU2 as laid down in Annex III to Regulation (EC) No 1059/2003 of the

a OJ L 154, 21.6.2003, p. 1.

		European Parliament and of the Council[a].
supraLocal	supra-local	A plan that overlaps several municipalities (entirely or partially).
infraRegional	infra-regional	A plan that overlaps several infra-administrative units in one administrative region.
regional	regional	Plan at regional level (equivalent to NUTS2 of EUROSTAT nomenclature of statistical units as established in Regulation (EC) No 1059/2003).
supraRegional	supra-regional	A plan that overlaps several administrative regions.
national	national	Plan at Member State level.
other	other	Other level of spatial plan.

a OJ L 154, 21.6.2003, p. 1.

4.7.3.2. Process Step General (ProcessStepGeneralValue)

General indication of the step in the planning process that the plan is undergoing.

The allowed values for this code list comprise only the values specified in the table below.
Values for the code list ProcessStepGeneralValue

Value	Name	Definition
adoption	in the process of adoption	Plan in the process of being legally adopted.
elaboration	under elaboration	Plan under elaboration.
legalForce	legally binding or active	Plan already adopted and being legally binding or active.
obsolete	obsolete	Plan having been substituted by another plan, or not being any longer in force.

4.7.3.3. Regulation Nature (RegulationNatureValue)

Legal nature of the land use indication.

The allowed values for this code list comprise only the values specified in the table below.
Values for the code list RegulationNatureValue

Value	Name	Definition

bindingForDevelopers	binding for developers	The land use indication is binding only for the entity in charge of developing an area.
bindingOnlyForAuthorities	binding only for authorities	The land use indication is binding only for certain authorities.
generallyBinding	generally binding	The land use indication is binding for everybody.
nonBinding	not binding	The land use indication is not binding.
definedInLegislation	defined in legislation	The land use indication is defined by the legislation.

4.7.3.4. Plan Type Name (PlanTypeNameValue)

Types of plans as defined in the Member States. The allowed values for this code list comprise any values defined by data providers.

4.7.3.5. Specific Supplementary Regulation (SpecificSupplementaryRegulationValue)

Category of supplementary regulation provided in a specific nomenclature of supplementary regulations provided by the data provider.

The allowed values for this code list comprise any values defined by data providers.

4.7.3.6. Supplementary Regulation (SupplementaryRegulationValue)

Types of conditions and constraints in spatial plans.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Land Use.

4.8. **Theme-specific Requirements**

(1) Any Land Use data sets shall assign to each polygon, pixel or location a land use type from the Hierarchical INSPIRE Land Use Classification System (HILUCS) at the most appropriate and detailed level of the hierarchy.

(2) The spatial object type CoverageByDomainAndRange must only be of subtypes of GridCoverage.

(3) Where a zone has been established to regulate planned land use and defined within a legally binding spatial plan, it falls within the scope of the Land Use theme and shall be encoded as a SupplementaryRegulation. However, if the zone has been established by legislative requirement but not defined within a legally binding spatial plan, then it shall be encoded as a ManagementRestrictionOrRegulationZone.

(4) Based on the INSPIRE horizontal coordinate reference system, each Member State shall define a projection or a set of projections suitable for working with the underlying cadastral parcels on national territory and cross-border areas where applicable for a SpatialPlan. A projection is suitable if it offers few linear alterations (ideally less than 50 cm per 500 m) and so enables users to measure distances and surfaces in

meaningful way. This projection or set of projections has to be defined in agreement with neighbouring countries. This projection or set of projections must be well documented to allow the conversion from and to the common Coordinate Reference System. The documentation shall be provided according to ISO 19111, which states how a projected coordinate reference system must be described.

(5) The use of the common metadata element "Spatial Resolution" (according to Section 6.2 of part B of the Annex to Regulation (EC) No 1205/2008) shall be restricted to providing a resolution distance.

(6) Data providers shall include the following keywords in addition to the mandatory keywords defined in Regulation (EC) No 1205/2008/EC:

(a) One of the following language-neutral keywords to describe the type of land use data set: ExistingLandUse, SampledExistingLandUse, GriddedExistingLandUse, PlannedLandUse.

(b) If the data set contains SpatialPlan objects, one keyword describing the level of the administrative units covered by the plan, as defined in the LevelOfSpatialPlan code list.

4.9. **Layers**

Layers for the spatial data theme Land Use

Layer Name	Layer Title	Spatial object type
LU.ExistingLandUse	Existing Land Use objects according to the Hierarchical INSPIRE Land Use Classification System at the most appropriate level	ExistingLandUseObject
LU.SpatialPlan	Extent of a spatial plan	SpatialPlan
LU.ZoningElement	Spatial planning Zoning objects according to the Hierarchical INSPIRE Land Use Classification System at the most appropriate level	ZoningElement
LU.SupplementaryRegulation	Regulations that supplement the zoning and that affect the use of land	SupplementaryRegulation

5. HUMAN HEALTH AND SAFETY

5.1. **Spatial object types**

The following spatial object types are specified for the spatial data theme Human Health and Safety:

— Health Statistical Data
— Biomarker
— Disease
— General Health Statistic
— Health Services Statistic

— Environmental Health Determinant Measure
— Environmental Health Determinant Statistical Data

5.1.1. *Health Statistical Data (HealthStatisticalData)*

Human health related data, from recorded diseases and related health problems (according to internationally accepted code lists, such as ICD-10), expressed as morbidity and mortality, to data on general health status (BMI, self perceived health, etc.), data on health care services (health care expenditure, day cases, etc.), and data on biomarkers; these are statistical indices aggregated at different statistical units, collected/reported in different population groups. Inclusion of human biomonitoring data provides an opportunity to explore potential direct or indirect links between human health and the environment.

This type is abstract.
Association roles of the spatial object type HealthStatisticalData

Association role	Definition	Type	Voidability
aggregationUnit	Statistical unit to which health statistical data refers.	StatisticalUnit	

5.1.2. *Biomarker (Biomarker)*

A biomarker (of exposure) is the concentration of a chemical, its metabolite or the product of an interaction between a chemical and some target molecule or cell that is measured in a compartment in an organism.

This type is a sub-type of HealthStatisticalData.
Attributes of the spatial object type Biomarker

Attribute	Definition	Type	Voidability
biomarkerName	It is the unique identifier for a biomarker, providing information on the chemical that is determined and the matrix in which the chemical was determined.	BiomarkerType	
biomarkerStatisticalParameter	The statistical summary of a human biomonitoring study, representing the most important statistical features of a biomarker measured in that particular study.	BiomarkerStatisticalParameterType	

referencePeriod	The time period to which data is referred to.	ReferencePeriodType	
ageRange	Age interval of a specific subpopulation expressed as starting age and an interval, both alternatively expressed in years, months or weeks.	AgeRangeType	
gender	Gender of the population considered.	GenderValue	

Association roles of the spatial object type Biomarker

Association role	Definition	Type	Voidability
refersTo	biomarker data described by metadata	BiomarkerThematicMetadata	

5.1.3. *Disease (Disease)*

Statistical information related to pathologies linked directly or indirectly to the quality of environment.

This type is a sub-type of HealthStatisticalData.

Attributes of the spatial object type Disease

Attribute	Definition	Type	Voidability
ageRange	Age interval of a specific subpopulation expressed as starting age and an interval, both alternatively expressed in years, months or weeks.	AgeRangeType	voidable
diseaseMeasure	Different ways how data on diseases and related health problems in a population can be reported.	DiseaseMeasure	
gender	Gender of the population considered.	GenderValue	voidable

referencePeriod	The time period to which data is referred to.	ReferencePeriodType	
pathology	Pathology type.	ICDValue	
COD	Data on causes of death (COD) that provide information on mortality patterns and form a major element of public health information.	CODValue	

Constraints of the spatial object type Disease

The COD attribute shall be provided only if the diseaseMeasureType attribute of diseaseMeasure takes a value that represents mortality.

At least one of pathology and COD attributes must not be empty.

5.1.4. *General Health Statistic (GeneralHealthStatistics)*

Numbers about some aspects of health related to a population or an area. For the purpose of this data model, "general health" data include issues such as self-perceived health, demographic distribution of various health problems, smokers, etc., expressed as raw numbers, rates, percentage, stratified by gender, age, and/or socio-economic, cultural, ethnic or other factors.

This type is a sub-type of HealthStatisticalData.
Attributes of the spatial object type GeneralHealthStatistics

Attribute	Definition	Type	Voidability
ageRange	Age interval of a specific subpopulation expressed as starting age and an interval, both alternatively expressed in years, months or weeks.	AgeRangeType	voidable
gender	Gender of the population considered.	GenderValue	voidable
generalHealthName	Health status indicator.	GeneralHealthTypeValue	
generalHealthValue	A numerical expression of a health index/indicator.	Real	
referencePeriod	The time period to which data is referred to.	ReferencePeriodType	

5.1.5. *Health Services Statistic (HealthServicesStatistic)*

Health Care/Services statistical data on NUTS 1 and 2 level and municipality.

This type is a sub-type of HealthStatisticalData.
Attributes of the spatial object type HealthServicesStatistic

Attribute	Definition	Type	Voidability
healthServiceType	Type of health services.	HealthServicesTypeValue	
healthServiceValue	Number of the type considered.	Real	
referencePeriod	The time period to which data is referred to.	ReferencePeriodType	

5.1.6. *Environmental Health Determinant Measure (EnvHealthDeterminantMeasure)*

A raw measurement performed at some place that is of interest for human health determinant analysis.
Attributes of the spatial object type EnvHealthDeterminantMeasure

Attribute	Definition	Type	Voidability
location	The location of the measurement.	GM_Object	
type	The type of environmental health determinant.	EnvHealthDeterminantTypeValue	
measureTime	The time period when the measure has been performed.	TM_Period	
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable
validFrom	The time when the information will start being used.	DateTime	voidable
validTo	The time when the information will stop being used.	DateTime	voidable

5.1.7. *Environmental Health Determinant Statistical Data (EnvHealthDeterminantStatisticalData)*

A statistical data of interest for human health determinant analysis, resulting from the aggregation of raw measurements located within a statistical unit.

This type is a sub-type of HealthStatisticalData.
Attributes of the spatial object type EnvHealthDeterminantStatisticalData

Attribute	Definition	Type	Voidability
statisticalMethod	The type of statistical method used to aggregate the raw measurement data on the statistical unit.	StatisticalAggregationMethodValue	
type	The type of environmental health determinant.	EnvHealthDeterminantTypeValue	

Association roles of the spatial object type EnvHealthDeterminantStatisticalData

Association role	Definition	Type	Voidability
measure	The measures	Measure	

5.2. **Data types**

5.2.1. *Age (Age)*

Persons' age can be expressed in various ways (for instance, years for adults, months or weeks for infants).

This type is a union type.
Attributes of the union type Age

Attribute	Definition	Type	Voidability
month	Time period.	Integer	
week	Time period.	Integer	
year	Time period.	Integer	

5.2.2. *Age Range (AgeRangeType)*

Age interval of a specific subpopulation expressed as starting age and an interval, both alternatively expressed in years, months or weeks.
Attributes of the data type AgeRangeType

Attribute	Definition	Type	Voidability
startAge	Beginning of age interval.	Age	

range	Duration of age interval.	Age	

5.2.3. *Biomarker Statistical Parameter (BiomarkerStatisticalParameterType)*

A set of statistical features of a biomarker measured for one specific biomarker.
Attributes of the data type BiomarkerStatisticalParameterType

Attribute	Definition	Type	Voidability
geometric Mean	The geometric mean.	Measure	
CI95ofGM	95 % confidence interval of the geometric mean.	Measure	
P50	The 50th Percentile, or median value. Value below which 50 percent of the observations may be found.	Measure	
P90	The 90th percentile. The value below which 90 percent of the observations may be found.	Measure	
P95	The 95th percentile. The value below which 95 percent of the observations may be found.	Measure	
CI95ofP95	95 % confidence interval of the 95th percentile.	Measure	
maximum	The highest biomarker value determined in an individual participant in the biomonitoring survey.	Measure	
pinLOD	Proportion of individuals with undetectable levels of tested parameter (below limit of detection).	Real	
LOQ	Limit of quantification.	Real	

numberOfParticipants	The number of participants that have provided samples that have contributed to the calculation of the biomarker statistical parameter.	Integer	

5.2.4. *Biomarker Thematic Metadata (BiomarkerThematicMetadata)*

Thematic Metadata describing the purpose of the study,the target population and the characteristic of the studied areas.

Attributes of the data type BiomarkerThematicMetadata

Attribute	Definition	Type	Voidability
studyType	The aim of the study (hypothesis driven, general population survey, opportunistic) when these choices are predefined.	PT_FreeText	
areaType	The characteristics of the sampling area (urban, rural, semi-urban) when these choices are predefined in a human biomonitoring study.	PT_FreeText	
specificSubPopulation	The characteristics of the sampled population with respect to age, gender, and other population characteristics when these choices are predefined in a human biomonitoring survey.	PT_FreeText	
mean Age	The mean age of the specific sub population.	Age	

Association roles of the data type BiomarkerThematicMetadata

Association role	Definition	Type	Voidability

describedBy	Metadata that are linked to biomarker data	Biomarker	

5.2.5. *Biomarker Type (BiomarkerType)*

A biomarker is defined both by a quantified or determined chemical (e.g. cadmium, lead) or its metabolite, and a matrix (e.g. blood, urine) that is used for quantification; for example - cadmium in urine, lead in blood.

Attributes of the data type BiomarkerType

Attribute	Definition	Type	Voidability
chemical	Identification of the compound by name or abbreviation, chemical formula, CAS-PubChem or any other number that is quantified by the measurement.	ChemicalValue	
matrix	Type of biological material or body compartment that is sampled to determine or quantify a biomarker.	MatrixValue	

5.2.6. *Disease Measure (DiseaseMeasure)*

Different ways in which data on diseases and related health problems in a population can be reported.

Attributes of the data type DiseaseMeasure

Attribute	Definition	Type	Voidability
diseaseMeasureType	Different ways how data on diseases and related health problems in a population can be reported.	DiseaseMeasureTypeValue	
value	Value of the measured disease indicator.	Real	

5.2.7. *Reference Period (ReferencePeriodType)*

The time period to which the data refer.

Attributes of the data type ReferencePeriodType

Attribute	Definition	Type	Voidability
startDate	Start of reference period.	Date	
endDate	End of reference period.	Date	

5.2.8. *Concentration Measure (Concentration)*

A measure of concentration of a specified component in a specified media.

This type is a sub-type of Measure.
Attributes of the type Concentration

Attribute	Definition	Type	Voidability
uom	The unit of measure.	UomConcentration	

5.2.9. *Unit Of Measure For Concentration (UomConcentration)*

A unit of measure for concentration of a specified component within a specified media.

This type is a sub-type of UnitOfMeasure.
Attributes of the type UomConcentration

Attribute	Definition	Type	Voidability
component	The component whose concentration is measured.	ComponentTypeValue	
media	The media in which the concentration is measured.	MediaTypeValue	

5.2.10. *Noise Measure (NoiseMeasure)*

A measure of noise intensity.

This type is a sub-type of Measure.
Attributes of the type NoiseMeasure

Attribute	Definition	Type	Voidability
uom	A unit of measure for noise intensity.	UomNoise	

5.2.11. *Noise Unit Of Measure (UomNoise)*

A unit of measure for noise intensity.

This type is a sub-type of UnitOfMeasure.
Attributes of the type UomNoise

Attribute	Definition	Type	Voidability
source	The noise source type.	NoiseSourceTypeValue	

5.3. **Code lists**

5.3.1. *Cause Of Death (CODValue)*

Data on causes of death (COD) provide information on mortality patterns and form a major element of public health information.

The allowed values for this code list comprise only the values specified in the European Shortlist for Causes of Death published by Eurostat.

5.3.2. *Chemical (ChemicalValue)*

Name of the chemical substance.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Human Health and Safety.

5.3.3. *Environment Health Component Type (ComponentTypeValue)*

Particular component type (chemical substance, biological species, etc) whose concentration in an environmental media is measured.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Human Health and Safety, in particular for components related to ground water quality, lake water quality, river water quality, ambient air quality and bathing water quality.

5.3.4. *Disease Measure Type (DiseaseMeasureTypeValue)*

Different ways how data on diseases and related health problems in a population can be reported.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Human Health and Safety.

5.3.5. *Environment Health Determinant Type (EnvHealthDeterminantTypeValue)*

Type of environmental health determinant.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Human Health and Safety.

5.3.6. *General Health Type (GeneralHealthTypeValue)*

Type of health status indicator.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Human Health and Safety.

5.3.7. *Health Services Type (HealthServicesTypeValue)*

Type of health care indicator.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Human Health and Safety.

5.3.8. *International Classification Of Diseases (ICDValue)*

Disease as defined in the International Classification of Diseases, 10th revision.

The allowed values for this code list comprise only the values specified in the 10th Revision of the International Statistical Classification of Diseases and Related Health Problems, published by the World Health Organization.

5.3.9. *Matrix (MatrixValue)*

Type of human tissue or compartment for biomarker measurement.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Human Health and Safety.

5.3.10. *Environmental Health Media Type (MediaTypeValue)*

The media in which the concentration of a health component is measured.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Human Health and Safety.

5.3.11. *Noise Source Type (NoiseSourceTypeValue)*

The noise source type values.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Human Health and Safety.

5.3.12. *Statistical Aggregation Method (StatisticalAggregationMethodValue)*

The types of statistical methods used to aggregate raw measurement data on the statistical unit.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Human Health and Safety.

5.4. **Theme-specific Requirements**

(1) Statistical information on the spatial data theme Human Health and Safety must refer to spatial objects as defined in the spatial data theme Statistical Units.

(2) Where possible, the ICDValue code list shall be used to identify the disease name.

(3) Raw measurement data shall be based on ISO/TS 19103:2005.

(4) Health determinant statistical data shall be modelled as health statistical data characterized by a measurement value based on ISO/TS 19103:2005 and a statistical aggregation method.

(5) Health determinant coverages shall be represented using the spatial object types defined in Section 6 of Annex I. For continuous coverages, a subtype of the CoverageByDomainAndRange class shall be used whose domain is restricted to measurement values based on ISO/TS 19103:2005.

5.5. **Layers**

Layers for the spatial data theme Human Health and Safety

Layer Name	Layer Title	Spatial object type
HH.HealthStatisticalData	Health statistical data	StatisticalUnit
HH.HealthDeterminantMeasure	Health determinant measure	EnvHealthDeterminantMeasure

6. UTILITY AND GOVERNMENTAL SERVICES

6.1. **Structure of the Spatial Data Theme Utility and Governmental Services**

The types specified for the spatial data theme Utility and Governmental Services are structured in the following packages:

— Common Utility Network Elements
— Electricity Network
— Oil-Gas-Chemicals Network
— Sewer Network
— Thermal Network
— Water Network
— Environmental Management Facilities
— Administrative And Social Governmental Services

6.2. **Common Utility Network Elements**

6.2.1. *Spatial object types*

The package Common Utility Network Elements contains the following spatial object types:

— Utility Network
— Utility Network Element
— Utility Link Set
— Utility Node
— Utility Node Container
— Appurtenance
— Cabinet
— Cable
— Duct
— Manhole

— Pipe
— Pole
— Tower

6.2.1.1. Utility Network (UtilityNetwork)

Collection of network elements that belong to a single type of utility network.
Attributes of the spatial object type UtilityNetwork

Attribute	Definition	Type	Voidability
utilityNetworkType	The type of utility network or the utility network theme.	UtilityNetworkTypeValue	
authorityRole	Parties authorized to manage a utility network, such as maintainers, operators or owners.	RelatedParty	
utilityFacilityReference	Reference to a facility activity complex that is linked to this utility network.	ActivityComplex	voidable
disclaimer	Legal text describing confidentiality clauses applying to the utility network information.	PT_FreeText	voidable

Association roles of the spatial object type UtilityNetwork

Association role	Definition	Type	Voidability
networks	A single sub-network that can be considered as part of a higher-order utility network.	UtilityNetwork	voidable

Constraints of the spatial object type UtilityNetwork

All utility networks shall have an external object identifier.

6.2.1.2. Utility Network Element (UtilityNetworkElement)

Abstract base type representing a utility network element in a utility network. Every element in a utility network provides some function that is of interest in the utility network.

This type is abstract.
Attributes of the spatial object type UtilityNetworkElement

Attribute	Definition	Type	Voidability

currentStatus	The status of a utility object with regards to its completion and use.	ConditionOfFacilityValue	voidable
validFrom	The time when the utility network element started to exist in the real world.	DateTime	voidable
validTo	The time from which the utility network element no longer exists in the real world.	DateTime	voidable
verticalPosition	Vertical position of the utility object relative to ground.	VerticalPositionValue	voidable
utilityFacilityReference	Reference to an activity complex that is linked (related) to this utility network element.	ActivityComplex	voidable
governmentalServiceReference	Reference to a governmental service object that is linked (related) to this utility network element.	GovernmentalService	voidable

6.2.1.3. Utility Link Set (UtilityLinkSet)

A collection of link sequences and or individual links that has a specific function or significance in a utility network.

This type is a sub-type of UtilityNetworkElement.

This type is a sub-type of LinkSet.

This type is abstract.

Attributes of the spatial object type UtilityLinkSet

Attribute	Definition	Type	Voidability
utilityDeliveryType	Utility delivery network e.g. transport, distribution, collection.	UtilityDeliveryTypeValue	voidable
warningType	Overground visible warning mechanism used to indicate an	WarningTypeValue	voidable

	underground utility network element.		

Constraints of the spatial object type UtilityLinkSet

A utility link set must be composed of links and or link sequences that all belong to the same network.

All utility link sets shall have an external object identifier.

6.2.1.4. Utility Link (UtilityLink)

A linear spatial object that describes the geometry and connectivity of a utility network between two points in the network.

This type is a sub-type of UtilityNetworkElement.

This type is a sub-type of Link.

6.2.1.5. Utility Link Sequence (UtilityLinkSequence)

A linear spatial object, composed of an ordered collection of utility links, which represents a continuous path in the utility network without any branches. The element has a defined beginning and end and every position on the utility link sequence is identifiable with one single parameter.

This type is a sub-type of UtilityNetworkElement.

This type is a sub-type of LinkSequence.

6.2.1.6. Utility Node (UtilityNode)

A point spatial object which is used for connectivity.

This type is a sub-type of UtilityNetworkElement.

This type is a sub-type of Node.

This type is abstract.

Constraints of the spatial object type UtilityNode

All utility nodes have an external object identifier.

6.2.1.7. Utility Node Container (UtilityNodeContainer)

A point spatial object which is used for connectivity, and also may contain other spatial objects (not necessarily belonging to the same utility network).

This type is a sub-type of UtilityNetworkElement.

This type is abstract.

Attributes of the spatial object type UtilityNodeContainer

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	

geometry	Location of the utility node container.	GM_Point	

Association roles of the spatial object type UtilityNodeContainer

Association role	Definition	Type	Voidability
nodes	Contained utility nodes.	UtilityNode	voidable

6.2.1.8. Appurtenance (Appurtenance)

An appurtenance is a node object that is described by its type (via the attribute appurtenanceType).

This type is a sub-type of UtilityNode.
Attributes of the spatial object type Appurtenance

Attribute	Definition	Type	Voidability
appurtenanceType	Type of appurtenance according to the INSPIRE appurtenance type classification.	AppurtenanceTypeValue	voidable
specificAppurtenanceType	Type of appurtenance according to a domain-specific classification.	SpecificAppurtenanceTypeValue	voidable

6.2.1.9. Cabinet (Cabinet)

Simple cabinet object which may carry utility objects belonging to either single or multiple utility networks.

This type is a sub-type of UtilityNodeContainer.

6.2.1.10. Cable (Cable)

A utility link or link sequence used to convey electricity or data from one location to another.

This type is a sub-type of UtilityLinkSet.

This type is abstract.

6.2.1.11. Duct (Duct)

A utility link or link sequence used to protect and guide cable and pipes via an encasing construction.

This type is a sub-type of UtilityLinkSet.
Attributes of the spatial object type Duct

Attribute	Definition	Type	Voidability

ductWidth	The width of the duct.	Length	voidable

Association roles of the spatial object type Duct

Association role	Definition	Type	Voidability
cables	A duct may contain one or more cables.	Cable	voidable
ducts	A single duct or set of ducts that constitute the inner-duct.	Duct	voidable
pipes	The set of pipes that constitute the duct bank.	Pipe	voidable

Constraints of the spatial object type Duct

The multiplicity of the utilityDeliveryType attribute shall be 0.

6.2.1.12. Manhole (Manhole)

Simple container object which may contain either single or multiple utility networks objects.

This type is a sub-type of UtilityNodeContainer.

6.2.1.13. Pipe (Pipe)

A utility link or link sequence for the conveyance of solids, liquids, chemicals or gases from one location to another. A pipe can also be used as an object to encase several cables (a bundle of cables) or other (smaller) pipes.

This type is a sub-type of UtilityLinkSet.
Attributes of the spatial object type Pipe

Attribute	Definition	Type	Voidability
pipeDiameter	Pipe outer diameter.	Measure	voidable
pressure	The maximum allowable operating pressure at which a product is conveyed through a pipe.	Measure	voidable

Association roles of the spatial object type Pipe

Association role	Definition	Type	Voidability
cable	Cable contained by the pipe.	Cable	voidable
pipe	Pipe contained by the pipe.	Pipe	voidable

6.2.1.14. Pole (Pole)

Simple pole (mast) object which may carry utility objects belonging to either single or multiple utility networks.

This type is a sub-type of UtilityNodeContainer.
Attributes of the spatial object type Pole

Attribute	Definition	Type	Voidability
poleHeight	The height of the pole.	Length	voidable

6.2.1.15. Tower (Tower)

Simple tower object which may carry utility objects belonging to either single or multiple utility networks.

This type is a sub-type of UtilityNodeContainer.
Attributes of the spatial object type Tower

Attribute	Definition	Type	Voidability
towerHeight	The height of the tower.	Length	voidable

6.2.2. *Code lists*

6.2.2.1. Appurtenance Type (AppurtenanceTypeValue)

Classification of appurtenances.

The allowed values for this code list comprise the values of the following code lists or other code lists specified by data providers:

— Electricity Appurtenance Type (ElectricityAppurtenanceTypeValue): Classification of electricity appurtenances, as specified in Section 6.3.2.1.

— Oil, Gas and Chemicals Appurtenance Type (OilGasChemicalsAppurtenanceTypeValue): Classification of oil, gas and chemicals appurtenances, as specified in Section 6.4.2.1.

— Sewer Appurtenance Type (SewerAppurtenanceTypeValue): Classification of sewer appurtenances, as specified in Section 6.5.2.1.

— Thermal Appurtenance Type (ThermalAppurtenanceTypeValue): Classification of thermal appurtenances, as specified in Section 6.6.2.1.

— Water Appurtenance Type (WaterAppurtenanceTypeValue): Classification of water appurtenances, as specified in Section 6.7.2.1.

6.2.2.2. Specific Appurtenance Type (SpecificAppurtenanceTypeValue)

Domain-specific classification of appurtenances.

The allowed values for this code list comprise any values defined by data providers.

6.2.2.3. Utility Delivery Type (UtilityDeliveryTypeValue)

Classification of utility delivery types.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.
Values for the code list UtilityDeliveryTypeValue

Value	Name	Definition
collection	collection	Description of a type of utility network delivering its utility product via collection (e.g. for sewer utility networks, collecting sewer water from customers)
distribution	distribution	Description of a type of utility network delivering its utility product via mainly local distribution (e.g. local distribution of electricity), connecting directly to consumers
private	private	Description of a type of utility network delivering its utility product via a small private network (e.g. owned by a private company)
transport	transport	Description of a type of utility network delivering its utility product via a large transport network (e.g. to convey oil-gas-chemicals products over larger distances)

6.2.2.4. Utility Network Type (UtilityNetworkTypeValue)

Classification of utility network types.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.
Values for the code list UtilityNetworkTypeValue

Value	Name	Definition
electricity	electricity	Electricity networks.
oilGasChemical	oil, gas or chemical	Oil, gas or chemical networks.
sewer	sewer	Sewer networks.
water	water	Water networks.
thermal	thermal	Thermal networks.

telecommunications	telecommunications	Telecommunications networks.

6.2.2.5. Warning Type (WarningTypeValue)

Classification of warning types.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.
Values for the code list WarningTypeValue

Value	Name	Definition
net	net	Warning net for protection of cables and pipes.
tape	tape	Caution tape (also known as warning tape) is a resilient plastic tape of a signal colour or highly contrasting colour combination (such as yellow-black or red-white).
concretePaving	concrete paving	A set or paving of pavers or tiles in concrete material covering cables or pipes.

6.3. Electricity Network

6.3.1. *Spatial object types*

The package Electricity Network contains the spatial object type Electricity Cable.

6.3.1.1. Electricity Cable (ElectricityCable)

A utility link or link sequence used to convey electricity from one location to another.

This type is a sub-type of Cable.
Attributes of the spatial object type ElectricityCable

Attribute	Definition	Type	Voidability
operatingVoltage	The utilization or operating voltage by the equipment using the electricity.	Measure	voidable
nominalVoltage	The nominal system voltage at the point of supply.	Measure	voidable

6.3.2. *Code lists*

6.3.2.1. Electricity Appurtenance Type (ElectricityAppurtenanceTypeValue)

Classification of electricity appurtenances.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.

Values for the code list ElectricityAppurtenanceTypeValue

Value	Name	Definition
electricityNode	electricity network node	Node in an electricity network.
capacitorControl	capacitor control	Capacitor control.
connectionBox	connection box	Connection box.
correctingEquipment	correcting equipment	Power factor correcting equipment.
deliveryPoint	delivery point	Delivery point.
dynamicProtectiveDevice	dynamic protective device	Dynamic protective device.
fuse	fuse	Fuse.
generator	generator	Generator.
loadTapChanger	load tap changer	Load tap changer.
mainStation	main station	Main station.
netStation	net station	Net station.
networkProtector	network protector	Network protector.
openPoint	open point	Open point.
primaryMeter	primary meter	Primary meter.
recloserElectronicControl	recloser electronic control	Recloser electronic control.
recloserHydraulicControl	recloser hydraulic control	Recloser hydraulic control.
regulatorControl	regulator control	Regulator control.
relayControl	relay control	Relay control.
sectionalizerElectronicControl	sectionalizer electronic control	Sectionalizer electronic control.
sectionalizerHydraulicControl	sectionalizer hydraulic control	Sectionalizer hydraulic control.
streetLight	street light	Street light.
subStation	sub station	Sub station.
switch	switch	Switch.
transformer	transformer	Transformer.
voltageRegulator	voltage regulator	Voltage regulator.
detectionEquipment	detection equipment	Detection Equipment

monitoringAndControlEquipment	monitoring and control equipment	Monitoring And Control Equipment

6.4. Oil-Gas-Chemicals Network

6.4.1. *Spatial object types*

The package Oil-Gas-Chemicals Network contains the spatial object type Oil, Gas and Chemicals Pipe.

6.4.1.1. Oil, Gas and Chemicals Pipe (OilGasChemicalsPipe)

A pipe used to convey oil, gas or chemicals from one location to another.

This type is a sub-type of Pipe.

Attributes of the spatial object type OilGasChemicalsPipe

Attribute	Definition	Type	Voidability
oilGasChemicalsProductType	The type of oil, gas or chemicals product that is conveyed through the oil, gas, chemicals pipe.	OilGasChemicalsProductTypeValue	Void

6.4.2. *Code lists*

6.4.2.1. Oil, Gas and Chemicals Appurtenance Type (OilGasChemicalsAppurtenanceTypeValue)

Classification of oil, gas, chemicals appurtenances.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.

Values for the code list OilGasChemicalsAppurtenanceTypeValue

Value	Name	Definition
pump	Pump	Pump
gasStation	Gas station	Gas station
oilGasChemicalsNode	oil, gas and chemicals network node	Node in an oil, gas and chemicals network
compression	Compression	Compression
terminal	Terminal	Terminal
deliveryPoint	Delivery point	Delivery point
frontier	Frontier	Frontier
productionRegion	Production region	Production Region
plant	Plant	Plant
pumpingStation	Pumping station	Pumping Station

storage	Storage	Storage
marker	Marker	Marker

6.4.2.2. Oil, Gas and Chemicals Product Type (OilGasChemicalsProductTypeValue)

Classification of oil, gas and chemicals products.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Utilities and Governmental Services.

6.5. Sewer Network

6.5.1. *Spatial object types*

The package Sewer Network contains the spatial object type Sewer Pipe.

6.5.1.1. Sewer Pipe (SewerPipe)

A sewer pipe used to convey wastewater (sewer) from one location to another.

This type is a sub-type of Pipe.
Attributes of the spatial object type SewerPipe

Attribute	Definition	Type	Voidability
sewerWaterType	Type of sewer water.	SewerWaterTypeValue	voidable

6.5.2. *Code lists*

6.5.2.1. Sewer Appurtenance Type (SewerAppurtenanceTypeValue)

Classification of sewer appurtenances.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.
Values for the code list SewerAppurtenanceTypeValue

Value	Name	Definition
anode	anode	Anode.
barrel	barrel	Barrel.
barScreen	bar screen	Bar screen.
catchBasin	catch basin	Catch basin.
cleanOut	clean out	Clean out.
dischargeStructure	discharge structure	Discharge structure.
meter	meter	Meter.
pump	pump	Pump.
regulator	regulator	Regulator.

scadaSensor	scada sensor	SCADA sensor.
thrustProtection	thrust protection	Thrust protection.
tideGate	tide gate	Tide gate.
sewerNode	sewer network node	Node in a sewer network.
connection	connection	Connection.
specificStructure	specific structure	Specific structure.
mechanicAndElectromechanicalEquipment	mechanic and electromechanic equipment	Mechanic and electromechanic equipment.
rainwaterCollector	rainwater collector	Rainwater collector.
watertankOrChamber	watertank or chamber	Watertank or chamber.

6.5.2.2. Sewer Water Type (SewerWaterTypeValue)

Classification of sewer water types.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.
Values for the code list SewerWaterTypeValue

Value	Name	Definition
combined	combined	Combined sewer water.
reclaimed	reclaimed	Reclaimed sewer water.
sanitary	sanitary	Sanitary sewer water.
storm	storm	Storm sewer water.

6.6. Thermal Network

6.6.1. *Spatial object types*

The package Thermal Network contains the spatial object typeThermal Pipe.

6.6.1.1. Thermal Pipe (ThermalPipe)

A pipe used to disseminate heating or cooling from one location to another.

This type is a sub-type of Pipe.
Attributes of the spatial object type ThermalPipe

Attribute	Definition	Type	Voidability
thermalProductType	The type of thermal product that is conveyed through the thermal pipe.	ThermalProductTypeValue	Voidable

6.6.2. *Code lists*

6.6.2.1. Thermal Appurtenance Type (ThermalAppurtenanceTypeValue)

Classification of thermal appurtenances.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Utilities and Governmental Services.

6.6.2.2. Thermal Product Type (ThermalProductTypeValue)

Classification of thermal products.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Utilities and Governmental Services.

6.7. **Water Network**

6.7.1. *Spatial object types*

The package Water Network contains the spatial object type Water Pipe.

6.7.1.1. Water Pipe (WaterPipe)

A water pipe used to convey water from one location to another.

This type is a sub-type of Pipe.
Attributes of the spatial object type WaterPipe

Attribute	Definition	Type	Voidability
waterType	Type of water.	WaterTypeValue	voidable

6.7.2. *Code lists*

6.7.2.1. Water Appurtenance Type (WaterAppurtenanceTypeValue)

Classification of water appurtenances.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.
Values for the code list WaterAppurtenanceTypeValue

Value	Name	Definition
waterNode	water network node	Node in a water network.
anode	anode	Anode.
clearWell	clear well	Clear well.
controlValve	control valve	Control valve.
fitting	fitting	Fitting.
hydrant	hydrant	Hydrant.
junction	junction	Junction.

lateralPoint	lateral point	Lateral point.
meter	meter	Meter.
pump	pump	Pump.
pumpStation	pump station	Pump station.
samplingStation	sampling station	Sampling station.
scadaSensor	scada sensor	SCADA sensor.
storageBasin	storage basin	Storage basin.
storageFacility	storage facility	Enclosed storage facility.
surgeReliefTank	surge relief tank	Surge relief tank.
systemValve	system valve	System valve.
thrustProtection	thrust protection	Thrust protection.
treatmentPlant	treatment plant	Treatment plant.
well	well	Production well.
pressureRelieveValve	pressure relieve valve	Pressure relieve valve.
airRelieveValve	air relieve valve	Air relieve valve.
checkValve	check valve	Check valve.
waterExhaustPoint	water exhaust point	Water exhaust point.
waterServicePoint	water service point	Water service point.
fountain	fountain	Fountain.
fireHydrant	fire hydrant	Fire hydrant.
pressureController	pressure controller	Pressure controller.
vent	vent	Vent.
recoilCheckValve	recoil check valve	Recoil check valve.
waterDischargePoint	water discharge point	Water discharge point.

6.7.2.2. Water Type (WaterTypeValue)

Classification of water types.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.
Values for the code list WaterTypeValue

Value	Name	Definition
potable	potable	Potable water.
raw	raw	Raw water.
salt	salt	Salt water.
treated	treated	Treated water.

6.8. **Environmental Management Facilities**

6.8.1. *Spatial object types*

The package Environmental Management Facilities contains the spatial object type Environmental Management Facility.

6.8.1.1. Environmental Management Facility (EnvironmentalManagementFacility)

A physical structure designed, built or installed to serve specific functions in relation to environmental material flows, such as waste or waste water flows, or a delimited area of land or water used to serve such functions.

This type is a sub-type of ActivityComplex.

Attributes of the spatial object type EnvironmentalManagementFacility

Attribute	Definition	Type	Voidability
type	The type of facility, such as installation or site.	EnvironmentalManagementFacilityTypeValue	voidable
serviceHours	Service hours of the facility.	PT_FreeText	voidable
facilityDescription	Additional information on an Environmental Management Facility, including its address, contact details, related parties and a free text description.	ActivityComplexDescription	voidable
physicalCapacity	A quantification of an actual or potential ability to perform an activity.	Capacity	voidable
permission	Official Decision (formal consent) granting authorization to operate all or part of an Environmental Management Facility	Permission	voidable
status	The status of the Environmental Management Facility, such as operational or decommissioned.	ConditionOfFacilityValue	voidable

Association roles of the spatial object type EnvironmentalManagementFacility

Association role	Definition	Type	Voidability

parentFacility	A parent facility, i.e., a facility to which this facility belongs.	EnvironmentalManagementFacility	voidable

6.8.2. *Code lists*

6.8.2.1. Environmental Facility Classification (EnvironmentalManagementFacilityTypeValue)

Classification of environmental facilities, e.g. as sites and installations.

The allowed values for this code list comprise the values specified in the table below and narrower values defined by data providers.
Values for the code list EnvironmentalManagementFacilityTypeValue

Value	Name	Definition
site	Site	All land at a distinct geographic location under the management control of an organisation covering activities, products and services.
installation	Installation	A technical unit, such as machinery, an apparatus, a device, a system installed, or a piece of equipment placed in position or connected for use.

6.9. **Administrative And Social Governmental Services**

6.9.1. *Spatial object types*

The package Administrative and Social Governmental Services contains the spatial object type Governmental Service.

6.9.1.1. Governmental Service (GovernmentalService)

Administrative and social governmental services such as public administrations, civil protection sites, schools and hospitals provided by Public Administrative Bodies or by private institutions as far as they are covered by the scope of Directive 2007/2/EC. This scope is mapped to the values of the corresponding code list ServiceTypeValue.
Attributes of the spatial object type GovernmentalService

Attribute	Definition	Type	Voidability
areaOfResponsibility	The spatial responsibility of a service instance.	AreaOfResponsibilityType	voidable
beginLifespanVersion	Date and time at which this version of the spatial object was	DateTime	voidable

	inserted or changed in the spatial data set.		
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable
inspireId	External object identifier of the spatial object.	Identifier	
pointOfContact	Contains necessary information to get access to a service and/or initial information regarding a service.	Contact	voidable
serviceLocation	Location where the service is offered.	ServiceLocationType	
serviceType	Type of an administrative and governmental service.	ServiceTypeValue	

6.9.2. *Data types*

6.9.2.1. Area Of Responsibility Type (AreaOfResponsibilityType)

Set of types for the description of spatial responsibility.

This type is a union type.
Attributes of the data type AreaOfResponsibilityType

Attribute	Definition	Type	Voidability
areaOfResponsibilityByAdministrativeUnit	Administrative unit describing the geographic extent of the responsibility of a service.	AdministrativeUnit	
areaOfResponsibilityByNamedPlace	Named geographical object describing the geographic extent of the responsibility of a service.	NamedPlace	
areaOfResponsibilityByNetwork	Part of a network describing the geographic extent of the competence of a service.	NetworkReference	

areaOfResponsibilityByPolygon	Polygon describing the geographic extent of the responsibility of a service.	GM_MultiSurface	

6.9.2.2. Service Location Type (ServiceLocationType)

Set of types of references to locate a service.

This type is a union type.
Attributes of the union type ServiceLocationType

Attribute	Definition	Type	Voidability
serviceLocationByAddress	Location of the service by referring to an address.	Address	
serviceLocationByBuilding	Location of the service by referring to a building.	Building	
serviceLocationByActivityComplex	Location of the service by referring to an activity complex.	ActivityComplex	
serviceLocationByGeometry	Location of the service by referring to a geometry.	GM_Object	
serviceLocationByUtilityNode	Location of the service by referring to a node related to a utility network (water, electricity, etc.), e.g. hydrant or emergency call point.	UtilityNode	

6.9.3. *Code lists*

6.9.3.1. Service Type (ServiceTypeValue)

Code list containing a classification of governmental services.

The allowed values for this code list comprise the values specified in the table below and narrower values defined by data providers.
Values for the code list ServiceTypeValue

Value	Name	Definition	Parent Value
publicAdministrationOffice	Public administration office	Public administration offices (not further differentiated).	

generalAdministrationOffice	general administration office	General administration offices, e.g. town halls.	publicAdministrationOffice
specializedAdministrationOffice	specialized administration office	Specialized administration offices which can not be allocated to the following areas: social service, education, health, environmental protection, public order and safety (e. g. surveying administration).	publicAdministrationOffice
publicOrderAndSafety	public order and safety	Services concerned with public order and safety.	
administrationForPublicOrderAndSafety	administration for public order and safety	Administration offices concerned with public order and safety.	publicOrderAndSafety
policeService	police service	Services concerned with police affairs.	publicOrderAndSafety
fireProtectionService	fire-protection service	Services concerned with fire-prevention and fire-fighting affairs; operation of regular and auxiliary fire brigades and of other fire-prevention and fire-fighting services maintained by public authorities; operation or support of fire-prevention and fire-fighting training programmes.	publicOrderAndSafety
fireStation	fire station	Services concerned with a station housing fire fighters, their equipment and vehicles.	fireProtectionService
siren	siren	Stationary device, often electrically operated, for producing a	fireProtectionService

		penetrating sound for warning the public.	
hydrant	hydrant	Special water access points of water supply networks that are specifically designed and built to serve as on-site water sources for fire fighting and other emergency services.	fireProtectionService
antiFireWaterProvision	anti-fire water provision	Location, installation or designated area from where water for fire-fighting is provided.	fireProtectionService
fireDetectionAndObservationSite	fire detection and observation site	Location, facility, construction or device for the detection and observation of fires.	fireProtectionService
rescueService	rescue service	Services dedicated to the search-and-rescue of people, animals and goods in emergency situations.	publicOrderAndSafety
rescueStation	rescue station	Services concerned with the housing of technical staff, equipment and auxiliary elements of land rescue teams.	rescueService
rescueHelicopterLandingSite	rescue helicopter landing site	A designated area from which rescue helicopters can take off and land.	rescueService
marineRescueStation	marine rescue station	Services on the coast providing buildings, mooring areas or piers to host marine rescue teams and their equipment, boats and other marine crafts.	rescueService
civilProtectionSite	civil protection site	Site offering protection and shelter from disasters and emergency situations	publicOrderAndSafety

		to the civilian population.	
emergencyCallPoint	emergency call point	Location of telephones in a box or on a post for the use of motorists in the event of an emergency situation.	publicOrderAndSafety
standaloneFirstAidEquipment	standalone First Aid equipment	First Aid element or set of elements or equipment made available to anyone who may need them, located in highly visible and accessible places.	publicOrderAndSafety
defence	defence	Services concerned with military defence.	publicOrderAndSafety
barrack	barrack	Services concerned with the provision of buildings used especially for lodging soldiers in garrison.	defence
camp	camp	Place usually away from urban areas where tents or simple buildings (as cabins) are erected for shelter or for temporary residence or instruction of military forces.	defence
environmentalProtection	environmental protection	Services concerned with the administration, supervision, inspection, operation or support of activities relating to the protection and conservation of the environment.	
administrationForEnvironmentalProtection	administration for environmental protection	Administration offices concerned with environmental protection.	environmentalProtection
environmentalEducationCentre	environmental education centre	Institution engaged in developing	environmentalProtection

		programs and material to increase awareness about the environment and sustainable development.	
health	health	Services concerned with health issues.	
administrationForHealth	administration for health	This item comprises establishments primarily engaged in the regulation of activities of agencies that provide health care and overall administration of health policy.	health
medicalProductsAppliancesAndEquipment	medical products, appliances and equipment	Services concerned with medicaments, prostheses, medical appliances and equipment and other health-related products obtained by individuals or households, either with or without a prescription, usually from dispensing chemists, pharmacists or medical equipment suppliers. They are intended for consumption or use outside a health facility or institution.	health
outpatientService	outpatient service	Medical, dental and paramedical services delivered to outpatients by medical, dental and paramedical practitioners and auxiliaries. The services may be delivered at home, in individual or group consulting facilities, dispensaries or the outpatient clinics of hospitals and the like.	health

		Outpatient services include the medicaments, prostheses, medical appliances and equipment and other health-related products supplied directly to outpatients by medical, dental and paramedical practitioners and auxiliaries.	
generalMedicalService	general medical service	General medical services delivered by general medical clinics and general medical practitioners.	outpatientService
specializedMedicalServices	specialized medical services	Specialized medical services delivered by specialized medical clinics and specialist medical practitioners. Specialized medical clinics and specialist medical practitioners differ from general medical clinics and general medical practitioners in that their services are limited to treatment of a particular condition, disease, medical procedure or class of patient.	outpatientService
paramedicalService	paramedical service	Provision of paramedical health services to outpatients; Administration, inspection, operation or support of health services delivered by clinics supervised by nurses, midwives, physiotherapists, occupational therapists, speech therapists or other paramedical	outpatientService

		personnel and of health services delivered by nurses, midwives and paramedical personnel in non-consulting rooms, in patients' homes or other non-medical institutions.	
hospitalService	hospital service	Services concerned with hospitalization. Hospitalization is defined as occurring when a patient is accommodated in a hospital for the duration of the treatment. Hospital day-care and home-based hospital treatment are included, as are hospices for terminally ill persons. Hospitals are defined as institutions which offer in-patient care under direct supervision of qualified medical doctors.	health
generalHospital	general hospital	Hospital services that do not limit their services to a particular medical speciality.	hospitalService
specializedHospital	specialized hospital	Hospital services that limit their services to a particular medical speciality.	hospitalService
nursingAndConvalescentHomeService	nursing and convalescent home service	In-patient services to persons recovering from surgery or a debilitating disease or condition that requires chiefly monitoring and administering of medicaments, physiotherapy	hospitalService

		and training to compensate for loss of function or rest.	
medicalAndDiagnosticLaboratory	medical and diagnostic laboratory	This item comprises establishments primarily engaged in providing analytic or diagnostic services, including body fluid analysis and diagnostic imaging, generally to the medical profession or the patient on referral from a health practitioner.	health
education	education	Services concerned with educational affairs. These services include military schools and colleges where curricula resemble those of civilian institutions, police colleges offering general education in addition to police training.	
administrationForEducation	administration for education	Administration offices concerned with educational matters.	education
earlyChildhoodEducation	early childhood education	Services concerned with pre-primary education at ISCED-2011 (International Standard Classification of Education, 2011 revision) level 0.	education
primaryEducation	primary education	Services concerned with primary education at ISCED-2011 (International Standard Classification of	education

		Education, 2011 revision) level 1.	
lowerSecondaryEducation	lower secondary education	Services concerned with lower secondary education at ISCED-2011 (International Standard Classification of Education, 2011 revision) level 2.	education
upperSecondaryEducation	upper secondary education	Services concerned with upper secondary education at ISCED-2011 (International Standard Classification of Education, 2011 revision) level 3.	education
postSecondaryNonTertiaryEducation	post-secondary non-tertiary education	Services concerned with post-secondary non-tertiary education at ISCED-2011 (International Standard Classification of Education, 2011 revision) level 4.	education
shortCycleTertiaryEducation	short-cycle tertiary education	Services concerned with short-cycle tertiary education at ISCED-2011 (International Standard Classification of Education, 2011 revision) level 5.	education
bachelorOrEquivalentEducation	bachelor or equivalent education	Services concerned with bachelor or equivalent education at ISCED-2011 (International Standard Classification of Education, 2011 revision) level 6.	education
masterOrEquivalentEducation	master or equivalent education	Services concerned with master or	education

		equivalent education at ISCED-2011 (International Standard Classification of Education, 2011 revision) level 7.	
doctoralOrEquivalentEducation	doctoral or equivalent education	Services concerned with doctoral or equivalent education at ISCED-2011 (International Standard Classification of Education, 2011 revision) level 8.	education
educationNotElsewhereClassified	education not elsewhere classified	Services concerned with education not elsewhere classified in ISCED-2011 (International Standard Classification of Education, 2011 revision), referred to as ISCED-2011 level 9.	education
subsidiaryServicesToEducation	subsidiary services to education	Subsidiary services to education, services concerned with transportation, food, lodging, medical and dental care and related subsidiary services chiefly for students regardless of level.	education
socialService	social service	Services concerned with social protection.	
administrationForSocialProtection	administration for social protection	Administration offices concerned with matters of social protection.	socialService
specializedServiceOfSocialProtection	specialized service of social protection	Various specialized services concerned with transport, home-, day- and holiday-care for the disabled and people	socialService

		in need of care. Services specifically concerned with education and employment of people with disabilities.	
housing	housing	Services concerned with any home, residence, facility, or premises which provide temporary, interim or permanent housing to various groups of persons.	socialService
childCareService	child care service	Services concerned with the day care of children.	socialService
charityAndCounselling	charity and counselling	Institutions and services providing benefits in kind and/ or counselling for the needy, e.g. people who are unemployed, the socially deprived, disaster victims, victims of assault and abuse, potential suicides, etc.	socialService

6.10. **Layers**

Layers for the spatial data theme Utility and Governmental Services

Layer Name	Layer Title	Spatial object type
US.UtilityNetwork	Utility Network	Appurtenance, Manhole, Tower, Pole, Cabinet, Duct, Pipe
US.ElectricityNetwork	Electricity Network	Electricity Cable, Appurtenance (if included in an electricity network)
US. OilGasChemicalsNetwork	Oil, Gas or Chemicals Network	OilGasChemicalsPipe, Appurtenance (if included in an oil, gas or chemicals network)
US.SewerNetwork	Sewer Network	SewerPipe, Appurtenance (if included in a sewer network)

a One layer shall be made available for each code list value, in accordance with Art. 14(3).

US.ThermalNetwork	Thermal Network	ThermalPipe, Appurtenance (if included in a thermal network)
US.WaterNetwork	Water Network	WaterPipe, Appurtenance (if included in a water network)
US. <CodeListValue>[a]	<human readable name>	GovernmentalService
Example: US.PoliceService	*Example: Police Service*	*(serviceType: ServiceTypeValue)*
US.EnvironmentalManagementFacility	Environmental Management Facility	EnvironmentalManagementFacility

a One layer shall be made available for each code list value, in accordance with Art. 14(3).

7. ENVIRONMENTAL MONITORING FACILITIES

7.1. **Spatial object types**

The following spatial object types are specified for the spatial data theme Environmental Monitoring Facilities:

— Abstract Monitoring Feature
— Abstract Monitoring Object
— Environmental Monitoring Activity
— Environmental Monitoring Facility
— Environmental Monitoring Network
— Environmental Monitoring Programme
— Observing Capability
— Operational Activity Period

7.1.1. *Abstract Monitoring Feature (AbstractMonitoringFeature)*

An abstract base class for environmental monitoring features in the real world (EnvironmentalMonitoringNetwork, EnvironmentalMonitoringFacility).

This type is a sub-type of AbstractMonitoringObject.

This type is abstract.

Attributes of the spatial object type AbstractMonitoringFeature

Attribute	Definition	Type	Voidability
reportedTo	Information on the involvement of the AbstractMonitoringFeature in reporting.	ReportToLegalAct	voidable

Association roles of the spatial object type AbstractMonitoringFeature

Association role	Definition	Type	Voidability
involvedIn	EnvironmentalMonitoringActivity in which the	EnvironmentalMonitoringActivity	voidable

	AbstractMonitoringFeature is involved.		
hasObservation	Observation of emissions, of the state of environmental media and of other ecosystem parameters (biodiversity, ecological conditions of vegetation, etc.) by or on behalf of public authorities at this AbstractMonitoringFeature.	OM_Observation	voidable

Constraints of the spatial object type AbstractMonitoringFeature

If observation(s) are attached to an AbstractMonitoringFeature this shall have an ObservingCapability attached to it. The ObservingCapability shall reference the same Domain, Phenomenon and ProcessUsed as the observation(s).

7.1.2. *Abstract Monitoring Object (AbstractMonitoringObject)*

An abstract base class for environmental monitoring objects.

This type is abstract.

Attributes of the spatial object type AbstractMonitoringObject

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
name	Plain text denotation of the AbstractMonitoringObject.	CharacterString	voidable
additionalDescription	Plain text description of additional information not fitting in other attributes.	CharacterString	voidable
mediaMonitored	Monitored environmental medium.	MediaValue	
legalBackground	The legal context, in which the management and regulation of the AbstractMonitoringObject is defined.	LegislationCitation	voidable

responsibleParty	Responsible party for the AbstractMonitoringObject.	RelatedParty	voidable
geometry	Geometry associated to the AbstractMonitoringObject. For mobile facilities the geometry represents the area the facility is expected to measure in.	GM_Object	
onlineResource	A link to an external document providing further information on the AbstractMonitoringObject.	URL	voidable
purpose	Reason for which the AbstractMonitoringObject has been generated.	PurposeOfCollectionValue	voidable

Association roles of the spatial object type AbstractMonitoringObject

Association role	Definition	Type	Voidability
observingCapability	A link pointing to the explicit capability of an AbstractMonitoringObject. This provides a clear link between the observed property, the procedure used as well as the location of the measurement	ObservingCapability	voidable
broader	A link pointing to a broader AbstractMonitoringObject (a higher level in a hierarchical structure). The association has additional properties as defined in the association class Hierarchy.	AbstractMonitoringObject	voidable
narrower	A link pointing to narrower AbstractMonitoringObject(s) (a lower level	AbstractMonitoringObject	voidable

	in a hierarchical structure). The association has additional properties as defined in the association class Hierarchy.		
supersedes	In a genealogy, the AbstractMonitoringObject(s) that has (have) been deactivated/replaced by another one.	AbstractMonitoringObject	voidable
supersededBy	In a genealogy, the newly active AbstractMonitoringObject(s) that replaces (replace) the superseded one.	AbstractMonitoringObject	voidable

7.1.3. *Environmental Monitoring Activity (EnvironmentalMonitoringActivity)*

Specific set of AbstractMonitoringFeatures used for a given domain in a coherent and concise timeframe, area and purpose. Usually the information collected is treated as one time step in a long term monitoring programme. It is a concrete realisation of a given EnvironmentalMonitoringProgramme.

Attributes of the spatial object type EnvironmentalMonitoringActivity

Attribute	Definition	Type	Voidability
activityTime	Lifespan of the EnvironmentalMonitoringActivity.	TM_Object	voidable
activityConditions	Textual description of the EnvironmentalMonitoringActivity.	CharacterString	voidable
boundingBox	Bounding box in which the EnvironmentalMonitoringActivity takes place.	GM_Boundary	voidable
responsibleParty	Responsible party for the EnvironmentalMonitoringActivity.	RelatedParty	voidable
inspireId	External object identifier of the spatial object.	Identifier	
onlineResource	A link to an external document providing further information on the EnvironmentalMonitoringActivity.	URL	voidable

Association roles of the spatial object type EnvironmentalMonitoringActivity

Association role	Definition	Type	Voidability
setUpFor	EnvironmentalMonitoringProgramme(s) for which the EnvironmentalMonitoringActivity is set up.	EnvironmentalMonitoringProgramme	voidable
uses	Specific set of AbstractMonitoringFeature(s) involved in an EnvironmentalMonitoringActivity.	AbstractMonitoringFeature	voidable

7.1.4. *Environmental Monitoring Facility (EnvironmentalMonitoringFacility)*

A georeferenced object directly collecting or processing data about objects whose properties (e.g. physical, chemical, biological or other aspects of environmental conditions) are repeatedly observed or measured. An environmental monitoring facility can also host other environmental monitoring facilities.

This type is a sub-type of AbstractMonitoringFeature.
Attributes of the spatial object type EnvironmentalMonitoringFacility

Attribute	Definition	Type	Voidability
representativePoint	Representative location for the EnvironmentalMonitoringFacility.	GM_Point	voidable
measurementRegime	Regime of the measurement	MeasurementRegimeValue	voidable
mobile	Indicate whether the EnvironmentalMonitoringFacility is mobile (repositionable) during the acquisition of the observation.	Boolean	voidable
resultAcquisitionSource	Source of result acquisition.	ResultAcquisitionSourceValue	voidable
specialisedEMFType	Categorisation of EnvironmentalMonitoringFacilities generally used by domain and in national settings.	SpecialisedEMFTypeValue	voidable
operationalActivityPeriod	The period(s) during which the EnvironmentalMonitoringFacility has been up and running.	TM_Object	voidable

Association roles of the spatial object type EnvironmentalMonitoringFacility

Association role	Definition	Type	Voidability
relatedTo	Any Thematic Link to an Environmental Monitoring Facility. The association has additional properties as defined in the association class AnyDomainLink.	EnvironmentalMonitoringFacility	voidable
belongsTo	A link pointing to the EnvironmentalMonitoringNetwork(s) this EnvironmentalMonitoringFacility pertains to. The association has additional properties as defined in the association class NetworkFacility.	EnvironmentalMonitoringNetwork	voidable

Constraints of the spatial object type EnvironmentalMonitoringFacility

Geometry and representativePoint cannot both be empty.

7.1.5. *Environmental Monitoring Network (EnvironmentalMonitoringNetwork)*

Administrative or organisational grouping of EnvironmentalMonitoringFacilities managed the same way for a specific purpose, targeting a specific area. Each network respects common rules aiming at ensuring coherence of the observations, especially for purposes of EnvironmentalMonitoringFacilities, mandatory parameters selection, measurement methods and measurement regime.

This type is a sub-type of AbstractMonitoringFeature.

Attributes of the spatial object type EnvironmentalMonitoringNetwork

Attribute	Definition	Type	Voidability
organisationLevel	Level of legal organisation the EnvironmentalMonitoringNetwork is affiliated with.	LegislationLevelValue	voidable

Association roles of the spatial object type EnvironmentalMonitoringNetwork

Association role	Definition	Type	Voidability
contains	A link pointing to the EnvironmentalMonitoringFacility(s) included in this EnvironmentalMonitoringNetwork. The association has additional properties as defined in the	EnvironmentalMonitoringFacility	voidable

	association class NetworkFacility.		

7.1.6. *Environmental Monitoring Programme (EnvironmentalMonitoringProgramme)*

Framework based on policy relevant documents defining the target of a collection of observations and/or the deployment of AbstractMonitoringFeatures on the field. Usually an Environmental Monitoring Programme has a long term perspective over at least a few years.

This type is a sub-type of AbstractMonitoringObject.
Association roles of the spatial object type EnvironmentalMonitoringProgramme

Association role	Definition	Type	Voidability
triggers	EnvironmentalMonitoringActivity(s) triggered by the EnvironmentalMonitoringProgramme.	EnvironmentalMonitoringActivity	voidable

7.1.7. *Observing Capability (ObservingCapability)*

Explicit capability of an AbstractMonitoringObject.
Attributes of the spatial object type ObservingCapability

Attribute	Definition	Type	Voidability
observingTime	Describes the time period that observations can be expected from this AbstractMonitoringObject. Can be only a start time for running measurements or an interval.	TM_Object	voidable
processType	The type of object used for describing the process.	ProcessTypeValue	voidable
resultNature	State of the provided result.	ResultNatureValue	voidable
onlineResource	A link to an external document providing further information about an ISO 19156 “Observations and Measurements” compliant data model used to store or exchange Observations and Measurements acquired.	URL	voidable

Association roles of the spatial object type ObservingCapability

Association role	Definition	Type	Voidability
observedProperty	The property being observed or measured at this AbstractMonitoringObject.	GF_PropertyType	
featureOfInterest	This feature is the real-world object whose properties are under observation, or is a feature intended to sample the real-world object.	GFI_Feature	voidable
procedure	Link to the Process used to generate the result. The OM_Process shall be suitable for the observed property. As a corollary, details of the observed property are constrained by the procedure used.	OM_Process	

7.2. Data types

7.2.1. *Any Domain Link (AnyDomainLink)*

Any domain relevant link to an EnvironmentalMonitoringFacility that is not hierarchical or associated with a notion of genealogy.

This type is an association class.
Attributes of the data type AnyDomainLink

Attribute	Definition	Type	Voidability
Comment	Additional information on the domain link.	CharacterString	voidable

7.2.2. *Hierarchy (Hierarchy)*

Hierarchical link between AbstractMonitoringObjects.

This type is an association class.
Attributes of the data type Hierarchy

Attribute	Definition	Type	Voidability
linkingTime	Time period of the link.	TM_Object	voidable

7.2.3. *Network Facility (NetworkFacility)*

Link between EnvironmentalMonitoringNetwork and EnvironmentalMonitoringFacility.

This type is an association class.
Attributes of the data type NetworkFacility

Attribute	Definition	Type	Voidability
linkingTime	Time period of the link.	TM_Object	voidable

7.2.4. *Report To Legal Act (ReportToLegalAct)*

Information on the involvement of an AbstractMonitoringFeature in reporting. The information is specific per submitted reporting envelope and not per obligation/agreement.
Attributes of the data type ReportToLegalAct

Attribute	Definition	Type	Voidability
legalAct	LegalAct which is reported to.	LegislationCitation	
reportDate	Time of reporting.	DateTime	voidable
reportedEnvelope	Link to the reported data set according to the date indicated in the attribute reportDate.	URI	voidable
observationRequired	Indicates whether an observation is required for the AbstractMonitoringFeature.	Boolean	voidable
observingCapabilityRequired	Indicates whether the observingCapability is required for the AbstractMonitoringFeature.	Boolean	voidable
description	Additional information on the actual data reported.	CharacterString	voidable

7.3. **Code lists**

7.3.1. *Measurement Regime (MeasurementRegimeValue)*

Categories for different types of the MeasurementRegime.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Environmental Monitoring Facilities.

7.3.2. *Media (MediaValue)*

Categories for different types of media.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Environmental Monitoring Facilities.

7.3.3. *Process Type (ProcessTypeValue)*

Categories for different process types.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Environmental Monitoring Facilities.

7.3.4. *Purpose Of Collection (PurposeOfCollectionValue)*

Categories for different purposes of collections.

The allowed values for this code list comprise any values defined by data providers.

7.3.5. *Result Acquisition Source (ResultAcquisitionSourceValue)*

Categories for different types of the ResultAcquisitionSource.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Environmental Monitoring Facilities.

7.3.6. *Result Nature (ResultNatureValue)*

State of the result of an observation.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Environmental Monitoring Facilities.

7.3.7. *Specialised EMF Type (SpecialisedEMFTypeValue)*

Categories for different types of EnvironmentalMonitoringFacilities.

The allowed values for this code list comprise any values defined by data providers.

7.4. **Layers**

Layers for the spatial data theme Environmental Monitoring Facilities

Layer Name	Layer Title	Spatial object type
EF.EnvironmentalMonitoringFacilities	Environmental Monitoring Facilities	EnvironmentalMonitoringFacility
EF.EnvironmentalMonitoringNetworks	Environmental Monitoring Networks	EnvironmentalMonitoringNetwork
EF.EnvironmentalMonitoringProgrammes	Environmental Monitoring Programmes	EnvironmentalMonitoringProgramme

8. PRODUCTION AND INDUSTRIAL FACILITIES

8.1. **Definitions**

In addition to the definitions set out in Article 2, the following definitions shall apply:

(1) "emission" means the direct or indirect release of substances, vibrations, heat or noise from individual or diffuse sources in the facility into the air, water or soil.

(2) "production" means an activity consisting of a series of actions or operations in a productive context.

8.2. **Spatial object types**

The following spatial object types are specified for the spatial data theme Production and Industrial Facilities:

— Production Facility
— Production Installation
— Production Installation Part
— Production Site
— Production Plot
— Production Building

8.2.1. *Production Facility (ProductionFacility)*

One or more installations on the same site operated by the same natural or legal person, designed, built or installed to serve specific production or industrial purposes, comprehending all infrastructure, equipment and materials.

This type is a sub-type of ActivityComplex.

Attributes of the spatial object type ProductionFacility

Attribute	Definition	Type	Voidability
surfaceGeometry	Spatial property of the spatial object.	GM_Surface	voidable
riverBasinDistrict	Code identifier and/ or name assigned to the basin district of a watercourse.	RiverBasinDistrictValue	
status	The state or condition of the facility, with regard to the functional and operational order, in which it is arranged for a limited or extended time period.	StatusType	voidable

Association roles of the spatial object type ProductionFacility

Association role	Definition	Type	Voidability

groupedBuilding	Buildings managed by the production facility.	ProductionBuilding	voidable
groupedPlot	Plots managed by the production facility.	ProductionPlot	voidable
hostingSite	Sites at a distinct geographic location where the production facility is located.	ProductionSite	voidable
groupedInstallation	Installations technically or legally part of the production facility.	ProductionInstallation	voidable

8.2.2. *Production Installation (ProductionInstallation)*

A technical unit, such as machinery, apparatus, devices or equipment placed in position or connected for use.

Attributes of the spatial object type ProductionInstallation

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
thematicId	Thematic object identifier.	ThematicIdentifier	
pointGeometry	Spatial property of the spatial object.	GM_Point	
surfaceGeometry	Spatial property of the spatial object.	GM_Surface	voidable
name	Official denomination or proper or conventional name of the installation.	CharacterString	voidable
description	Descriptive statement about the installation.	CharacterString	voidable
status	The state or condition of the installation, with regard to the functional and operational order, in which it is arranged for a limited or extended time period.	StatusType	voidable
type	Special kind of an installation, denoting	InstallationType	voidable

	the operative function which has to be performed.		

Association roles of the spatial object type ProductionInstallation

Association role	Definition	Type	Voidability
groupedInstallationPart	Minor Installations technically or legally part of an Installation	ProductionInstallationPart	voidable

8.2.3. *Production Installation Part (ProductionInstallationPart)*

A single engineered facility that performs specific functionalities related with a production activity.

This level of description covers specific parts of the production installation which must be registered by the legal mandate of the competent authorities, including points of emission as chimneys (for pollutants) or tanks (for special products).

Attributes of the spatial object type ProductionInstallationPart

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
thematicId	Thematic object identifier.	ThematicIdentifier	
pointGeometry	Spatial property of the spatial object.	GM_Point	
surfaceGeometry	Spatial property of the spatial object.	GM_Surface	voidable
name	Official denomination or proper or conventional name of the installation part.	CharacterString	voidable
description	Descriptive statement about the installation part.	CharacterString	voidable
status	The state or condition of the installation part, with regard to the functional and operational order, in which it is arranged for a limited or extended time period.	StatusType	voidable
type	Special kind of an installation	InstallationPartType	voidable

	part, denoting the operative function which has to be performed.		
technique	Method to reduce pollutant concentration due to the emissions of a technical component, typically a chimney.	PollutionAbatementTechnique	voidable

8.2.4. *Production Site (ProductionSite)*

All land at a distinct geographic location where the production facility was, is, or is intended to be located. This includes all infrastructure, equipment and materials.
Attributes of the spatial object type ProductionSite

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
thematicId	Thematic object identifier.	ThematicIdentifier	
geometry	Spatial property of the spatial object.	GM_MultiSurface	
sitePlan	Descriptive statement about the project concerning the configuration and organisation of the production site.	DocumentCitation	voidable
name	Official denomination or proper or conventional name of the site.	CharacterString	voidable
description	Descriptive statement about the site.	CharacterString	voidable
status	The state or condition of the site, with regard to the functional and operational order, in which it is arranged for a limited or extended time period.	StatusType	voidable

8.2.5. *Production Plot (ProductionPlot)*

A portion of land or water part of a facility destined to functional purposes.
Attributes of the spatial object type ProductionPlot

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
thematicId	Thematic object identifier.	ThematicIdentifier	
geometry	Spatial property of the spatial object.	GM_Surface	
status	The state or condition of the plot, with regard to the functional and operational order, in which it is arranged for a limited or extended time period.	StatusType	voidable

8.2.6. *Production Building (ProductionBuilding)*

Artificial construction, part of the production facility that is useful to host or provide shelter for activities development.
Attributes of the spatial object type ProductionBuilding

Attribute	Definition	Type	Voidability
thematicId	Thematic object identifier.	ThematicIdentifier	
typeOfBuilding	Classified description of the production and industrial building.	TypeOfProductionBuildingValue	voidable
status	The state or condition of the production and industrial building, with regard to the functional and operational order, in which it is arranged for a limited or extended time period.	StatusType	voidable
geometry	Spatial property of the spatial object.	GM_Object	voidable

Association roles of the spatial object type ProductionBuilding

Association role	Definition	Type	Voidability

building	Representation of the production building in a Buildings data set.	AbstractBuilding	voidable

Constraints of the spatial object type Production Building

The geometry shall be provided if the building property is empty.

8.3. Data types

8.3.1. *Status Type (StatusType)*

The state or condition of a technical component, with regard to the functional and operational order, in which it is arranged for a limited or extended time period.
Attributes of the data type StatusType

Attribute	Definition	Type	Voidability
statusType	The state or condition of a technical component referring to a list of predefined potential values.	ConditionOfFacilityValue	
description	Descriptive statement about the declared status.	CharacterString	voidable
validFrom	The starting time of validity for a status type.	Date	voidable
validTo	The ending time of validity for a status type.	Date	voidable

8.4. Code lists

8.4.1. *Pollution Abatement Technique (PollutionAbatementTechniqueValue)*

Methods for reducing pollutant concentration due to the emissions of a technical component, typically a chimney.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.
Values for the code list PollutionAbatementTechniqueValue

Value	Name	Definition
gravitation	gravitation	Pollutant abatement by gravitation
dustScrubbers	dust scrubbers	Pollutant abatement through dust scrubbers

filtration	filtration	Pollutant abatement by filtration
condensation	condensation	Pollutant abatement by condensation
adsorption	adsorption	Pollutant abatement by adsorption

8.4.2. *Installation Type (InstallationTypeValue)*

Values denoting the operative function which has to be performed by an installation.The allowed values for this code list comprise any values defined by data providers.

8.4.3. *Installation Part Type (InstallationPartTypeValue)*

Values denoting the operative function which has to be performed by an installation part.The allowed values for this code list comprise any values defined by data providers.

8.4.4. *River Basin District (RiverBasinDistrictValue)*

Code identifiers and/or names assigned to river basin districts.The allowed values for this code list comprise any values defined by data providers.

8.4.5. *Type of Production Building (TypeOfProductionBuildingValue)*

Classification of production and industrial buildings.

The allowed values for this code list comprise any values defined by data providers.

8.5. **Layers**

Layers for the spatial data theme Production and Industrial Facilities

Layer Name	Layer Title	Spatial object type
PF.ProductionSite	Production And Industrial Site	ProductionSite
PF. <CodeListValue>[a]	<human readable name>	ProductionFacility
Example: PF.Manufacturing	*Example: Manufacturing*	*(activity: EconomicActivityValue)*
PF.ProductionPlot	Production And Industrial Parcel	ProductionPlot
PF.ProductionInstallation	Production And Industrial Installation	ProductionInstallation
PF.ProductionInstallationPart	Production And Industrial Installation Part	ProductionInstallationPart
PF.ProductionBuilding	Production and Industrial Building	ProductionBuilding

a One layer shall be made available for each code list value, in accordance with Art. 14(3).

9. AGRICULTURAL AND AQUACULTURE FACILITIES

9.1. Definitions

In addition to the definitions set out in Article 2, the following definition shall apply:

(1) "Agriculture" means the set of process and activities consisting in cultivating soils, producing crops and rearing animals; it includes harvesting, milking, breeding animals and keeping animals for farming purposes. According to Council Regulation(EC) No 73/2009 maintaining the land in good agricultural and environmental condition shall be considered as an agricultural activity.

(2) "Livestock" refers to animals being bred and/or raised for use or profit (covered by the activities defined under NACE codes A.1.4. and A.1.5).

(3) "Aquaculture" means the set of activities and techniques related to the production, breeding and treatment of fish, molluscs, seaweed and other kinds of aquatic resources (vegetables or animal).

9.2. Spatial object types

The following spatial object types are specified for the spatial data theme Agricultural and Aquaculture Facilities:

— Holding
— Site

9.2.1. *Holding (Holding)*

The whole area and all infrastructures included on it, covering the same or different "sites", under the control of an operator to perform agricultural or aquaculture activities.

This type is a sub-type of ActivityComplex.
Association roles of the spatial object type Holding

Attribute	Definition	Type	Voidability
contains	The Sites that are part of the specified Holding.	Site	

Constraints of the spatial object type Holding

At least one of the function attributes of the Holding spatial object shall be provided using the EconomicActivityNACEValue code list (for the activity attribute of the Function data type).

9.2.1.1. Site (Site)

All land at the same or distinct geographic location under the management control of a holding covering activities, products and services. This includes all infrastructure, equipment and materials.
Attributes of the spatial object type Site

Attribute	Definition	Type	Voidability
geometry	The geometry defining the extent or position of the site.	GM_Object	

activity	The classification of the economic activity of the site, according to the NACE rev. 2.0 coding.	EconomicActivityNACEValue	
includesAnimal	Presence of Animals in the Site.	FarmAnimalSpecies	voidable

9.3. **Data types**

9.3.1. *Farm Animal Species (FarmAnimalSpecies)*

Identifies an animal or group of animals (Livestock or Aquaculture) of the same species kept on the specific site.

Attributes of the data type FarmAnimalSpecies

Attribute	Definition	Type	Voidability
livestock	Presence of livestock species in the site.	LivestockSpeciesValue	voidable
aquaculture	Presence of aquaculture species in the site.	AquacultureSpeciesValue	voidable

9.4. **Code lists**

9.4.1. *Livestock Species (LivestockSpeciesValue)*

Classification of livestock species.

The allowed values for this code list comprise the values specified in Annex II to Regulation (EC) No 1165/2008[(1)] and additional values at any level defined by data providers.

9.4.2. *Aquaculture Species (AquacultureSpeciesValue)*

Classification of aquaculture species.

The allowed values for this code list comprise only the values specified in the February 2012 version of the ASFIS (Aquatic Sciences and Fisheries Information System) List of Species for Fishery Statistics Purposes published by the Food and Agriculture Organization of the United Nations.

9.5. **Layers**

Layers for the spatial data theme Agricultural and Aquaculture Facilities

Layer Name	Layer Title	Spatial object type
AF. AgriculturalHolding	Agricultural Holding	Holding (spatial objects whose activity attribute has the value = “A1 - Crop and animal production, hunting and related service activities” (from the EconomicActivityNACEValue

		code list) or a narrower value)
AF. AquacultureHolding	Aquaculture Holding	Holding (spatial objects whose activity attribute has the value "A3 - Fishing and aquaculture activities" (from the EconomicActivityNACEValue code list) or a narrower value)
AF.Site	Agricultural and Aquaculture Sites	Site

10. POPULATION DISTRIBUTION – DEMOGRAPHY

10.1. **Spatial object types**

The following spatial object type is specified for the spatial data theme Population Distribution – Demography: Statistical Distribution.

10.1.1. *Statistical Distribution (StatisticalDistribution)*

Set of measures describing how a phenomenon is spread within some part of the 2D world.
Attributes of the spatial object type StatisticalDistribution

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
areaOfDissemination	The part of the 2D world the StatisticalDataDistribution describes.	GM_Surface	
universe	When distribution is related to a subset of the population and not the population in its whole, the literal description of the way this subset was defined.	PT_FreeText	
domain	The part of statistical knowledge the data refers to.	PT_FreeText	
measure	The measure concerned by the distribution.	VariableValue	

measurementMethod	The description of the statistic measurement method.	StatisticsMeasurementMethodValue	
measurementUnit	The unit of the measurement.	UnitOfMeasure	
notCountedProportion	The proportion of population of the area of interest that is not counted in any of its spatial components.	Number	
periodOfMeasurement	The date or period the observation has been taken, the data was collected.	TM_Period	
periodOfReference	The period when the data is supposed to give a picture of the area of interest.	TM_Period	
periodOfValidity	The period in which the data remains relevant.	TM_Period	
beginLifeSpanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifeSpanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable
generalStatus	The status of the statistical data distribution.	StatisticalDataStatusValue	

Association roles of the spatial object type StatisticalDistribution

Association role	Definition	Type	Voidability
value	The statistical values composing the distribution.	StatisticalValue	
classification	Additional classifications used to split a total value of the described phenomenon. The StatisticalDistribution	Classification	

	object will provide actually several distributions, one for each item of the used classification. When no classification is provided, the statistical value is the total population.		

10.2. Data types

10.2.1. *Classification (Classification)*

A classification used for a statistical distribution.
Attributes of the data type Classification

Attribute	Definition	Type	Voidability
type	The classification type.	ClassificationTypeValue	

Association roles of the data type Classification

Association role	Definition	Type	Voidability
item	The items composing the classification.	ClassificationItem	

10.2.2. *Classification Item (ClassificationItem)*

An item composing a classification.
Attributes of the data type ClassificationItem

Attribute	Definition	Type	Voidability
type	The classification item type.	ClassificationItemTypeValue	

10.2.3. *Statistical Value (StatisticalValue)*

The pieces of datum of the distribution.
Attributes of the data type StatisticalValue

Attribute	Definition	Type	Voidability
value	The value for the piece of datum.	Number	
specialValue	Some conventional string when value for the piece of datum cannot be provided: missing value, value	SpecialValue	

	hidden because of confidentiality.		
conventionallyLocatedPopulation	The proportion of population counted in the piece of datum but that cannot actually be physically located anywhere within the area of interest.	Number	
approximatelyLocatedPopulation	The proportion of population count that doesn't follow the common rule for location. "Population" can be persons if persons are counted, dwellings if the StatisticalDatadistribution is about dwellings, etc.	Number	
comment	Free style comment about the value.	PT_FreeText	
flags	A set of one-character encoded comments about the data.	PT_FreeText	
periodOfMeasurement	The collection period of the statistical value. This period overrides the period specified in the associated statistical distribution.	TM_Period	voidable
status	The status of the statistical data.	StatisticalDataStatusValue	

Association roles of the data type StatisticalValue

Association role	Definition	Type	Voidability
dimensions	The part of the world the piece of datum refers to. Dimensions contains a description of the geographic location (2D dimension) together with possible	Dimensions	

	additional dimensions when population counts are produced simultaneously for different individual characteristics.		

Constraints of the data type StatisticalValue

Either the value or the specialValue attribute shall be provided.

10.2.4. *Dimensions (Dimensions)*

The identification of what the piece of datum refers to in terms of geographic location or individual characteristics.

Association roles of the data type Dimensions

Association role	Definition	Type	Voidability
spatial	The spatial dimension of the statistical value.	StatisticalUnit	
thematic	The thematic dimensions of the statistical value.	ClassificationItem	

10.3. **Code lists**

10.3.1. *Classification Type (ClassificationTypeValue)*

Code values for classification types.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Population Distribution.

10.3.2. *Classification Item Type (ClassificationItemTypeValue)*

Code values for classification items.

The allowed values for this code list comprise the values of the following code lists or other code lists defined by data providers:

— Age By 5 Years (AgeBy5YearsValue): Code values for age by 5 years classification items, as specified in the table below.

Values for the code list AgeBy5Years

Value	Name	Definition
0-5	0-5	0 to less than 5
5-10	5-10	5 to less than 10
10-15	10-15	10 to less than 15
15-20	15-20	15 to less than 20

20-25	20-25	20 to less than 25
25-30	25-30	25 to less than 30
30-35	30-35	30 to less than 35
35-40	35-40	35 to less than 40
40-45	40-45	40 to less than 45
45-50	45-50	45 to less than 50
50-55	50-55	50 to less than 55
55-60	55-60	55 to less than 60
60-65	60-65	60 to less than 65
65-70	65-70	65 to less than 70
70-75	70-75	70 to less than 75
75-80	75-80	75 to less than 80
80-85	80-85	80 to less than 85
85-90	85-90	85 to less than 90
90+	90	90 and more
90-95	90-95	90 to less than 95
95+	95	95 and more
95-100	95-100	95 to less than 100
100+	100	100 and more

— Age By Year (AgeByYearValue): Code values for age by year classification items, including one value for each one-year interval. The first value shall be “0-1” with the label “0-1” and the definition “0 to less than 1 year”, and the last value shall be “100+” with label “100+” and the definition “100 years or older”.

— NACE Code (NACECodeValue): Classification of economic activities according to Eurostat NACE, as specified in Regulation (EC) No 1893/2006 of the European Parliament and of the Council and narrower values defined by data providers.

— Gender (GenderValue): Gender of a person or group of persons, as specified in Section 4.6 of Annex I.

10.3.3. *Variable (VariableValue)*

Code values for variable names.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Population Distribution – Demography.

10.3.4. *Statistics Measurement Method (StatisticsMeasurementMethodValue)*

Code values for statistics measurement method.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.

Values for the code list StatisticsMeasurementMethodValue

Value	Name	Definition
count	count	A simple count.
relativeCount	relative count	A ratio combining two different kinds of statistical population.
percentage	percentage	A proportion expressed as a ratio whose denominator is 100.
median	median	The median.

10.3.5. *Status of Statistical Data (StatisticalDataStatusValue)*

Code values for status.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.
Values for the code list StatisticalDataStatusValue

Value	Name	Definition
definitive	definitive	A definitive statistical data value.
final	final	A final statistical data value.
preliminary	preliminary	A preliminary statistical data value.
provisional	provisional	A provisional statistical data value.
semiDefinitive	semi-definitive	A semi-definitive statistical data value.

10.3.6. *Special Value (SpecialValue)*

Code values for special values.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.
Values for the code list SpecialValue

Value	Name	Definition
confidential	confidential	The value is not provided for confidentiality reasons.
unknown	unknown	The value could have been measured but was not.
notApplicable	not applicable	The value would not have any sense.

10.4. **Layers**

No layers are defined for the spatial data theme Population Distribution and Demography.

11. AREA MANAGEMENT/RESTRICTION/REGULATION ZONES AND REPORTING UNITS

11.1. **Definitions**

In addition to the definitions set out in Article 2, the following definition shall apply:

(1) "manage" means plan, perform, monitor and control activities to achieve specific legally defined environmental objectives.

(2) "restrict" means prohibit or limit certain activities, to only be performed within specific bounds and/or time periods, in order to achieve a certain purpose according to legally defined responsibilities or obligations.

(3) "regulate" means monitor and control certain activities (to permit, promote, prohibit, or restrict) to achieve a legally defined environmental objectives. A regulated activity may require that if the environmental status is degraded then particular actions must be enacted to restore good environmental status.

(4) "report" means evaluate the effectiveness of environmental policies and publish data and information (i.e. spatial data, observations, statistics, indicators) that can be used to assess progress towards maintaining or improving good environmental status and achievement of policy objectives.

(5) "reporting unit" means a spatial object that provides the spatial reference for any non-spatial data exchanged under environmental reporting obligations.

(6) "legal instrument" means a document that specifies legal obligations, including, but not limited to, international conventions, laws and legal acts or implementing regulations at any administrative level.

(7) "integrated coastal zone management" means a dynamic process for the sustainable management and use of coastal zones, taking into account at the same time the fragility of coastal ecosystems and landscapes, the diversity of activities and uses, their interactions, the maritime orientation of certain activities and uses and their impact on both the marine and land parts.

(8) "climate" means the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands or millions of years. These quantities are most often surface variables such as temperature, precipitation and wind.

11.2. **Spatial object types**

The following spatial object type is specified for the spatial data theme Area management/ restriction/regulation zones and reporting units: Management Restriction Or Regulation Zone.

11.2.1. *Management Restriction Or Regulation Zone (ManagementRestrictionOrRegulationZone)*

Area managed, restricted or regulated in accordance with a legal requirement related to an environmental policy or a policy or activity that may have an impact on the environment at any level of administration (international, European, national, regional and local).

Attributes of the spatial object type ManagementRestrictionOrRegulationZone

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
thematicId	Descriptive unique object identifier applied to spatial objects in a defined information theme.	ThematicIdentifier	voidable
name	A geographical name that is used to identify the management, restriction or regulation zone in the real world. It provides a “key” for implicitly associating different representations of the object.	GeographicalName	voidable
geometry	The geometry representing the spatial extent of the spatial object.	GM_Object	
zoneType	High level classification defining the type of management, restriction or regulation zone.	ZoneTypeCode	
specialisedZoneType	Additional classification value which further specialises the type of management, regulation or restriction zone relevant to the domain.	SpecialisedZoneTypeCode	voidable
environmentalDomain	Classification of the environment domain(s) for which, through the establishment of the zone, certain environmental	EnvironmentalDomain	

	objectives shall be reached.		
designationPeriod	Time period defining when the management, restriction or regulation zone was legally designated or became effective in the real world.	TM_Period	voidable
competentAuthority	Description of the organisation(s) responsible for managing, restricting or regulating measures or activities within the zone.	RelatedParty	voidable
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable

Association roles of the spatial object type ManagementRestrictionOrRegulationZone

Association role	Definition	Type	Voidability
legalBasis	Reference to, or citation of, the legal instrument or document that required the establishment of the zone.	LegislationCitation	voidable
relatedZone	Reference to a related management, regulation or restriction zone.	ManagementRestrictionOrRegulationZone	voidable
plan	Reference to, or citation of a plan (management or action plan) that describes the environmental objectives and	DocumentCitation	voidable

	measures that shall be undertaken in the zone to protect the environment.		

Constraints of the spatial object type ManagementRestrictionOrRegulationZone

At least the most specific legal instrument that required the establishment of zone shall be provided using the legalBasis association role.

The role attribute of the competentAuthority shall take the value “authority”.

11.3. Code lists

11.3.1. *Zone Type Code (ZoneTypeCode)*

High-level classification defining the type of Management, Restriction or Regulation Zone.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.
Values for the code list ZoneTypeCode

Value	Name	Definition
airQualityManagementZone	air quality management zone	Part of the territory of a Member State, as delimited by that Member State for the purposes of air quality assessment and management.
noiseRestrictionZone	noise restriction zone	An area delimited by a competent authority to manage and mitigate noise pollution. This includes agglomerations and quiet areas (in agglomerations and open country) as defined in the Directive 2002/49/EC of the European Parliament and of the Council.
animalHealthRestrictionZone	animal health restriction zone	Restriction zones established for the control and eradication of notifiable animal diseases
prospectingAndMiningPermitArea	prospecting and mining permit area	The area on which the prospection or extraction of any mineral has been authorised and for which that right or permit is granted.

a OJ L 312, 22.11.2008, p. 3.

b OJ L 327, 22.12.2000, p. 1.

c OJ L 288, 6.11.2007, p. 27.

d OJ L 135, 30.5.1991, p. 40.

regulatedFairwayAtSeaOrLargeInlandWater	regulated fairway at Sea or large inland water	Regulated navigation areas port-to-port established to organise traffic, prevent accident and pollution and to support management and planning.
restrictedZonesAroundContaminatedSites	restricted zones around contaminated sites	Zones established to protect human, plant and animal health and control movement and development within a contaminated site.
areaForDisposalOfWaste	area for disposal of waste	Area affected by disposal of waste as defined in Article 3(19) of Directive 2008/98/EC[a].
coastalZoneManagementArea	coastal zone management area	Area in which integrated coastal zone management takes place.
drinkingWaterProtectionArea	drinking water protection area	Area in which waste water leakage, use of fertilizer or pesticides, or establishment of waste disposal sites are prohibited.
nitrateVulnerableZone	nitrate vulnerable zone	Areas of land which drain into polluted or threatened waters and which contribute to nitrate pollution.
marineRegion	marine region	Marine regions and their subregions are sea regions designated under international, Union, national or sub-national legislation for the purpose of assessment, management and regulation.
riverBasinDistrict	river basin district	Area of land and sea, made up of one or more neighbouring river basins together with their associated groundwaters and coastal waters, identified under Article 3(1) of Directive 2000/60/EC[b] as the main

a OJ L 312, 22.11.2008, p. 3.

b OJ L 327, 22.12.2000, p. 1.

c OJ L 288, 6.11.2007, p. 27.

d OJ L 135, 30.5.1991, p. 40.

		unit for management of river basins.
bathingWaters	bathing waters	Coastal waters or inland waters (rivers, lakes) explicitly authorised, or not prohibited for recreational bathing by large numbers of people.
floodUnitOfManagement	flood unit of management	Area of land and sea, identified under Directive 2007/60/EC of the European Parliament and Council[c] as the main unit for management when an alternative to the River Basin Districts or Sub-Districts are chosen.
waterBodyForWFD	water body under the Water Framework Directive (2000/60/EC)	The "water body" is a coherent sub-unit in the river basin (district) to which the environmental objectives of the Directive 2000/60/EC must apply. The identification of water bodies is based on geographical and hydrological determinants. This includes surface (river, lake, transitional and coastal) and ground water bodies.
sensitiveArea	sensitive area	Water bodies identified as sensitive areas, as defined in Annex II to Directive 91/271/EEC[d].
designatedWaters	designated waters	Marine, coastal or surface waters designated by Member States as needing protection or improvement in order to support fish life.
plantHealthProtectionZone	plant health protection zone	Protection zone within which protective measures are established against the introduction of organisms harmful to plants or plant

a OJ L 312, 22.11.2008, p. 3.

b OJ L 327, 22.12.2000, p. 1.

c OJ L 288, 6.11.2007, p. 27.

d OJ L 135, 30.5.1991, p. 40.

		products and against their spread.
forestManagementArea	forest management area	Area designated for the sustainable management of forest resources and functions.

a OJ L 312, 22.11.2008, p. 3.

b OJ L 327, 22.12.2000, p. 1.

c OJ L 288, 6.11.2007, p. 27.

d OJ L 135, 30.5.1991, p. 40.

11.3.2. *Specialised Zone Type Code (SpecialisedZoneTypeCode)*

Additional classification value that defines the specialised type of zone.

The allowed values for this code list comprise any values defined by data providers.

11.3.3. *Environmental Domain (EnvironmentalDomain)*

Environmental domain, for which environmental objectives can be defined.

The allowed values for this code list comprise only the values specified in the table below.
Values for the code list EnvironmentalDomain

Value	Name	Definition
soil	soil	The top layer of the land surface of the earth that is composed of disintegrated rock particles, humus, water and air.
noise	noise	Sound which is unwanted, either because of its effects on humans, its effect on fatigue or malfunction of physical equipment, or its interference with the perception or detection of other sounds.
naturalResources	natural resources	A feature or component of the natural environment that is of value in serving human needs, e.g. soil, water, plant life, wildlife, etc. Some natural resources have an economic value (e.g. timber) while others have a “non-economic” value (e.g. scenic beauty).
climateAndClimateChange	climate and climate change	State of the climate and/or change in this state that can

		be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties, and that persists for an extended period, typically decades or longer.
healthProtection	health protection	Measures or devices designed to reduce the risk of harm to human health posed by pollutants or other threatening conditions in the ecosystem.
air	air	A predominantly mechanical mixture of a variety of individual gases forming the earth's enveloping atmosphere.
water	water	Common liquid (H_2O) which forms rain, rivers, the sea, etc., and which makes up a large part of the bodies of organisms.
waste	waste	Material, often unusable, left over from any manufacturing, industrial, agricultural or other human process; material damaged or altered during a manufacturing process and subsequently left useless.
natureAndBiodiversity	nature and biodiversity	Active management of the earth's natural resources and environment to ensure their quality is maintained and that they are wisely used.
sustainableDevelopment	sustainable development	Development that provides economic, social and environmental benefits in the long term having regard to the needs of living and future generations.
landUse	land use	The term land use deals with the spatial aspects of all human activities on the land and with the way in which the land surface is adapted, or could be adapted, to serve human needs.

11.4. Theme-specific Requirements

11.4.1. *Management Restriction Or Regulation Zones*

(1) Where the geometry of the spatial object is derived from another spatial object, the geometries of the two objects shall be consistent.

(2) If the geometries of the spatial objects in a ManagementRestrictionOrRegulationZone data set are derived from the geometries of spatial objects in another data set, then this source data set (including its version) shall be described as part of the lineage metadata element.

(3) Data providers shall include the following keywords in addition to the mandatory keywords defined in Regulation (EC) 1205/2008:

(a) One or several keywords describing the high-level classification of the zone type(s) included in the data set, as defined in ZoneTypeCode code list.

(b) One or several keywords describing the official document number(s) of the legal instrument(s) under which the zone(s) included in the data set is (are) established. For Union legislation, the CELEX number shall be used.

11.4.2. *Reporting Units*

(1) Spatial objects acting as reporting units shall be defined and made available according to the requirements of their respective INSPIRE spatial data theme(s).

(2) Where environmental reporting data, to establish a spatial reference, refers to real-world entities that are made available as spatial objects in accordance with this Regulation, the reporting data shall include an explicit reference to those spatial objects.

11.4.3. *Cross-theme requirements*

(1) If an area has been established exclusively to manage, regulate and restrict activities to conserve nature, biodiversity and cultural heritage, it shall be made available as a ProtectedSite spatial object. If a zone has been established to deliver multiple objectives, including the conservation of nature, biodiversity and cultural heritage, it shall be made available as a ManagementRestrictionOrRegulationZone spatial object.

(2) Where a zone has been established to regulate planned land use and defined within a legally binding spatial plan, it falls within the scope of the Land Use theme and shall be encoded as a SupplementaryRegulation. However, if the zone has been established by legislative requirement but not defined within a legally binding spatial plan, then it shall be encoded as a ManagementRestrictionOrRegulationZone.

11.5. Layers

Layers for the spatial data theme Area Management / Restriction / Regulation Zones and Reporting Units

Layer Name	Layer Title	Spatial object type
AM.<CodeListValue>[a]	<human readable name>	ManagementRestrictionOrRegulationZone (zoneType: ZoneTypeCode)

a One layer shall be made available for each code list value, in accordance with Art. 14(3).

Example: AM.AirQualityManagementZone[a]	Example: Air Quality Management Zone	

a One layer shall be made available for each code list value, in accordance with Art. 14(3).

12. NATURAL RISK ZONES

12.1. **Definitions**

In addition to the definitions set out in Article 2, the following definition shall apply:

(1) "risk" means the combination of the consequences of an event (hazard) and the associated likelihood/probability of its occurrence, in accordance with ISO/IEC 31010:2009.

(2) "hazard" means a dangerous phenomenon, substance, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

(3) "exposure" means people, property, systems, or other elements present in hazard zones that are thereby subject to potential losses.

(4) "vulnerability" means the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard.

12.2. **Spatial object types**

The following spatial object types are specified for the spatial data theme Natural Risk Zones:
— Abstract Exposed Element
— Abstract Hazard Area
— Abstract Observed Event
— Abstract Risk Zone
— Exposed Element Coverage
— Exposed Element
— Hazard Area
— Hazard Coverage
— Observed Event Coverage
— Observed Event
— Risk Coverage
— Risk Zone

12.2.1. *Abstract Exposed Element (AbstractExposedElement)*

People, property, systems, or other elements present in hazard zones that are thereby subject to potential losses.

This type is abstract.
Attributes of the spatial object type AbstractExposedElement

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	identifier	

beginLifeSpanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifeSpanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable
validFrom	The time when the exposed element started to exist in the real world.	DateTime	voidable
validTo	The time from which the exposed element no longer exists in the real world.	DateTime	voidable

Association roles of the spatial object type AbstractExposedElement

Association role	Definition	Type	Voidability
sourceOfSpatialRepresentation	The source object which is used to represent the exposed element.	AbstractFeature	voidable

Constraints of the spatial object type AbstractExposedElement

If the sourceOfSpatialRepresentation association role is empty, the geometry of the AbstractExposedElement spatial object shall be provided.

12.2.2. *Abstract Hazard Area (AbstractHazardArea)*

An area affected by a natural hazard.

This type is abstract.

Attributes of the spatial object type AbstractHazardArea

Attribute	Definition	Type	Voidability
beginLifeSpanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
determinationMethod	Specifies if the hazard area result is delineated after modelling or	DeterminationMethodValue	

	determined after interpretation.		
endLifeSpanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable
inspireId	External object identifier of the spatial object.	identifier	
typeOfHazard	A generic classification and a specific classification of the type of natural hazard.	NaturalHazardClassification	
validityPeriod	The time frame for which the model applies.	TM_Period	voidable

Association roles of the spatial object type AbstractHazardArea

Association role	Definition	Type	Voidability
source	The observed event that triggered the modelling of a hazard area.	AbstractObservedEvent	voidable

12.2.3. *Abstract Observed Event (AbstractObservedEvent)*

A natural phenomenon relevant to the study of natural hazards which occurred or is currently occurring and which has been observed.

This type is abstract.
Attributes of the spatial object type AbstractObservedEvent

Attribute	Definition	Type	Voidability
beginLifeSpanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifeSpanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable

inspireId	External object identifier of the spatial object.	Identifier	
nameOfEvent	Common name of the observed event.	CharacterString	voidable
typeOfHazard	A generic classification and a specific classification of the type of hazard.	NaturalHazardClassification	
validFrom	The time when the observed event started to exist in the real world.	DateTime	voidable
validTo	The time from which the observed event no longer exists in the real world.	DateTime	voidable

Association roles of the spatial object type AbstractObservedEvent

Association role	Definition	Type	Voidability
isMonitoredBy	The environmental program which monitors the observed event	EnvironmentalMonitoringFacility	voidable

12.2.4. *Abstract Risk Zone (AbstractRiskZone)*

A risk zone is the spatial extent of a combination of the consequences of an event (hazard) and the associated probability/likelihood of its occurrence.

This type is abstract.
Attributes of the spatial object type AbstractRiskZone

Attribute	Definition	Type	Voidability
beginLifeSpanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifeSpanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable
inspireId	External object identifier of the spatial object.	identifier	

sourceOfRisk	A generic classification and a specific classification of the type of hazard which is the source of risk.	NaturalHazardClassification	
validityPeriod	Future finite time frame where the model applies.	TM_Period	voidable

Association roles of the spatial object type AbstractRiskZone

Association role	Definition	Type	Voidability
exposedElement	The element that is within a hazardous area	AbstractExposedElement	voidable
source	The hazard which is considered for the creation of the risk zone object.	AbstractHazardArea	voidable

12.2.5. *Exposed Element Coverage (ExposedElementCoverage)*

A coverage representing continuous information about exposed elements.

This type is a sub-type of AbstractExposedElement

This type is a sub-type of CoverageByDomainAndRange.

Attributes of the spatial object type ExposedElementCoverage

Attribute	Definition	Type	Voidability
typeOfElement	A classification of the exposed element.	ExposedElementClassification	voidable

Constraints of the spatial object type ExposedElementCoverage

The range set shall be the level, or intensity, of the vulnerability assessment.

The domain shall be a rectified grid or referenceable grid.

12.2.6. *Exposed Element (ExposedElement)*

Discrete spatial object representing an exposed element.

This type is a sub-type of AbstractExposedElement.

Attributes of the spatial object type ExposedElement

Attribute	Definition	Type	Voidability
geometry	Geometric representation of the exposed element.	GM_Object	

assessmentOfVulnerability	Assessment of the vulnerability of the exposed element.	VulnerabilityAssessment	voidable

12.2.7. *Hazard Area (HazardArea)*

Discrete spatial objects representing a natural hazard.

This type is a sub-type of AbstractHazardArea.
Attributes of the spatial object type HazardArea

Attribute	Definition	Type	Voidability
geometry	Geometric representation of spatial extent covered by the hazard area.	GM_Surface	
likelihoodOfOccurrence	A general concept relating to the chance of an event occurring.	LikelihoodOfOccurrence	voidable
magnitudeOrIntensity	An expression of the magnitude or the intensity of a phenomenon.	LevelOrIntensity	voidable

12.2.8. *Hazard Coverage (HazardCoverage)*

A coverage representing continuous information about a type of natural hazard.

This type is a sub-type of AbstractHazardArea.

This type is a sub-type of CoverageByDomainAndRange.
Constraints of the spatial object type HazardCoverage

The range set shall be described by magnitude or intensity, or by the likelihood of occurence.

The domain shall be a rectified grid or referenceable grid.

12.2.9. *Observed Event Coverage (ObservedEventCoverage)*

A coverage representing continuous information about observed events.

This type is a sub-type of AbstractObservedEvent

This type is a sub-type of CoverageByDomainAndRange.
Constraints of the spatial object type ObservedEventCoverage

The range set shall be described by magnitude or intensity, or by the likelihood of occurence.

The domain shall be a rectified grid or referenceable grid.

12.2.10. *Observed Event (ObservedEvent)*

Discrete spatial objects representing natural phenomenon relevant to the study of natural hazards which occurred, or is currently occurring, and which has been observed.

This type is a sub-type of AbstractObservedEvent.
Attributes of the spatial object type ObservedEvent

Attribute	Definition	Type	Voidability
geometry	Geometric representation of the spatial extent covered by the observed event.	GM_Object	
magnitudeOrIntensity	An expression of the magnitude or the intensity of a phenomenon.	LevelOrIntensity	voidable

12.2.11. *Risk coverage (RiskCoverage)*

A coverage representing continuous information about intensity or level of risk.

This type is a sub-type of AbstractRiskZone.

This type is a sub-type of CoverageByDomainAndRange.
Constraints of the spatial object type RiskCoverage

The range set shall be described by level or intensity.

The domain shall be a rectified grid or referenceable grid.

12.2.12. *Risk Zone (RiskZone)*

Discrete spatial objects representing the spatial extent of a combination of the consequences of an event (hazard) and the associated probability/likelihood of its occurrence.

This type is a sub-type of AbstractRiskZone.
Attributes of the spatial object type RiskZone

Attribute	Definition	Type	Voidability
geometry	Geometric representation of spatial extent covered by this risk zone.	GM_Surface	
levelOfRisk	The level of risk is an assessment of the combination of the consequences of an event (hazard) and the associated probability/likelihood of the occurrence of the event.	LevelOrIntensity	voidable

12.3. **Data types**

12.3.1. *Exposed Element Classification (ExposedElementClassification)*

This class provides piece of information about the nature of the exposed element which is relevant to risk analysis.
Attributes of the data type ExposedElementClassification

Attribute	Definition	Type	Voidability
exposedElementCategory	A generic classification of the types of element that are exposed to a risk.	ExposedElementCategoryValue	
specificExposedElementType	Any additional denomination of exposed element according to a nomenclature that is specific to the data set.	SpecificExposedElementTypeValue	voidable

12.3.2. *Level Or Intensity (LevelOrIntensity)*

Quantitative or qualitative assessment of either risk, hazard or vulnerability.
Attributes of the data type LevelOrIntensity

Attribute	Definition	Type	Voidability
qualitativeValue	A qualitative assessment of the level or intensity.	CharacterString	voidable
quantitativeValue	A quantitative assessment of the level or intensity.	Measure	voidable
assessmentMethod	A citation to the method used to express the level or intensity.	DocumentCitation	voidable

Constraints of the data type LevelOrIntensity

Either the qualitative value or the quantitative value shall be provided.

12.3.3. *Likelihood Of Occurrence (LikelihoodOfOccurrence)*

Likelihood is a general concept relating to the chance of an event occurring.
Attributes of the data type LikelihoodOfOccurrence

Attribute	Definition	Type	Voidability
qualitativeLikelihood	A qualitative assessment of the likelihood of	CharacterString	voidable

	occurrence of a hazard.		
quantitativeLikelihood	A frequency of occurence or return period of a hazard phenomenon.	QuantitativeLikelihood	voidable
assessmentMethod	A citation to the method used to express the likelihood.	DocumentCitation	voidable

Constraints of the data type LikelihoodOfOccurrence

Either the qualitative likelihood or the quantitative likelihood shall be provided.

12.3.4. *Natural Hazard Classification (NaturalHazardClassification)*

This class provides piece of information about the nature of the natural hazard as well as the type of hazard which is the source of risk.
Attributes of the data type NaturalHazardClassification

Attribute	Definition	Type	Voidability
hazardCategory	A generic classification of types of natural hazards.	HazardCategoryValue	
specificHazardType	Additional classification of the natural hazard that further specifies the hazard type according to a nomenclature that is specific to this data set.	SpecificHazardTypeValue	voidable

12.3.5. *Quantitative Likelihood (QuantitativeLikelihood)*

A frequency of occurrence or return period of a hazard phenomenon.
Attributes of the data type QuantitativeLikelihood

Attribute	Definition	Type	Voidability
probabilityOfOccurrence	The probability of occurrence of a hazard event, expressed as a value between 0 and 1.	Probability	voidable
returnPeriod	Long-term average interval of time or number of years within which an	Number	voidable

	event will be equalled or exceeded.		

12.3.6. *Vulnerability Assessment (VulnerabilityAssessment)*

Assessment of the vulnerability.
Attributes of the data type VulnerabilityAssessment

Attribute	Definition	Type	Voidability
sourceOfVulnerability	The type of hazard for which the vulnerability is assessed.	NaturalHazardClassification	
levelOfVulnerability	Level of vulnerability.	LevelOrIntensity	voidable
magnitudeOrIntensityOfHazard	An expression of the magnitude or the intensity of a phenomenon.	LevelOrIntensity	voidable
typeOfElement	A classification of the exposed element.	ExposedElementClassification	voidable

12.4. **Enumerations**

12.4.1. *Determination Method (DeterminationMethodValue)*

An enumeration to describe the method used to define the area of hazard or risk.
Values for the enumeration DeterminationMethodValue

Value	Definition
modelling	The area has been computed according to a model.
indirectDetermination	The area has been defined by interpretation of available data and/or information.

12.5. **Code lists**

12.5.1. *Exposed Element Category (ExposedElementCategoryValue)*

A classification of the exposed element.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.

This code list is hierarchical.
Values for the code list ExposedElementCategoryValue

Value	Name	Definition	Parent value

social	social	Anything related to people or groups of people.	
people	people	The presence of human beings.	social
community	community	A complex relation between human beings acting as a whole or as a unit.	social
political	political	Any object relevant to political affairs.	social
socialService	social service	Any service provided to people.	social
economic	economic	Any object related to property, economics or monetary issues.	
property	property	Any object subject to ownership, such as a house.	economic
infrastructure	infrastructure	Any object considered as a structure providing a service, such as a road, a bridge, a military facility, etc.	economic
economicActivity	economic activity	Any object representing an economic activity, such as an industry.	economic
ruralLandUse	rural land use	Any non-urban object that is dedicated to any given use.	economic
environmental	environmental	An area subject to a given protection level, such as a natural park.	
waterBody	water body	Any significant accumulation of water.	environmental
protectedArea	protected area	An area that is protected	environmental
pollutionSource	source of pollution	An object that contains pollutants.	environmental
heritage	heritage	Anything related to relevant objects from	

		a cultural or heritage perspective.	
culturalAsset	cultural asset	Any object considered to be relevant from a cultural perspective, such as a stadium, a theatre, a museum, etc.	heritage
historicalAsset	historical asset	Any object with a historical relevance.	heritage
worldHeritageSite	world heritage site	A place (such as a forest, mountain, lake, desert, monument, building, complex, or city) that is listed by the UNESCO as of special cultural or physical significance.	heritage

12.5.2. *Natural Hazard Category (NaturalHazardCategoryValue)*

A generic classification of types of natural hazards.

The allowed values for this code list comprise the values specified in the table below and narrower values defined by data providers.

This code list is hierarchical.
Values for the code list NaturalHazardCategoryValue

Value	Name	Definition	Parent value
geologicalHydrological	geological / hydrological	Processes that have a geological (geosphere) or hydrological (hydrosphere) nature (or origin).	
tsunami	tsunami	Long wave disruption in a large water body reaching emerged land.	geologicalHydrological
volcanic	volcanic	An opening, or rupture, in the Earth's crust that allows hot magma, ash and gases to escape.	geologicalHydrological
earthquake	earthquake	Earthquake hazards involve the	geologicalHydrological

		propagation of elastic waves at or near the surface after the release of tectonic stress or other natural sources, such as volcanic explosions or meteorite impacts.	
subsidenceAndCollapse	subsidence and collapse	Subsidence and collapse involve mainly vertical downwards ground movement of the surface of the Earth due to different processes of rock or soil weathering or rock compaction to a point where the rock structure cannot bear its own load (collapse) or causing relatively slow downwards movements (subsidence).	geologicalHydrological
landslide	landslide	Processes of downhill slope movements of soil, rock, and organic materials related to different types of ground failure.	geologicalHydrological
snowAvalanche	snow avalanche	A snow mass with typically a volume greater than 100 m^3 and a minimum length of 50 meters that slides rapidly downhill.	geologicalHydrological
flood	flood	Processes of inundation of usually dry (emerged) land, or temporary covering by water of land not normally covered by water.	geologicalHydrological
toxicOrRadioactive	toxic or radioactive	Processes related to the nature of substances that might	geologicalHydrological

		pose a threat to human health.	
meteorologicalClimatological	meteorological / climatological	Processes that have a meteorological (atmospheric) or climatic (changes in the long-run of environmental variables) nature (or origin).	
drought	drought	Sustained and extensive occurrence of below-average water availability, caused by climate variability.	meteorologicalClimatological
extremeTemperature	extreme temperature	An abnormal temperature rise or decrease lasting longer than usual temperature rise or drop.	meteorologicalClimatological
tornadosAndHurricanesStrongWinds	tornadoes, hurricanes and strong winds	Violent (high speed) winds.	meteorologicalClimatological
lightning	lightning	Discharge of atmospheric electricity.	meteorologicalClimatological
stormSurge	storm surge	Water pushed from the sea onto the land caused by an atmospheric disruption such as a hurricane or a rapid change in atmospheric pressure.	meteorologicalClimatological
fires	fires	This category includes all types of processes that involve the occurrence and spreading of fire.	
forestFireWildfire	forest fires or wild fires	Fire occurrence and spreading on vegetated land.	fires
undergroundFires	underground fires	Fire spreading below the surface, typically occurring in peat rich soils.	fires

biological	biological	Processes that are directly linked to living organisms or products produced by living organisms.	
infestation	infestation	Abnormal population increase of living organisms.	biological
epidemic	epidemic	An outbreak of a disease that spreads rapidly among individuals in an area or population.	
allergens	allergens	Biological products or substances (such as pollen) that might cause allergy over a large number of people.	biological
cosmic	cosmic	Processes from outer space.	
meteoriteImpact	meteorite impact	Solid materials from outer space reaching the Earth.	cosmic
magneticDisruption	magnetic disruption	Disturbances of the magnetic field of the Earth.	cosmic
solarAndCosmicRadiation	solar and cosmic radiations	Radiation from outer space (UV, gamma ray, etc).	cosmic

12.5.3. *Specific Exposed Element Type (SpecificExposedElementTypeValue)*

An additional denomination of exposed elements.

The allowed values for this coded list comprise any values defined by data providers.

12.5.4. *Specific Hazard Type (SpecificHazardTypeValue)*

An additional classification of the natural hazard.

The allowed values for this coded list comprise any values defined by data providers.

12.6. **Theme-specific Requirements**

(1) Where a RiskZone is associated with a HazardArea, the RiskZone and the HazardArea shall overlap.

(2) Where a RiskZone is associated with an ExposedElement, the ExposedElement shall overlap with the RiskZone.

12.7. **Layers**

Layers for the spatial data theme Natural Risk Zones

Layer Name	Layer Title	Spatial object type
NZ.RiskZone	Risk Zones	RiskZone
NZ.RiskZoneCoverage	Risk Zones Coverage	RiskZoneCoverage
NZ. <CodeListValue>[a]	<human readable name>	HazardArea, HazardAreaCoverage (typeOfHazard: NaturalHazardCategoryValue)
Example: NZ.Landslide	Example: Landslides	
NZ. <CodeListValue>[b]	<human readable name>	ObservedEvent, ObservedEventCoverage (typeOfHazard: NaturalHazardCategoryValue)
Example: NZ.Flood	Example: Floods	
NZ.ExposedElement	Exposed Elements	ExposedElement
NZ.ExposedElementCoverage	Exposed Element Coverage	ExposedElementCoverage

a One layer shall be made available for each code list value, in accordance with Art. 14(3).

b One layer shall be made available for each code list value, in accordance with Art. 14(3).

13. ATMOSPHERIC CONDITIONS AND METEOROLOGICAL GEOGRAPHICAL FEATURES

13.1. **Structure of the Spatial Data Themes Atmospheric Conditions and Meteorological Geographical Features**

The types specified for the spatial data themes Atmospheric Conditions and Meteorological Geographical Features are structured in the following packages:

— Atmospheric Conditions and Meteorological Geographical Features
— Specialised Observations (specified in Section 7.4 of Annex I)
— Processes (specified in Section 7.2 of Annex I)
— Observable Properties (specified in Section 7.3 of Annex I)

13.2. **Atmospheric Conditions and Meteorological Geographical Features**

13.2.1. *Code lists*

13.2.1.1. EU Air Quality Reference Component (EU_AirQualityReferenceComponentValue)

Definitions of phenomena regarding air quality in the context of reporting under Union legislation.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Atmospheric Conditions and Meteorological Geographical Features.

13.2.1.2. WMO GRIB Code and Flags Table 4.2 (GRIB_CodeTable4_2Value)

Definitions of phenomena observed in meteorology.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Atmospheric Conditions and Meteorological Geographical Features.

13.3. **Theme-specific Requirements**

(1) By way of derogation from the requirements of Section 2.2 of Annex II, gridded data related to the themes Atmospheric Conditions and Meteorological Geographical Features may be made available using any appropriate grid.

(2) Data related to the themes Atmospheric Conditions or Meteorological Geographical Features shall be made available using the types defined in Specialised Observations package in Annex I, the OM_Observation spatial object type or sub-types thereof.

(3) The observed property of an OM_Observation shall be identified by an identifier from the EU Air Quality Reference Component, the WMO GRIB Code & Flags Table 4.2, the Climate and Forecast Standard Names vocabularies or another appropriate vocabulary.

13.4. **Layers**

No layers are specified for the themes Atmospheric Conditions and Meteorological Geographical Features.

14. OCEANOGRAPHIC GEOGRAPHICAL FEATURES

14.1. **Structure of the Spatial Data Theme Oceanographic Geographical Features**

The types specified for the spatial data theme Oceanographic Geographical Features are structured in the following packages:

— Oceanographic Geographical Features
— Specialised Observations (specified in Section 7.4 of Annex I)
— Processes (specified in Section 7.2 of Annex I)
— Observable Properties (specified in Section 7.3 of Annex I)
— Observation References (specified in Section 7.1 of Annex I)

14.2. **Oceanographic Geographical Features**

14.2.1. *Code lists*

14.2.1.1. BODC P01 Parameter Usage (BODC_P01ParameterUsageValue)

Definitions of phenomena observed in oceanography.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Oceanographic Geographical Features.

14.3. **Theme-specific Requirements**

(1) By way of derogation from the requirements of Section 2.2. of Annex II, gridded data related to the theme Oceanographic Geographical Features may be made available using any appropriate grid.

(2) Data related to the theme Oceanographic Geographical Features shall be made available using the following types defined in the Specialised Observations package in Annex I: PointObservation, PointTimeSeriesObservation, MultiPointObservation, GridObservation, GridSeriesObservation, PointObservationCollection.

(3) The observed property of an OM_Observation shall be identified by an identifier from the BODC P01 Parameter Usage or Climate and Forecast Standard Names vocabularies.

14.4. **Layers**

Layers for the spatial data theme Oceanographic Geographical Features

Layer Name	Layer Title	Spatial object type
OF.PointObservation	Oceanographic Point Observation	PointObservation
OF.PointTimeSeriesObservation	Oceanographic Point Timeseries Observation	PointTimeSeriesObservation
OF.MultiPointObservation	Oceanographic Multipoint Observation	MultiPointObservation
OF.GridObservation	Oceanographic Grid Observation	GridObservation
OF.GridSeriesObservation	Oceanographic Grid Series Observation	GridSeriesObservation

15. SEA REGIONS

15.1. **Spatial object types**

The following spatial object types are specified for the spatial data theme Sea Regions:

— Sea Area
— Sea
— Marine Circulation Zone
— Intertidal Area
— Shoreline
— Shore Segment
— Coastline
— Marine Contour
— Marine Layer
— Sea Bed Area
— Sea Surface Area

15.1.1. *Sea Area (SeaArea)*

An area of sea defined according to its physical and chemical characteristics. It may have multiple geometries (extent) to represent different tidal states.

This type is a sub-type of HydroObject.

Attributes of the spatial object type SeaArea

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
seaAreaType	Type of the sea area according to the classifications in the SeaAreaTypeClassificationValue code list, e.g. estuary.	SeaAreaTypeClassificationValue	
extent	The extent of the sea area at a particular tidal state.	MarineExtent	
parameterValue	A value of some parameter assigned to the sea area. E.g. Annual Mean Sea Surface Temperature = 12 degrees Celsius.	ParameterValuePair	
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable

Association roles of the spatial object type SeaArea

Association role	Definition	Type	Voidability
subArea	Sea Areas can consist of sub areas, e.g. a Sea Area defining all European seas could be an aggregation of multiple Sea Areas (North Sea, Mediterranean Sea etc.).	SeaArea	

15.1.2. *Sea (Sea)*

Extent of sea at High Water (meanHighWater).

This type is a sub-type of SeaArea.
Attributes of the spatial object type Sea

Attribute	Definition	Type	Voidability
extent	The extent of the Sea at Mean High Water.	MarineExtent	

Constraints of the spatial object type Sea

Sea is defined at Mean High Water. This constraint can be relaxed if there is not significant tidal variation in water level.

15.1.3. *Marine Circulation Zone (MarineCirculationZone)*

A sea area defined by its physical and chemical circulation patterns. Typically used for management and reporting of the marine environment or marine environmental classification.

This type is a sub-type of SeaArea.
Attributes of the spatial object type MarineCirculationZone

Attribute	Definition	Type	Voidability
zoneType	The type of the Marine Circulation Zone, e.g. sedimentCell.	ZoneTypeValue	
extent	The extent of the Marine Circulation Zone at a particular tidal state.	MarineExtent	

15.1.4. *Intertidal Area (InterTidalArea)*

The part of the marine environment that is exposed (not covered in water) during a normal tidal cycle; defined as the difference between any high and any low water level.

This type is a sub-type of Shore.
Attributes of the spatial object type InterTidalArea

Attribute	Definition	Type	Voidability
lowWaterLevel	The low water level which was used to define the lower limit of the Intertidal Area, e.g. “meanLowWater”.	WaterLevelValue	
highWaterLevel	The high water level which was used to define the upper limit of the Intertidal Area, e.g. “meanHighWater”.	WaterLevelValue	

15.1.5. *Shoreline (Shoreline)*

Any Boundary between a Sea Area and land.

This type is a sub-type of HydroObject.
Attributes of the spatial object type Shoreline

Attribute	Definition	Type	Voidability
segment	A section of shoreline.	ShoreSegment	
waterLevel	The water level used when defining this shoreline (e.g. meanHighWater).	WaterLevelValue	voidable

15.1.6. *Shore Segment (ShoreSegment)*

A Shore Segment is a section of shoreline.
Attributes of the spatial object type ShoreSegment

Attribute	Definition	Type	Voidability
geometry	The geometry of the ShoreSegment.	GM_Curve	
shoreClassification	The primary type of the shore segment, taken from the ShoreTypeClassificationValue code list.	ShoreTypeClassificationValue	voidable
shoreStability	The primary stability type of the shore segment, taken from the ShoreStabilityValue code list.	ShoreStabilityValue	voidable

15.1.7. *Coastline (Coastline)*

A special case of a shoreline defined as the shoreline at Mean High Water (MHW). Where there is not significant variation in water level, Mean Sea Level (MSL) can be used as a substitute for MHW.

This type is a sub-type of Shoreline.
Constraints of the spatial object type Coastline

Coastline is a special case of shoreline at Mean High Water Level (MHW). Coastline is the boundary between land and sea to be used for viewing, discovery and general purpose applications where a land/marine boundary is required. Where there is no significant variation in water level, Mean Sea Level (MSL) can be used as a substitute for MHW.

15.1.8. *Marine Contour (MarineContour)*

A set of isolines representing the value of some phenomenon at a particular time.
Attributes of the spatial object type MarineContour

Attribute	Definition	Type	Voidability
isoline	Isoline used to generate the contour.	MarineIsoline	
phenomenon	The property represented by the isolines (e.g. wave height).	AbstractObservableProperty	
validTime	The time at which this contour is representative.	TM_Instant	

Association roles of the spatial object type MarineContour

Association role	Definition	Type	Voidability
sourceObservations	Used to link to a collection of underlying observations which were used to define a marine contour.	ObservationSet	

15.1.9. *Marine Layer (MarineLayer)*

A Marine Layer describes any layer that may cover any part of a sea surface or sea bottom.

This type is abstract.

Attributes of the spatial object type MarineLayer

Attribute	Definition	Type	Voidability
geometry	Geometry of the marine layer.	GM_Object	
validTime	Time period for which the marine layer is valid.	TM_Period	

Association roles of the spatial object type MarineLayer

Association role	Definition	Type	Voidability
subLayer	A marine layer may have a sub-layer, for example an Oil Slick may have a main slick with several smaller sub-slicks.	MarineLayer	

Constraints of the spatial object type MarineLayer

A Marine Layer can be represented as either a surface or a point. The point type geometry reflects the reality that many Marine Layers are identified by point observations.

15.1.10. *Sea Bed Area (SeaBedArea)*

An area of the sea bed with some identified type of cover, e.g. an area of vegetation or sediment type.

This type is a sub-type of MarineLayer.
Attributes of the spatial object type SeaBedArea

Attribute	Definition	Type	Voidability
surfaceType	Surface type of sea bed.	SeaBedCoverValue	

15.1.11. *Sea Surface Area (SeaSurfaceArea)*

An area of the sea surface with some type of cover, e.g. an area of sea ice.

This type is a sub-type of MarineLayer.
Attributes of the spatial object type SeaSurfaceArea

Attribute	Definition	Type	Voidability
surfaceType	Surface type of sea area.	SeaSurfaceClassificationValue	

15.2. **Data types**

15.2.1. *Marine Extent (MarineExtent)*

The extent of a sea area for a given tidal state.
Attributes of the data type MarineExtent

Attribute	Definition	Type	Voidability
geometry	The geometry of the Marine Extent.	GM_MultiSurface	
waterLevel	Water level at which the extent is valid.	WaterLevelValue	

15.2.2. *Marine Isoline (MarineIsoline)*

An isoline representing a particular value of some marine physical or chemical phenomenon such as temperature, salinity or wave height.
Attributes of the data type MarineIsoline

Attribute	Definition	Type	Voidability
geometry	Geometry of the isolines.	GM_MultiCurve	
value	Values attributed to the isolines.	Measure	

15.2.3. *Parameter Value Pair (ParameterValuePair)*

A parameter value pair contains a value of some observed property, e.g. Annual Mean Sea Surface Temperature.

Attributes of the data type ParameterValuePair

Attribute	Definition	Type	Voidability
parameter	A definition of the observed parameter (e.g. mean temperature).	AbstractObservableProperty	
value	The value of the observed parameter, e.g. 12 degrees Celsius.	Measure	
validTime	The time for which the attributed value is valid. This may be a time instant or a duration.	TM_Object	Voidable

15.3. **Code lists**

15.3.1. *Sea Area Type Classification (SeaAreaTypeClassificationValue)*

Classification type of the SeaArea, e.g. estuary, openOcean.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Sea Regions.

15.3.2. *Sea Bed Cover (SeaBedCoverValue)*

Types of cover found on sea beds.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Sea Regions.

15.3.3. *Sea Surface Classification (SeaSurfaceClassificationValue)*

Types of sea surface layers found on sea surfaces.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Sea Regions.

15.3.4. *Shore Stability (ShoreStabilityValue)*

Types of the stability of shore segments.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Sea Regions.

15.3.5. *Shore Type Classification (ShoreTypeClassificationValue)*

Types of shore segments.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Sea Regions.

15.3.6. *Zone Type (ZoneTypeValue)*

Types of marine circulation zones.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Sea Regions.

15.4. **Theme-specific Requirements**

(1) The Sea spatial object type shall be used to describe identified, named areas of sea (or ocean). Artificial reporting units are excluded from this requirement.

(2) The MarineExtent of a Sea spatial object shall have a waterlevel value equal to "MeanHighWater", unless there is no appreciable change in the Sea extent due to tides, in which case a value of "MeanSeaLevel" may be used.

(3) The low water level used to define an IntertidalArea shall be provided as a value of the lowWaterLevel attribute. The level shall be a low water level.

(4) The code lists defined in the spatial data theme Oceanographic Geographical Features shall be used to identify phenomena represented by MarineContour spatial object types.

(5) SeaAreas shall be represented as 2-dimensional geometries.

15.5. **Layers**

Layers for the spatial data theme Sea Regions

Layer Name	Layer Title	Spatial object type
SR.SeaArea	Sea Area	SeaArea
SR.Sea	Sea	Sea
SR.MarineCirculationZone	Marine Circulation Zone	MarineCirculationZone
SR.InterTidalArea	Intertidal Area	InterTidalArea
SR.MarineContour	Marine Contour	MarineContour
SR.Shoreline	Shoreline	Shoreline
SR.Coastline	Coastline	CoastLine
SR.SeaSurfaceArea	Sea surface area	SeaSurfaceArea
SR.SeaBedArea	Sea bed area	SeaBedArea

16. BIO-GEOGRAPHICAL REGIONS

16.1. **Spatial object types**

The following spatial object type is specified for the spatial data theme Bio-geographical Regions: Bio-geographical Region.

16.1.1. *Bio-geographical Region (Bio-geographicalRegion)*

An area in which there are relatively homogeneous ecological conditions with common characteristics.

Attributes of the spatial object type Bio-geographicalRegion

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
geometry	The geometry defining the ecological region.	GM_MultiSurface	
regionClassification	Region class code, according to a classification scheme.	RegionClassificationValue	
regionClassificationScheme	Classification scheme used for classifying regions.	RegionClassificationSchemeValue	
regionClassificationLevel	The classification level of the region class.	RegionClassificationLevelValue	voidable
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable

16.2. **Code lists**

16.2.1. *Region Classification Level (RegionClassificationLevelValue)*

Codes defining the classification level of the region class.

The allowed values for this code list comprise only the values specified in the table below.

Values for the code list RegionClassificationLevelValue

Value	Name	Definition

international	International	This is a region classification on the international level.
local	Local	This is a region classification on the local level.
national	National	This is a region classification on the national level.
regional	Regional	This is a region classification on the regional level.

16.2.2. *Region Classification Scheme (RegionClassificationSchemeValue)*

Codes defining the various bio-geographical regions.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Bio-geographical Regions.

16.2.3. *Region Classification (RegionClassificationValue)*

Codes used to define the various bio-geographical regions.

The allowed values for this code list comprise the values of the following code lists or other code lists defined by data providers:

— Environmental Stratification Classification (EnvironmentalStratificationClassificationValue): Codes for the climatic stratification of the environment in the Union, as specified in Metzger, M.J., Shkaruba, A.D., Jongman, R.H.G. & Bunce, R.G.H., *Descriptions of the European Environmental Zones and Strata*. Alterra, Wageningen, 2012.

— Marine Strategy Framework Directive Classification (MarineStrategyFrameworkDirectiveClassificationValue): Codes for the Marine Stategy Framework Directive classification, as listed in Article 4 of Directive 2008/56/EC[(2)].

— Natura 2000 And Emerald Bio-geographical Region Classification (Natura2000AndEmeraldBio-geographicalRegionClassificationValue): Codes for the classification of bio-geographical regions, as specified in the Code List for Bio-geographical Regions, Europe 2011, published on the web site of the European Environment Agency.

— Natural Vegetation Classification (NaturalVegetationClassificationValue): Codes for the natural vegetation classification, as specified in the main formations in Bohn, U., Gollub, G., and Hettwer, C., *Map of the natural vegetation of Europe: scale 1:2,500,000, Part 2: Legend*, Bundesamt für Naturschutz (German Federal Agency for Nature conservation), Bonn, 2000.

16.3. **Layers**

Layer for the spatial data theme Bio-Geographical Regions

Layer Name	Layer Title	Spatial object type
BR.Bio-geographicalRegion	Bio-geographical Regions	Bio-geographicalRegion

17. HABITATS AND BIOTOPES

17.1. **Definitions**

In addition to the definitions set out in Article 2, the following definitions shall apply:

(1) "biotope" means a region of relatively uniform environmental conditions, occupied by a given plant community and its associated animal community.

(2) "habitat" means the locality in which a plant or animal naturally grows or lives. It can be either the geographical area over which it extends, or the particular station in which a specimen is found. A habitat is characterized by a relative uniformity of the physical environment and fairly close interaction of all the biological species involved.

(3) "habitat type (or biotope type)" means an abstract type classified to describe habitats or biotopes that are common in some characteristics on a certain level of detail. Commonly used classification criteria may refer to vegetation structure (as woodland, pastures, heathland) or to abiotic features such as running waters, limestone rocks or sand dunes, but also to relevant phases or stages of the life-cycle of a certain species or ecological guild, like wintering areas, nesting areas or wandering corridors etc.

(4) "distribution (of habitat types)" means a collection of spatial objects where the habitat type occurs, giving information on the occurrence of one specific habitat type in time or space across analytical units. It is usually depicted or modelled based on other spatial objects used as analytical units, for instance across grid-cells (very frequently), bio-geographical regions, nature conservation sites or administrative units.

(5) "habitat feature" means a habitat in terms of its exact location, size (area or volume) and biological information (e.g. occurring habitat types, structural traits, lists of species, vegetation types).

(6) "species" means a taxonomic category ranking immediately below a genus and including closely-related and morphologically similar individuals which actually or potentially inbreed. In the context of the theme Habitats and Biotopes, "species" means all animal species, plant species or fungi species relevant to describe a habitat.

(7) "vegetation" means the plants of an area considered in general or as communities, but not taxonomically. Vegetation can also be defined as the total plant cover in a particular area or on the Earth as a whole.

(8) "vegetation type" means plants (or total mass of plant life) of a given area considered in general or as plant communities, but not taxonomically.

17.2. **Spatial object types**

The following spatial object type is specified for the spatial data theme Habitats and Biotopes: Habitat.

17.2.1. *Habitat (Habitat)*

Geographical areas characterised by specific ecological conditions, processes, structure, and functions that physically support the organisms that live there.
Attributes of the spatial object type Habitat

Attribute	Definition	Type	Voidability

geometry	The extent of the habitat based on natural boundaries.	GM_Object	
habitat	The identifier for a habitat class, defined and described in an international, national or local habitat classification scheme.	HabitatTypeCoverType	
habitatSpecies	List of species which occur in or constitute a certain habitat at the time of mapping.	HabitatSpeciesType	voidable
habitatVegetation	List of vegetation types (according to a local vegetation classification scheme) which constitute a certain habitat.	HabitatVegetationType	voidable
inspireId	External object identifier of the spatial object.	Identifier	

17.3. **Data types**

17.3.1. *Habitat Species Type (HabitatSpeciesType)*

Species which occur in a certain habitat at the time of mapping.
Attributes of the data type HabitatSpeciesType

Attribute	Definition	Type	Voidability
localSpeciesName	Scientific name plus author used in national nomenclature with its national taxonomic concept.	LocalNameType	voidable
referenceSpeciesScheme	Reference list defining a nomenclatural and taxonomical standard to which all local species names and taxonomic concepts shall be mapped.	ReferenceSpeciesSchemeValue	
referenceSpeciesId	Identifier of one of the reference	ReferenceSpeciesCodeValue	

	lists given by the referenceSpeciesScheme.		

17.3.2. *Habitat Type Cover Type (HabitatTypeCoverType)*

Habitat type according to an international, national or local habitat classifications scheme.
Attributes of the data type HabitatTypeCoverType

Attribute	Definition	Type	Voidability
areaCovered	The area covered by a certain habitat type within the provided geometry of the habitat spatial object.	Area	voidable
lengthCovered	The length covered by a certain habitat type within the provided geometry of a habitat spatial object.	Length	voidable
volumeCovered	The volume of a certain habitat type within the provided geometry of a habitat spatial object.	Volume	voidable
referenceHabitatTypeId	Habitat type unique identifier (code) according to one Pan-European classification scheme.	ReferenceHabitatTypeCodeValue	
referenceHabitatTypeScheme	One of the Pan-European classification schemes that are widely used in Europe.	ReferenceHabitatTypeSchemeValue	
localHabitatName	Habitat type according to a local habitat classification scheme.	LocalNameType	voidable
referenceHabitatTypeName	Name of a habitat type according to one Pan-European classification scheme.	CharacterString	voidable

17.3.3. *Habitat Vegetation Type (HabitatVegetationType)*

Vegetation type which occurs in a certain habitat.

Attributes of the data type HabitatVegetationType

Attribute	Definition	Type	Voidability
localVegetationName	Vegetation class (vegetation type) according to a local classification scheme. Natural language name according to a local vegetation classification scheme.	LocalNameType	

17.3.4. *Local Name Type (LocalNameType)*

Name according to a local classification scheme.
Attributes of the data type LocalNameType

Attribute	Definition	Type	Voidability
localScheme	Uniform resource identifier of a local classification scheme.	CharacterString	
localNameCode	Natural language name according to a local classification scheme.	LocalNameCodeValue	
qualifierLocalName	The relation between the local name and the corresponding name in the Pan-European schema.	QualifierLocalNameValue	voidable
localName	Name according to a local classification scheme.	CharacterString	voidable

17.4. **Code lists**

17.4.1. *Qualifier Local Name (QualifierLocalNameValue)*

List of values that specify the relation between a locally used name and a name used at the pan-European level.

The allowed values for this code list comprise only the values specified in the table below.
Values for the code list QualifierLocalNameValue

Value	Name	Definition
congruent	congruent	The local type is conceptually the same as its related Pan-European type.

excludes	excludes	The Pan-European habitat type is conceptually not a subtype of its related local type.
includedIn	included in	The local type is conceptually a subtype of its related Pan-European type.
includes	includes	The Pan-European habitat type is conceptually a subtype of its related local type.
overlaps	overlaps	There is a certain overlap between the local type and its related Pan-European type according to their respective definitions, but none of the other specific relationships (congruent, excludes, included in, includes) holds.

17.4.2. *Reference Habitat Type Code (ReferenceHabitatTypeCodeValue)*

Values used in the Pan-European habitat classification schemes.

The allowed values for this code list comprise the values of the following code lists:

— EUNIS Habitat Type Code (EunisHabitatTypeCodeValue): Classification of habitat types according to the EUNIS Biodiversity database, as specified in the EUNIS habitat types classification published on the web site of the European Environment Agency.

— Habitats Directive Code (HabitatsDirectiveCodeValue): Classification of habitat types according to Annex I to Directive 92/43/EEC.

— Marine Strategy Framework Directive Code (MarineStrategyFrameworkDirectiveCodeValue): Classification of habitat types according to table 1 of Annex III to Directive 2008/56/EC.

17.4.3. *Reference Habitat Type Scheme (ReferenceHabitatTypeSchemeValue)*

This value defines which pan-European habitat classification scheme has been used.

The allowed values for this code list comprise only the values specified in the table below.
Values for the code list ReferenceHabitatTypeSchemeValue

Value	Name	Definition
eunis	Eunis	EUNIS habitat classification.
habitatsDirective	Habitats directive	Classification of habitats according to Annex I to Directive 92/43/EEC.
marineStrategyFrameworkDirective	Marine strategy framework directive	Classification of habitats according to table 1 of Annex III to Directive 2008/56/EC.

17.4.4. *Local Name Code (LocalNameCodeValue)*

Identifier taken from any local classification scheme.

The allowed values for this code list comprise any values defined by data providers.

17.5. **Theme-specific Requirements**

(1) It is mandatory to make available at least one habitat type according to a (pan-european) referenceHabitatTypeScheme listed in the ReferenceHabitatTypeSchemeValue code list. This encoding is intended to allow for queries on habitat types on a pan-European harmonized level.

17.6. **Layers**

Layer for the spatial data theme Habitats and Biotopes

Layer Name	Layer Title	Spatial object type
HB.Habitat	Habitat	Habitat

18. SPECIES DISTRIBUTION

18.1. **Definitions**

In addition to the definitions set out in Article 2, the following definitions shall apply:

(1) “aggregation” means the grouping of multiple objects into a class or cluster.

(2) “amalgamation” means the combination of multiple objects in a single structure.

18.2. **Spatial object types**

The following spatial object types are specified for the spatial data theme Species Distribution:

— Species Distribution Data Set

— Species Distribution Unit

18.2.1. *Species Distribution Data Set (SpeciesDistributionDataSet)*

This data set is a collection of individual spatial objects (units) in a distribution of species.

Attributes of the spatial object type SpeciesDistributionDataSet

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
domainExtent	The geographic extent of the domain of the feature collection.	GM_MultiSurface	voidable
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable

endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable
name	Name of a specific data set provided for Species Distribution.	CharacterString	voidable

Association roles of the spatial object type SpeciesDistributionDataSet

Association role	Definition	Type	Voidability
member	Individual spatial object in a collectionof spatial objects.	SpeciesDistributionUnit	
documentBasis	Reference to or citation of a document describing a campaign or a legal act which is the basis for the data set.	DocumentCitation	voidable

18.2.2. *Species Distribution Unit (SpeciesDistributionUnit)*

Occurrence of animal and plant species aggregated by grid, region, administrative unit or other analytical unit.

Attributes of the spatial object type SpeciesDistributionUnit

Attribute	Definition	Type	Voidability
geometry	The geometry of each unit in a collection.	GM_Object	
inspireId	External object identifier of the spatial object.	Identifier	
distributionInfo	The description of the subject of distribution (occurrences or population), the indication of the count of observations or population size of the particular species, species group or taxon rank and its distribution or isolation within the	DistributionInfoType	voidable

	species distribution unit.		
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable
speciesName	Identifier and scientific name, including the author, taken from an international reference list, optionally completed by a locally used name and its taxonomic concept relationship to the reference name.	SpeciesNameType	

Association roles of the spatial object type SpeciesDistributionUnit

Association role	Definition	Type	Voidability
spatialObject	A reference to another spatial object defining the spatial extent of a distribution unit.	AbstractFeature	voidable

Constraints of the spatial object type SpeciesDistributionUnit

If geometry has no value, a reference to a spatial object needs to be provided.

18.3. **Data types**

18.3.1. *Distribution Info Type (DistributionInfoType)*

The description of the status of the subject of distribution within the species distribution unit, including the indication of the abundance by counting, estimation or calculation of the number of occurrences or population size of the particular species.
Attributes of the data type DistributionInfoType

Attribute	Definition	Type	Voidability
occurrenceCategory	The species population density	OccurrenceCategoryValue	

	in the species distribution unit.		
residencyStatus	Information on the status of residency of a species regarding nativeness versus introduction and permanency.	ResidencyStatusValue	voidable
populationSize	A range value indicating the counted, estimated or calculated occurrences or population sizes, using an upper and a lower limit.	PopulationSizeType	
sensitiveInfo	Boolean value that indicates whether the location of a specific species is sensitive.	Boolean	voidable
populationType	The permanency of populations, particularly with regard to migratory species within a given species distribution unit.	PopulationTypeValue	voidable
collectedFrom	The date when the collecting of the original species occurrence data started.	Date	voidable
collectedTo	The date when the collecting of the original species occurrence data stopped.	Date	voidable

18.3.2. *Population Size Type (PopulationSizeType)*

A range value indicating the counted, estimated or calculated occurrences or population sizes, which is defined by an upper and a lower limit.
Attributes of the data type PopulationSizeType

Attribute	Definition	Type	Voidability
countingMethod	Method of providing a number for the indication of the abundance of a	CountingMethodValue	

	species within a specific species distribution unit.		
countingUnit	What has been counted, estimated or calculated when compiling information on the abundance of a species within the species distribution unit.	CountingUnitValue	
populationSize	A range value indicating the counted, estimated or calculated occurrences or population sizes using upper and lower bounds.	RangeType	

18.3.3. *Range Type (RangeType)*

Value indicating the upper and lower limits of the counting, estimation or calculation of occurrences.

Attributes of the data type RangeType

Attribute	Definition	Type	Voidability
upperBound	The upper limit of the range. If the value of this attribute is null and lowerBound is populated, this implies that the value is between the lowerBound and infinity.	Integer	
lowerBound	The lower limit of the range. If the value of this attribute is null and upperBound is populated, this implies that the value is between the upperBound and zero.	Integer	

18.3.4. *Species Name Type (SpeciesNameType)*

Identifier and scientific name, including the author, taken from an international reference list, optionally completed by a locally used name and its taxonomic concept relationship to the reference name.

Attributes of the data type SpeciesNameType

Attribute	Definition	Type	Voidability
referenceSpeciesId	Identifier of one of the reference lists given by the referenceSpeciesScheme.	ReferenceSpeciesCodeValue	
referenceSpeciesScheme	Reference list defining a nomenclatural and taxonomical standard to which all local names and taxonomic concepts shall be mapped.	ReferenceSpeciesSchemeValue	
referenceSpeciesName	The scientific name used in the authorized ReferenceSpeciesScheme.	CharacterString	voidable
localSpeciesId	Identifier used in national nomenclature.	LocalSpeciesNameCodeValue	voidable
localSpeciesScheme	Name of local species classification scheme (bibliographic reference).	CharacterString	voidable
localSpeciesName	Scientific name used in national nomenclature with its national taxonomic concept.	CharacterString	voidable
qualifier	Specifies the taxonomic concept relationship between local species identifier and the reference species identifier.	QualifierValue	voidable

18.4. **Code lists**

18.4.1. *Counting Method (CountingMethodValue)*

Method for producing numbers indicating the abundance of a species within an aggregation unit.

The allowed values for this code list comprise only the values specified in the table below.

Values for the code list CountingMethodValue

Value	Name	Definition
counted	counted	The units defined by the countUnitValues have been counted.
estimated	estimated	The units defined by the countUnitValues have been estimated.
calculated	calculated	The units defined by the countUnitValues have been calculated using a modelling technique.

18.4.2. *Counting Unit (CountingUnitValue)*

The defined unit used to express a counted or estimated number indicating the abundance of a species in a SpeciesDistributionUnit.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified for one of the following code lists in the INSPIRE Technical Guidance document on Species Distribution:

— General Counting Unit (GeneralCountingUnitValue): The unit used to express a counted or estimated number indicating the abundance within a SpeciesAggregationUnit (e.g. occurrences or the population size).

— Article 17 Counting Unit (Article17CountingUnitValue): The unit used for reporting pursuant to Article 17 of Directive 92/43/EEC. This unit expresses a counted or estimated number indicating the abundance within a species distribution unit (e.g. occurrences or the population size).

18.4.3. *Local Species Name Code (LocalSpeciesNameCodeValue)*

Species identifier taken from any local classification scheme.

The allowed values for this code list comprise any values defined by data providers.

18.4.4. *Occurrence Category (OccurrenceCategoryValue)*

The species population density in the SpeciesDistributionUnit.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.

Values for the code list OccurrenceCategoryValue

Value	Name	Definition
common	Common	The species is regarded as common in the SpeciesDistributionUnit by the data provider.
rare	Rare	The species is regarded as rare in the SpeciesDistributionUnit by the data provider.

veryRare	Very rare	The species is regarded as very rare in the SpeciesDistributionUnit by the data provider.
present	Present	The species is present in the SpeciesDistributionUnit.
absent	Absent	The species has been searched for but not found in the SpeciesDistributionUnit.

18.4.5. *Population Type (PopulationTypeValue)*

The permanency of populations, particularly with regard to migratory species within a given species distribution unit.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Species Distribution.

18.4.6. *Qualifier (QualifierValue)*

This value defines the relation between the taxonomic concepts of a local species name and the reference species name given by reference species identifier or by a reference species scheme.

The allowed values for this code list comprise only the values specified in the table below.
Values for the code list QualifierValue

Value	Name	Definition
congruent	Congruent	The taxonomic concepts are identical.
includedIn	Included in	The taxonomic concept of the localSpeciesName is included in the concept of the referenceSpeciesName.
includes	Includes	The taxonomic concept of the localSpeciesName includes the concept of the referenceSpeciesName.
overlaps	Overlaps	The taxonomic concepts partially overlap, but each one has a part that is not included in the other.
excludes	Excludes	The taxonomic concepts exclude each other.

18.4.7. *Reference Species Code (ReferenceSpeciesCodeValue)*

Reference lists containing species identifiers.

The allowed values for this code list comprise the values of the following code lists:

— EU-Nomen Code (EuNomenCodeValue): Reference lists containing the EU-Nomen species identifiers, as specified in the Pan-European Species directories Infrastructure available through the EU-Nomen portal.

— EUNIS Species Code (EunisSpeciesCodeValue): Reference lists containing the EUNIS species identifiers, as specified in EUNIS Biodiversity database published on the web site of the European Environment Agency.

— Nature Directives Code (NatureDirectivesCodeValue): Reference lists containing nature directives species identifiers, as specified in the Reference Portal for Natura 2000 as defined in Commission Implementing Decision 2011/484/EU.

18.4.8. *Reference Species Scheme (ReferenceSpeciesSchemeValue)*

Reference lists defining a nomenclatural and taxonomical standard to which local names and taxonomic concepts can be mapped.

The allowed values for this code list comprise only the values specified in the table below.
Values for the code list ReferenceSpeciesSchemeValue

Value	Name	Definition
eunomen	Eunomen	Names and taxonomic concepts as defined by the Pan European Species Inventory, published by the EU-Nomen portal.
eunis	Eunis	Names and taxonomic concepts as defined by the EUNIS Species list.
natureDirectives	Nature directives	Names and taxonomic concepts as defined by the species lists in Directives 2009/147/EC (Birds Directive) and 92/43/EEC (Habitats Directive).

18.4.9. *Residency Status (ResidencyStatusValue)*

Category of the residency of the occurrences or estimated population within a given aggregation unit.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Species distribution.

18.5. **Theme-specific Requirements**

(1) Where grid representations of species distributions are needed, the Grid_ETRS89-LAEA as defined in Section 2.2.1 of Annex II shall be used.

(2) For SpeciesDistributionUnit spatial objects,

(a) if a species has not been actively searched for, the distributionInfo attribute shall be void with reason "unknown",

(b) and if a species has been actively searched for, but has not been found, the value of the attribute occurenceCategory of DistributionInfoType shall be "absent".

(3) If the geometries of the spatial objects in aSpeciesDistributionUnit data set are derived from the geometries of spatial objects in another data set, then this source data set (including its version) shall be described as part of the lineage metadata element.

18.6. **Layer**

Layer for the spatial data theme Species Distribution

Layer Name	Layer Title	Spatial object type
SD.<CodeListValue>[a]	Species Distribution (of <human readable name>)	SpeciesDistributionUnit (speciesName / referenceSpeciesId: ReferenceSpeciesCodeValue)
Example: SD.SulaBassana	Example: Species Distribution (of Sula bassana)	

a One layer shall be made available for each code list value, in accordance with Art. 14(3).

19. ENERGY RESOURCES

19.1. **Definitions**

In addition to the definitions set out in Article 2, the following definitions shall apply:

(4) "energy resource" means a concentration or occurrence of an energy source which may have been present, is present or may be present in the future.

(5) "fossil fuels" means a form of non-renewable primary energy formed by natural processes such as the anaerobic decomposition of buried dead organisms, which contains high percentages of carbon and includes coal, crude oil, and natural gas.

(6) "primary energy" means energy that has not been subjected to any conversion or transformation process.

(7) "non-renewable energy" means natural resources which, due to long-term formation, cannot be produced, grown, generated, or used on a scale which can sustain its consumption rate.

(8) "energy from renewable sources" means energy from renewable non-fossil sources, namely wind, solar, aerothermal, geothermal, hydrothermal and ocean energy, hydropower, biomass, landfill gas, sewage treatment plant gas and biogases, in accordance with Article 2 of Directive 2009/28/EC of the European Parliament and of the Council[(3)].

(9) "waste as energy resources" means a fuel that may consist of many different materials coming from combustible industrial, institutional, hospital and household waste such as rubber, plastics, waste fossil oils and other similar commodities. It is either solid or liquid in form, renewable or non-renewable, biodegradable or non-biodegradable.

19.2. **Structure of the Spatial Data Theme Energy Resources**

The types specified for the spatial data theme Energy Resources are structured in the following packages:

— Energy Resources Base
— Energy Resources Vector
— Energy Resources Coverage

19.3. Energy Resources Base

19.3.1. *Data types*

19.3.1.1. Vertical Extent Range Type (VerticalExtentRangeType)

Value indicating the upper and lower bounds of the height/depth range.
Attributes of the data type VerticalExtentRangeType

Attribute	Definition	Type	Voidability
lowerBound	Value indicating the lower bound of the height/depth range.	Length	voidable
upperBound	Value indicating the upper bound of the height/depth range.	Length	

Constraints of the data type VerticalExtentRangeType

Value of lowerBound shall be expressed in meters.

Value of upperBound shall be expressed in meters.

19.3.1.2. Vertical Extent Type (VerticalExtentType)

Vertical dimensional property consisting of an absolute measure or range of measures referenced to a well-defined vertical reference level which is commonly taken as origin (ground level, mean sea level, etc.).
Attributes of the data type VerticalExtentType

Attribute	Definition	Type	Voidability
verticalExtent	Extent of the vertical dimension, represented by a scalar or by a range of values.	VerticalExtentValue	
verticalReference	Reference level that was chosen to determine the vertical height/depth.	VerticalReferenceValue	

19.3.1.3. Vertical Extent Value (VerticalExtentValue)

Either a single number or a range of height/depth values to describe the height/depth position of an Energy Resource.

This type is a union type.

Attributes of the union type VerticalExtentValue

Attribute	Definition	Type	Voidability
range	Range of numbers representing the height or depth range of an Energy Resource.	VerticalReferenceRangeType	
scalar	Number representing the height or depth of an Energy Resource.	Length	

Constraints of the union type VerticalExtentValue

Value of scalar shall be expressed in meters.

19.3.2. *Code lists*

19.3.2.1. Classification and Quantification Framework (ClassificationAndQuantificationFrameworkValue)

Values for the most widely used classification schemes to classify and quantify energy resources.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Energy Resources.

19.3.2.2. Fossil Fuel Class (FossilFuelClassValue)

Values indicating the various levels of fossil fuel resources.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Energy Resources.

19.3.2.3. Renewable and Waste (RenewableAndWasteValue)

Types of renewable and waste resources.

The allowed values for this code list comprise only the values specified in the table below.
Values for the code list RenewableAndWasteValue

Value	Name	Definition
biogas	biogas	A gas composed principally of methane and carbon dioxide produced by anaerobic digestion of biomass.
geothermal	geothermal	Energy available as heat emitted from within the Earth's crust, usually in the form of hot water or steam. This energy production

		is the difference between the enthalpy of the fluid produced in the production borehole and that of the fluid eventually disposed of. It is exploited at suitable sites for electricity generation or directly as heat.
hydro	hydro power	Potential and kinetic energy of water converted into electricity in hydroelectric plants.
industrialWaste	industrial waste	Waste of industrial non-renewable origin (solids or liquids) combusted directly for the production of electricity and/or heat.
liquidBiofuels	liquid biofuels	Liquid biofuels are biogasoline, bio-diesels or other biofuels directly used as fuel.
municipalSolidWaste	municipal solid waste	Waste produced by households, industry, hospitals and the tertiary sector which contains biodegradable materials that are incinerated at specific installations.
solarPhotovoltaic	solar photovoltaic	Sunlight converted into electricity by the use of solar cells usually made of semi-conducting material which, when exposed to light, will generate electricity.
solarThermal	solar thermal	Heat from solar radiationthat can consist ofsolar thermal-electric plants or of equipment for the production of heat.
solidBiomass	solid biomass	Covers organic, non-fossil material of biological origin which may be used as fuel for heat production or electricity generation.
tideWaveOcean	tide, wave, ocean	Mechanical energy derived from tidal movement, wave motion or ocean current

		and exploited for electricity generation.
wind	wind	Kinetic energy of wind exploited for electricity generation in wind turbines.

19.3.2.4. Fossil Fuel (FossilFuelValue)

Types of fossil fuels.

The allowed values for this code list comprise only the values specified in the table below.
Values for the code list FossilFuelValue

Value	Name	Definition
hardCoal	hard coal	Black, combustible, solid, organic fossil sediment often referred to as High Rank, due to their high calorific value, or Black Coals, given their physical characteristic. This category includes anthracite, coking coal and other bituminous coal.
lowRankCoal	low-rank coal	Combustible brown to black organic fossil sediment which are non-agglomerating and are often referred to as Low Rank Coals due to their lower calorific value or Brown Coals, due to their physical characteristics. This category includes both sub-bituminous coals and lignite.
peat	peat	A combustible soft, porous or compressed, sedimentary deposit of plant origin with high water content (up to 90 % in the raw state), easily cut, of light to dark brown colour.
crudeOil	crude oil	Crude oil is a mineral oil of natural origin comprising a mixture of hydrocarbons and associated impurities, such as sulphur. It exists in the liquid phase under normal surface temperature and pressure and its physical characteristics

		(density, viscosity, etc.) are highly variable.
naturalGas	natural gas	Gases occurring in underground deposits, whether liquefied or gaseous, consisting mainly of methane.
naturalGasLiquids	natural gas liquids	Liquid or liquefied hydrocarbons recovered from natural gas in separation facilities or gas processing plants.
oilSands	oil sands	Oil sands, tar sands or, more technically, bituminous sands, are loose sand or partially consolidated sandstone saturated with a dense and extremely viscous form of petroleum technically referred to as bitumen.
oilShales	oil shales	Oil shale, also known as kerogen shale, is an organic-rich fine-grained sedimentary rock containing kerogen (immature hydrocarbons).

19.3.2.5. Vertical Reference (VerticalReferenceValue)

Values indicating the reference level of the vertical extent.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Energy Resources.

19.4. **Energy Resources Vector**

19.4.1. *Spatial object types*

The package Energy Resources Vector contains the following spatial object types:
— Vector Energy Resource
— Fossil Fuel Resource
— Renewable And Waste Resource

19.4.1.1. Vector Energy Resource (VectorEnergyResource)

A vector spatial object defining an inferred or observable spatial extent of a resource that can be or has been used as a source of energy.

This type is abstract.
Attributes of the spatial object type VectorEnergyResource

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	
geometry	Geometric representation of spatial extent covered by this energy resource.	GM_Object	
classificationAndQuantificationFramework	A reference framework classification scheme to classify and quantify energy resources.	ClassificationAndQuantificationFrameworkValue	
verticalExtent	Vertical dimensional property consisting of an absolute measure or range of measures referenced to a well-defined vertical reference level which is commonly taken as origin (ground level, mean sea level, etc.).	VerticalExtentType	voidable
exploitationPeriod	The exploitationPeriod defines the start and, if applicable, the end date of the application.	ExploitationPeriodType	voidable
reportingAuthority	Organisation responsible for reporting on the estimated and produced energy resources.	RelatedParty	voidable
resourceName	The name of the energy resource.	GeographicalName	voidable
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable

19.4.1.2. Fossil Fuel Resource (FossilFuelResource)

A spatial object defining an inferred or observable spatial extent of a resource that can be or has been used as a source of fossil fuel energy. The most common fossil fuel types are coal, natural gas and crude oil.

This type is a sub-type of VectorEnergyResource.
Attributes of the spatial object type FossilFuelResource

Attribute	Definition	Type	Voidability
resource	Type and amount of fossil fuel resources in a single spatial object.	FossilFuelResourceType	
dateOfDiscovery	The date the energy source was discovered.	TM_Position	voidable

19.4.1.3. Renewable And Waste Resource (RenewableAndWasteResource)

A spatial object defining an inferred or observable spatial extent of a resource that can be or has been used as a source of renewable energy or waste.

This type is a sub-type of VectorEnergyResource.
Attributes of the spatial object type RenewableAndWasteResource

Attribute	Definition	Type	Voidability
capacity	Energy capacity of a renewable energy resource within the spatial extent.	Measure	voidable
dateOfDetermination	Date on which the capacity of the resource has been determined.	TM_Position	voidable
typeOfResource	The type of renewable energy or waste resource.	RenewableAndWasteValue	

19.4.2. *Data types*

19.4.2.1. Calorific Range Type (CalorificRangeType)

Value indicating the upper and lower bounds of the calorific range of the energy resource.
Attributes of the data type CalorificRangeType

Attribute	Definition	Type	Voidability

lowerBound	Value indicating the lower bound of the calorific range.	Measure	
upperBound	Value indicating the upper bound of the calorific range.	Measure	

19.4.2.2. Calorific Value Type (CalorificValueType)

Value or range of values describing the calorific value of an Energy Resource.

This type is a union type.
Attributes of the union type CalorificValueType

Attribute	Definition	Type	Voidability
calorificRange	A range of calorific values describing the calorific value of an Energy Resource.	CalorificRangeType	
calorificScalar	Measure quantifying the calorific property of an Energy Resource.	Measure	

19.4.2.3. Exploitation Period Type (ExploitationPeriodType)

The exploitationPeriod defines the start and, if applicable, the end date of the exploitation or application.
Attributes of the data type ExploitationPeriodType

Attribute	Definition	Type	Voidability
beginTime	The time when the exploitation started.	TM_Position	
endTime	The time when the exploitation ended.	TM_Position	

19.4.2.4. Fossil Fuel Measure (FossilFuelMeasure)

Amount of resources according to the specific categorisation.
Attributes of the data type FossilFuelMeasure

Attribute	Definition	Type	Voidability
amount	Amount of resource present in the spatial object.	Measure	

dateOfDetermination	Date on whichthe resource was quantified.	TM_Position	
resourceClass	Category indicating the different confidence of fossil fuel resource, like initially in place, proven reserves, contingent.	FossilFuelClassValue	

19.4.2.5. Fossil Fuel Resource Type (FossilFuelResourceType)

Type and amount of resource according to specific categorisation.
Attributes of the data type FossilFuelResourceType

Attribute	Definition	Type	Voidability
calorificValue	Each fossil fuel resource is characterised by its own calorific value, i.e. the quantity of energy available in a unit of mass.	CalorificValueType	voidable
quantity	Amount of resource according to the specific categorisation.	HydrocarbonMeasure	voidable
typeOfResource	Type of fossil fuel.	FossilFuelValue	

19.5. Energy Resources Coverage

19.5.1. *Spatial object types*

The package Energy Resources Coverage contains the spatial object type Renewable And Waste Potential Coverage.

19.5.1.1. Renewable And Waste Potential Coverage (RenewableAndWastePotentialCoverage)

Function that returns an energy potential value from its range for any direct position within its spatial, temporal or spatio-temporal domain.

This type is a sub-type of RectifiedGridCoverage.
Attributes of the spatial object type RenewableAndWastePotentialCoverage

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	

potentialType	There are various types of potential energy, each associated with a particular type of power.	PotentialTypeValue	
typeOfResource	Type of renewable and waste resource to which the measured phenomenon is applicable.	RenewableAndWasteValue	
domainExtent	The attribute domainExtent shall contain the extent of the spatiotemporal domain of the coverage. Extents may be specified in both space and time.	EX_Extent	
assessmentMethod	A reference to the method used to assess the energy resource potential.	DocumentCitation	voidable
name	Name of the coverage.	CharacterString	voidable
validTime	The time period for which this coverage is representative.	TM_Period	voidable
verticalExtent	A number or a range of height/depth values to describe the height/depth for which the range set values are valid.	VerticalExtentType	voidable
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable

Constraints of the spatial object type RenewableAndWastePotentialCoverage

The rangeSet values shall be of type Measure.

19.5.2. *Code lists*

19.5.2.1. Potential Type (PotentialTypeValue)

Types of potential energy from renewable and waste resources.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified for one of the following code lists in the INSPIRE Technical Guidance document on Energy Resources:

— Geothermal Potential (GeothermalPotentialValue): Types of potential geothermal energy.
— Hydro Potential (HydroPotentialValue): Types of potential hydro energy.
— Solar Potential (SolarPotentialValue): Types of potential solar energy.
— Tidal Potential (TidalPotentialValue): Types of potential tidal energy.
— Wind Potential (WindPotentialValue): Types of potential wind energy.

19.6. **Theme-specific Requirements**

Where the geometry of the spatial object is derived from another spatial object, the geometries of the two objects shall be consistent.

19.7. **Layers**
Layers for the spatial data theme Energy Resources

Layer Name	Layer Title	Spatial object type
ER. FossilFuelResource	Fossil Fuel Resources	FossilFuelResource
ER.RenewableAndWasteResource	Renewable And Waste Resources	RenewableAndWasteResource
ER.RenewableAndWastePotentialCoverage	Renewable And Waste Potential Coverage	RenewableAndWastePotentialCoverage

20. MINERAL RESOURCES

20.1. **Definitions**

In addition to the definitions set out in Article 2, the following definitions shall apply:

(1) “commodity” means a material of economic interest in an earth resource.

(2) “mine” means an excavation for the extraction of mineral deposits, including underground workings and open-pit workings (also called open-sky mines) for the extraction of metallic commodities, as well as open workings for the extraction of industrial minerals, (which are commonly referred to as quarries).

(3) “mining activity” means the process of extracting metallic or non-metallic mineral deposits from the Earth.

20.2. **Structure of the Spatial Data Theme Mineral Resources**

The types specified for the spatial data theme Mineral Resources are structured in the following packages:

— Mineral Resources

— Geology (for the spatial object type MappedFeature, specified in Section 4.2.1.10 of Annex III)

20.3. **Mineral Resources**

The package Mineral Resources contains the following spatial object types:
— Earth Resource
— Mineral Occurrence
— Commodity
— Exploration Activity
— Mining Feature
— Mining Feature Occurrence
— Mine
— Mining Activity

20.3.1. *Spatial object types*

20.3.1.1. Earth Resource (EarthResource)

The kinds of observable or inferred phenomena required to classify economic and non economic earth resources.

This type is a sub-type of GeologicFeature.

This type is abstract.
Attributes of the spatial object type EarthResource

Attribute	Definition	Type	Voidability
dimension	The size/volume of the earth resource.	EarthResourceDimension	voidable
expression	An indicator of whether an EarthResource appears on the surface or has been detected under cover rocks.	Category	voidable
form	The orebody's typical physical and structural relationship to wallrocks and associated rocks.	Category	voidable
linearOrientation	The linear orientation of the Earth Resource.	CGI_LinearOrientation	voidable
planarOrientation	The planar orientation of the Earth Resource.	CGI_PlanarOrientation	voidable

shape	The typical geometrical shape of the Earth Resource.	Category	voidable
sourceReference	The source reference for the Earth Resource.	DocumentCitation	voidable
beginLifespanVersion	Date and time at which this version of the spatial object was inserted or changed in the spatial data set.	DateTime	voidable
endLifespanversion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable

Association roles of the spatial object type EarthResource

Association role	Definition	Type	Voidability
oreAmount	The estimated or calculated amount of ore with the identification of the commodities contained and their grade.	OreMeasure	voidable
explorationHistory	Chronological list of surveys undertaken to better define the potential of a mineral occurrence.	ExplorationActivity	voidable
classification	Classification of the EarthResource.	MineralDepositModel	voidable
resourceExtraction	One or more periods of mining activity of the earth resource.	MiningActivity	voidable
commodityDescription	The commodities present in the resource ranked by importance order	Commodity	

20.3.1.2. Mineral Occurrence (MineralOccurrence)

A mineral accumulation in the lithosphere.

This type is a sub-type of EarthResource.
Attributes of the spatial object type MineralOccurrence

Attribute	Definition	Type	Voidability
type	The type of mineral occurrence.	MineralOccurrenceTypeValue	
endusePotential	The end-use potential of the mineral.	EndusePotentialValue	voidable

20.3.1.3. Commodity (Commodity)

The material of economic interest in the EarthResource.
Attributes of the spatial object type Commodity

Attribute	Definition	Type	Voidability
commodityImportance	The importance of the deposit for the commodity.	ImportanceValue	voidable
commodity	The earth resource commodity.	CommodityCodeValue	
commodityRank	The rank of the commodity.	Integer	voidable

Association roles of the spatial object type Commodity

Association role	Definition	Type	Voidability
source	The deposit/resource from which the commodity comes.	EarthResource	

20.3.1.4. Exploration Activity (ExplorationActivity)

A period of exploration activity.
Attributes of the spatial object type ExplorationActivity

Attribute	Definition	Type	Voidability
activityDuration	Period, or extent in time, of the exploration activity.	TM_Period	
activityType	The type of exploration activity.	ExplorationActivityTypeValue	
explorationResult	The result of the exploration activity.	ExplorationResultValue	

20.3.1.5. Mining Feature (MiningFeature)

Spatial object type grouping the common properties of mines and mining activities.

This type is abstract.
Attributes of the spatial object type MiningFeature

Attribute	Definition	Type	Voidability
inspireId	External object identifier of the spatial object.	Identifier	

20.3.1.6. Mining Feature Occurrence (MiningFeatureOccurrence)

A spatial representation of a MiningFeature.
Attributes of the spatial object type MiningFeatureOccurrence

Attribute	Definition	Type	Voidability
shape	The geometry of the MiningFeature.	GM_Object	

Association roles of the spatial object type MiningFeatureOccurrence

Association role	Definition	Type	Voidability
specification	Indicates the MiningFeature that the MiningFeatureOccurrence specifies.	MiningFeature	

20.3.1.7. Mine (Mine)

An excavation carried out for the extraction of mineral deposits.

This type is a sub-type of MiningFeature.
Attributes of the spatial object type Mine

Attribute	Definition	Type	Voidability
mineName	Data type indicating the Mine Name and whether it is the preferred name.	MineName	
status	Operational status value of the mine.	MineStatusValue	
sourceReference	The source reference for the mine.	DocumentCitation	voidable
startDate	Date on which the mine commenced operation.	TM_Instant	voidable
endDate	Date on which the mine ceased operation.	TM_Instant	voidable
beginLifespanVersion	Date and time at which this version of	DateTime	voidable

	the spatial object was inserted or changed in the spatial data set.		
endLifespanVersion	Date and time at which this version of the spatial object was superseded or retired in the spatial data set.	DateTime	voidable

Association roles of the spatial object type Mine

Association role	Definition	Type	Voidability
relatedMine	A related mine.	Mine	voidable
relatedActivity	The MiningActivity associated with the Mine.	MiningActivity	

20.3.1.8. Mining Activity (MiningActivity)

The process of extracting metallic, non-metallic mineral or industrial rock deposits from the Earth.

This type is a sub-type of MiningFeature.
Attributes of the spatial object type MiningActivity

Attribute	Definition	Type	Voidability
activityDuration	Period, or extent in time, of the mining activity.	TM_Period	
activityType	The type of mining activity.	MiningActivityTypeValue	
oreProcessed	The amount of ore processed by the activity.	Quantity	voidable
processingType	The type of processing carried out during the mining activity.	ProcessingActivityTypeValue	

Association roles of the spatial object type MiningActivity

Association role	Definition	Type	Voidability
associatedMine	The mine where the mining activity takes or took place.	Mine	voidable

deposit	The deposit to which the mining activity is associated.	EarthResource	voidable

20.3.2. *Data types*

20.3.2.1. Commodity Measure (CommodityMeasure)

A measure of the amount of the commodity based on a Reserve, Resource or Endowment calculation.

Attributes of the data type CommodityMeasure

Attribute	Definition	Type	Voidability
commodityAmount	The amount of the commodity.	QuantityRange	voidable
cutOffGrade	The cut-off grade used for calculating the commodity measure.	QuantityRange	voidable
grade	The grade of the commodity.	QuantityRange	voidable

Association roles of the data type CommodityMeasure

Association role	Definition	Type	Voidability
commodityOfInterest	The commodity to which the CommodityMeasure refers.	Commodity	

20.3.2.2. Earth Resource Dimension (EarthResourceDimension)

The size and volume of the earth resource.

Attributes of the data type EarthResourceDimension

Attribute	Definition	Type	Voidability
area	The area of the Earth Resource.	QuantityRange	voidable
depth	The depth of the Earth Resource.	QuantityRange	voidable
length	The length of the Earth Resource.	QuantityRange	voidable
width	The width of the Earth Resource.	QuantityRange	voidable

20.3.2.3. Endowment (Endowment)

The quantity of a mineral (or a group of minerals for industrial rocks) in accumulations (deposits) meeting specified physical characteristics such as quality, size and depth.

This type is a sub-type of OreMeasure.
Attributes of the data type Endowment

Attribute	Definition	Type	Voidability
includesReserves	A flag indicating if the estimate includes the reserves value.	Boolean	voidable
includesResources	A flag indicating if the estimate includes the resources value.	Boolean	voidable

20.3.2.4. Mine Name (MineName)

A data type indicating the Mine Name and whether it is the preferred name.
Attributes of the data type MineName

Attribute	Definition	Type	Voidability
isPreferred	A boolean operator indicating if the value in mineName is the preferred name of the mine.	Boolean	
mineName	The name of the mine.	CharacterString	

20.3.2.5. Mineral Deposit Model (MineralDepositModel)

Systematically arranged information describing the essential attributes of a class of mineral deposits. It may be empirical (descriptive) or theoretical (genetic).
Attributes of MineralDepositModel

Attribute	Definition	Type	Voidability
mineralDepositGroup	A grouping of mineral deposits defined by generic characteristics.	MineralDepositGroupValue	
mineralDepositType	Style of mineral occurrence or deposit.	MineralDepositTypeValue	voidable

20.3.2.6. Ore Measure (OreMeasure)

The estimate of the Reserve, Resource or Endowment ore amount.

This type is abstract.
Attributes of the data type OreMeasure

Attribute	Definition	Type	Voidability
classificationMethodUsed	Means of calculating the measurement.	ClassificationMethodUsedValue	
date	Date of calculated or estimated value.	TM_GeometricPrimitive	
dimension	Size of the body used in the calculation.	EarthResourceDimension	voidable
ore	Amount of ore.	QuantityRange	
proposedExtractionMethod	The method proposed to extract the commodity.	Category	voidable
sourceReference	The reference for the OreMeasure values.	DocumentCitation	

Association roles of the data type OreMeasure

Association role	Definition	Type	Voidability
measureDetails	A measure of the amount of each commodity, based on a reserve, resource or endowment calculation.	CommodityMeasure	

20.3.2.7. Reserve (Reserve)

The economically mineable part of a Measured and/or Indicated Mineral Resource.

This type is a sub-type of OreMeasure.
Attributes of the data type Reserve

Attribute	Definition	Type	Voidability
category	The level of confidence of the estimate.	ReserveCategoryValue	

20.3.2.8. Resource (Resource)

An accumulation of material of intrinsic economic interest in or on the Earth’s crust in such form, quality and quantity that there are reasonable prospects for economic extraction.

This type is a sub-type of OreMeasure.
Attributes of the data type Resource

Attribute	Definition	Type	Voidability
category	Indication of whether the resource is	ResourceCategoryValue	

	measured, indicated or inferred.		
includesReserves	A flag indicating whether the estimate of resources includes reserve values.	Boolean	voidable

20.3.3. *Code lists*

20.3.3.1. Classification Method Used (ClassificationMethodUsedValue)

Codes indicating the means used to calculate the ore measurement.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.
Values for the code list ClassificationMethodUsedValue

Value	Name	Definition
JORCcode	JORC code	The Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves.
NI43-101	NI 43-101	National Instrument 43-101 (the “NI 43-101” or the “NI”) is a mineral resource classification scheme used for the public disclosure of information relating to mineral properties in Canada.
CIMstandards	CIM standards	The CIM Definition Standards on Mineral Resources and Reserves (CIM Definition Standards) establish definitions and guidelines for the reporting of exploration information, mineral resources and mineral reserves in Canada.
SAMRECcode	SAMREC code	The South African Code for Reporting of Exploration Results, Mineral Resources and Mineral Reserves.
IMMReportingCode	IMM Reporting Code	The Code for Reporting of Mineral Resources and Mineral Reserves sets out minimum standards, recommendations and guidelines for Public Reporting of Mineral Exploration Results, Mineral

		Resources and Mineral Reserves in the United Kingdom, Ireland and Europe.
SMEGuide	SME Guide	A guide for reporting exploration information, mineral resources, and mineral reserves – USA.
IIMChCode	IIMCh Code	Certification Code for Exploration Prospects, Mineral Resources & Ore Reserves. This Code is the result of a Collaboration Agreement between the Institution of Mining Engineers of Chile (IIMCh) and the Ministry of Mining.
peruvianCode	Peruvian Code	This Code was prepared by a Joint Committee formed by members of the Lima Stock Exchange and by professionals dedicated to the exploration and evaluation of mineral resources.
CRIRSCOCode	CRIRSCO Code	The International Template for Reporting of Exploration Results, Mineral Resources and Mineral Reserves of the Committee for Mineral Reserves International Reporting Standards (CRIRSCO) integrates the minimum standards being adopted in national reporting codes worldwide with recommendations and interpretive guidelines for the public reporting of exploration results, mineral resources and mineral reserves.
UNFCCode	UNFC Code	The United Nations Framework Classification for Fossil Energy and Mineral Reserves and Resources 2009 (UNFC-2009) is a universally applicable scheme for classifying/evaluating energy and mineral reserves and

		resources - it is the successor to UNFC-2004.
SECGuide	SEC Guide	Description of Property by Issuers Engaged or to be Engaged in Significant Mining Operations. Developed by the United States Securities and Exchange Commission.
PERCCode	PERC Code	The Pan European Reserves and Resources Reporting Committee (PERC) Code for Reporting of Exploration Results, Mineral Resources and Mineral Reserves (further referred to as “the Code”) sets out minimum standards, recommendations and guidelines for Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves in the United Kingdom, Ireland and Europe.
russianCode	Russian Code	Currently effective in Russia is the Code approved by the Decree of the Ministry of Natural Resources, RF No 278 of 11 December, 2006. Full title of the Document: Classification of resources/reserves and prognostic resources of solid minerals.
historicResourceEstimate	Historic resource estimate	Term for resource estimation before “standard codes” (e.g. JORC etc.)

20.3.3.2. Commodity Code (CommodityCodeValue)

Values indicating the type of commodity.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Mineral Resources.

20.3.3.3. Enduse Potential (EndusePotentialValue)

Values indicating the end-use potential of the mineral.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.

This code list is hierarchical.

Values for the code list EndusePotentialValue

Value	Name	Definition	Parent
metallicMinerals	metallic minerals	Mineral occurrences including any type of metallic mineral.	
preciousMetals	precious metals	Mineral occurrences including Silver; Gold; Platinoids in general.	metallicMinerals
baseMetals	base metals	Mineral occurrences including Aluminium; Copper; Lead; Lead + Zinc; Tin; Zinc	metallicMinerals
ironFerroalloyMetals	iron and ferro-alloy metals	Mineral occurrences including Cobalt; Chromium; Iron; Manganese; Molybdenum; Niobium; Nickel; Vanadium; Tungsten.	metallicMinerals
specialityAndRareMetals	speciality and rare metals	Mineral occurrences including Beryllium; Bismuth; Cadmium; Germanium, Gallium; Hafnium; Mercury; Indium; Lithium; Rubidium, Cesium; Rhenium; Rare Earths (undifferentiated); Antimony; Selenium; Tantalum; Tellurium; Titanium (ilmenite, rutile); Zirconium (zircon, baddeleyite).	metallicMinerals
nonMetallicMinerals	non-metallic minerals	Mineral occurrences including any type of non-metallic mineral.	
buildingRawMaterial	building raw material	Mineral occurrences including Aggregate; Dimension & ornamental stones (granite, gabbro, travertine, etc.);	nonMetallicMinerals

		Gypsum, anhydrite; Cement limestone; Limestone for lime; Marble.	
ceramicAndRefractory	ceramic and refractory	Mineral occurrences including common clays (brick, tile); White-firing clays (refractory and ceramic clays); Dolomite; Feldspar, nepheline; Kaolin; Andalusite group (andalusite, kyanite, sillimanite).	nonMetallicMinerals
chemicalMinerals	chemical minerals	Mineral occurrences including Borates; Barite; Fluorite; Magnesium (magnesite); Sodium sulphate; Sodium carbonate (trona); Pyrite; Sulphur; Rock salt; Strontium; Zeolites.	nonMetallicMinerals
energyCoverMinerals	energy cover minerals	Mineral occurrences including Bituminous sandstone/limestone, oil shale; Coal; Lignite; Peat; Thorium; Uranium.	nonMetallicMinerals
fertilizer	fertilizer	Mineral occurrences including Phosphate; Potash (sylvite, carnalite).	nonMetallicMinerals
preciousAndSemiPreciousStones	precious and semi-precious stones	Mineral occurrences including Diamond (industrial and gemstone); Emerald; Ruby, Sapphire, Corundum (gemstone); Beryls, quartz, tourmalines, garnets, topaz, peridot, zircon, etc. (gemstones).	nonMetallicMinerals
specialityAndOtherIndustrialMinerals	speciality and other industrial rocks and minerals	Mineral occurrences including Abrasives: garnet, staurolite, corundum; Asbestos	nonMetallicMinerals

		(antophyllite, chrysotile, crocidolite); Attapulgite, sepiolite (clay); Bentonite (clay); Limestone, calcite (filler); Diatomite (kieselguhr); Graphite; Mica; Perlite; Quartz (massive / block for ferrosilicon); Quartz, optical & piezoelectrical use; Silica sand; Talc, pyrophyllite; Vermiculite; Wollastonite.	
recycledWaste	recycled waste	Mineral occurrences including metals or minerals coming from mining waste treatment.	

20.3.3.4. Exploration Activity Type (ExplorationActivityTypeValue)

Types of exploration activity carried out.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.

This code list is hierarchical.

Values for the code list ExplorationActivityTypeValue

Value	Name	Definition	Parent
regionalReconnaissance	regional reconnaissance	Regional investigation to identify anomalies (geochemical, geophysical, mineralogical) and discover occurrences.	
hammerProspectingAndGeologicalReconnaissance	Hammer prospecting and geological reconnaissance	Drafting of a very preliminary geological map with the main formations and the main structures, including the location	regionalReconnaissance

		of discovered mineral showings.	
regionalGeochemistry	regional geochemistry	The detection of abnormal concentrations of chemical elements in superficial water, soils or organisms, usually accomplished by instrumental, spot-test, or rapid techniques which are applicable in the field.	regionalReconnaissance
airborneGeophysics	airborne geophysics	Exploration technique based on the detection of anomalous physical characteristics of a ground.	regionalReconnaissance
regionalHeavyMineralSampling	regional heavy mineral sampling	Prospecting with a hand-held washing tool, usually shaped like a plate or a flat cone, at the bottom of which the densest fractions of a soil, a stream sediment are collected.	regionalReconnaissance
detailedSurfaceExploration	detailed surface exploration	Detailed surface exploration to delineate anomalies and describe occurrences in their refined geological context.	
geologicalMappingAndSampling	geological mapping and sampling	Detailed geological mapping of the area(s) of interest.	detailedSurfaceExploration
detailedGeochemistry	detailed geochemistry	Detailed surveys (often on a grid) with the most appropriate method, in order to confirm and better delineate and characterize geochemical anomalies identified	detailedSurfaceExploration

		during the previous phase.	
detailedGeophysics	detailed geophysics	Detailed surveys (often on a grid) with the most appropriate method, in order to confirm and better delineate and characterize geophysical anomalies identified during the previous phase.	detailedSurfaceExploration
detailedHeavyMineralSampling	detailed heavy mineral sampling	Detail prospecting in a local scale with a hand-held washing tool, usually shaped like a plate or a flat cone, at the bottom of which the densest fractions of a soil, a stream sediment are collected.	detailedSurfaceExploration
subsurfaceExploration	subsurface exploration	Subsurface exploration using the low costs techniques (trenching, destructive drilling, etc.), of resources appraisal.	
trenchingChannelSampling	removal of overburden, trenching, channel sampling	Shallow ditch from which a sample can be taken and a geological observation made.	subsurfaceExploration
augerDrilling	auger drilling	Drilling of a cylindrical hole with an ad hoc tool in order to collect a rock sample, or to carry out a physical measurement or a geological observation. By extension, designates also the drill hole, whatever the latter's purpose. In this case drilling is performed by means of an auger,	subsurfaceExploration

		i.e. with a helical screw which is driven into the ground with rotation.	
percussionDrilling	percussion drilling	Drilling of a cylindrical hole with an ad hoc tool in order to collect a rock sample, or to carry out a physical measurement or a geological observation. By extension, designates also the drill hole, whatever the latter's purpose. In this case, drilling is performed with a percussion tool.	subsurfaceExploration
assesmentOfResource	assesmantof the resource	The aim of this phase is the (still rough) delineation of the envelope of an orebody. Logging of cores, sampling of mineralized sections to better understand the distinctive features of the deposit, the physical properties of the ore, and finally to lead to a first (still approximate) calculation of the resource.	
reconnaissancePercussionDrilling	reconnaissance percussion drilling	The assessment of the resource using percussion drilling, sometimes on a grid with a wide mesh. The aim of this phase is the (still rough) delineation of the envelope of an orebody. Drill logging, sampling of mineralized sections to better understand the	assesmentOfResource

		distinctive features of the deposit, the physical properties of the ore, and finally to lead to a first (still approximate) calculation of the resource.	
reconnaissanceCoreDrilling	reconnaissance core drilling	Drilling of a cylindrical hole with an ad hoc tool in order to collect a rock sample, or to carry out a physical measurement or a geological observation. By extension, designates also the drill hole, whatever the latter's purpose. Boreholes are drilled by coring. This technique is used to collect undisturbed rock cylinders and allows to confirm/to precise results from percussion drilling.	assesmentOfResource
geologicalInterpretation	geological interpretation	Compilation and synthesis of all the available geological information in order to get an as precise as possible model of the mineral resource.	assesmentOfResource
oreBeneficiationTest	ore beneficiation tests	Technique designed to treat run of mine material.	assesmentOfResource
approximateResourceCalculation	approximate calculation of the resource	Rough evaluation of the tonnage and grade essentially based on drill holes information, by correlation and interpolation of intersected mineralized sections.	assesmentOfResource
evaluationOfOreDeposit	evaluation of the ore deposit	This the final phase of evaluation leading	

		to the final yes/no mining decision.	
systematicReconnaissanceCoreDrilling	systematic reconnaissance core drilling	The evaluation of the ore deposit with the aim of getting very detailed information on the whole deposit and best quality samples. This the final phase of evaluation leading to the final yes/no mining decision	evaluationOfOreDeposit
miningWorkings	mining workings	Reconnaissance workings aimed at getting a better understanding of the deposit, and allowing to get large ore samples for detailed beneficiation tests.	evaluationOfOreDeposit
geostatisticalEstimates	geostatistical estimates	Technique based on probability theory that is used to compute regionalized variables, the values of which depend on their position in space, such as the metal content or grade in a deposit.	evaluationOfOreDeposit
feasibilityStudyReport	feasibility study and report	Technical economic study aimed at assessing the possibility to launching a mine venture.	evaluationOfOreDeposit
miningPilot	mining pilot	Intermediate phase between laboratory tests and actual plant.	evaluationOfOreDeposit

20.3.3.5. Exploration Result (ExplorationResultValue)

Values indicating the result of the exploration activity.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.
Values for the code list ExplorationResultValue

Value	Name	Definition

isolatedMineralizedStones	isolated mineralized stones, showings, occurrences, altered areas	Identification of possible markers of a mineralized area.
anomalies	anomalies	Anomaly or anomalous area which geophysical or geochemical properties are different from areas around and which might indicate the presence of a mineralizing process in the vicinity.
keyMineralsIdentification	identification of key minerals	Identification of particular minerals which may indicate a possible mineralized area or accompany a mineralizing process.
detailedProspectMap	detailed prospect map with location of mineralized areas	A detailed map with location of all the mineralized occurrences whatever their size and representation of their relationships with lithology, structures, alteration zones, anomalous areas, sampling analysis results.
structuredAnomalies	structured anomalies	Narrowing of the area under mineral prospection, and a more detailed internal structure
prospectBoundariesRefinement	prospect boundaries refinement	Progressively reducing the surface area until the discovery of a mineral deposit.
primaryReconnaissanceMineralization	mineralization primary reconnaissance	The first attempts to see (removal of overburdens, trenching) or to intercept (auger, subsurface percussion drilling), and to sample primary mineralization.
indicatedMineralization	mineralization indicated	The first attempts to roughly delineate the ore body, using reconnaissance drilling (percussion and then core drilling), to sample it in detail, and to approximately evaluate the resource using geological interpretation, beneficiation tests.

indicatedOreDeposit	ore deposit indicated	The presence of an ore body has been demonstrated using systematic core drilling and sometimes some preliminary mining workings. The external geometry of the ore body and its internal structure (including ore grade distribution) starts to be well-known.
indicatedAndEstimatedOreDeposit	ore deposit indicated and estimated	Refinement of previous knowledge using statistical tools allowing for example interpolations between drill holes, and definition of enriched areas.
feasibilityStudyForMiningDecision	feasibility study report available for mining decision	Technical economic study aimed at assessing the possibility to launching a mine venture.
industrialTest	industrial test	Intermediate phase between laboratory tests and actual plant.

20.3.3.6. Importance (ImportanceValue)

Values indicating the importance of the commodity for the Earth Resource.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Mineral Resources.

20.3.3.7. Mine Status (MineStatusValue)

Values indicating the operational status of the mine.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.
Values for the code list MineStatusValue

Value	Name	Definition	Parent
operating	operating	A mine is operating.	
operatingContinuously	operating continuously	A mine is operating continuously.	operating
operatingIntermittently	operating intermittently	A mine is operating intermittently.	operating
notOperating	not operating	A mine is not operating.	

closed	closed	A mine can be closed for technical, economical or technico-economical reasons.	notOperating
abandoned	abandoned	A mine is abandoned.	notOperating
careAndMaintenance	care and maintenance	A mine is under care and maintenance.	notOperating
retention	retention	A mine can be kept unexploited until the price of contained commodity(ies) makes it economical.	notOperating
historic	historic	An “old” mine which has been exploited before 1900.	notOperating
underDevelopment	under development	Under development.	
construction	under construction	Under construction.	underDevelopment
pendingApproval	pending approval	A mine waiting for the exploitation authorization, generally given by a State Mining Engineering Department.	underDevelopment
feasibility	feasibility	Technical economic study aimed at assessing the possibility to launching a mine venture.	underDevelopment

20.3.3.8. Mineral Deposit Group (MineralDepositGroupValue)

Values indicating the grouping of mineral deposits on the basis of their generic characteristics.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.
Values for the code list MineralDepositGroupValue

Value	Name	Definition
organic	organic	Organic deposits result from the concentration of organic matter on, or close to the surface, by sedimentation and early diagenesis.

residualOrSurficial	residual/surficial	Surficial processes are the physical and chemical phenomena which cause concentration of ore material within the regolith, generally by removal of chemical constituents by aqueous leaching. This includes laterite deposits and residual or eluvial deposits.
placer	placer	Placer deposits represent concentrations of heavy minerals of certain elements, particularly of Au, U, and PGE, by sedimentary processes.
continentalSedimentAndVolcanics	continental sediments and volcanics	Mineral deposits associated with sediments or volcanic material on continental crust. They form where volcanic rocks and ash layers react with alkaline groundwater, and may also crystallize in post-depositional environments over periods ranging from thousands to millions of years in shallow marine basins.
sedimentHosted	sediment-hosted	Sediment-hosted deposits can be divided into two major subtypes. The first subtype is clastic-dominated lead-zinc ores, which are hosted in shale, sandstone, siltstone, or mixed clastic rocks, or occur as carbonate replacement, within a clastic-dominated sedimentary rock sequence. This subtype includes deposits that have been traditionally referred to as sedimentary exhalative (SEDEX) deposits. The second subtype of sediment-hosted Pb-Zn deposits is the Mississippi Valley-type that occurs in platform carbonate sequences, typically in passive-margin tectonic settings.

chemicalSediment	chemical sediment	Mineral deposits, mainly Fe or Mn, of sedimentary origin which originated as chemical precipitates from ancient ocean water. The process of accumulating these sedimentary deposits is controlled by the physicochemical properties inherent in iron and manganese.
marineVolcanicAssociation	marine volcanic association	Mineral deposits formed in a marine volcanic environment. Magmatic and hydrothermal fluids react with sea water for giving volcanogenic massive sulphides (VMS), which are at the origin stratiform deposits of Cu, Zn, Pb, Ag, Au.
epithermal	epithermal	Epithermal deposits occur largely in volcano-plutonic arcs associated with subduction zones, with ages similar to those of volcanism. The deposits form at shallow depth, less than 1 km, in the temperature range of 50°-200 °C, are hosted mainly by volcanic rocks, and occur mainly as veins.
veinBrecciaStockwork	vein, breccia and stockwork	It is a systematic group with special occurrence of mineral deposits in a finite volume within a rock. Vein: Fracture filling deposits which often have great lateral and/or depth extent but which are usually very narrow. Breccia: A fissure containing numerous wall-rock fragments, with mineral deposits in the interstices. Stockwork: a complex system of structurally controlled or randomly oriented veins.
manto	manto	Manto ore deposits are defined by a strict stratigraphic control on their

		distribution, generally within a porous formation within a structural trap site. The source of ore within manto deposits is considered to be interformational, from a sedimentary source within an adjacent sedimentary basin, or from ore fluids driven off from intrusive rocks.
skarn	skarn	Mineral deposits formed by replacement of limestone by ore and calc-silicate minerals, usually adjacent to a felsic or granitic intrusive body.
porphyry	porphyry	Porphyry deposits are intrusion-related, large tonnage low grade mineral deposits with metal assemblages that may include all or some of copper, molybdenum, gold and silver. The genesis of these deposits is related to the emplacement of intermediate to felsic, hypabyssal, generally porphyritic intrusions that are commonly formed at convergent plate margins.
ultramaficOrMafic	ultramafic / mafic	Mineral deposits related to mafic and ultramafic plutonism and resulting from magmatic processes such as fractional crystallisation. The main types of deposits are chromite and platinoids in ophiolitic peridotites, titanum within anorthosites, nickel, copper and platinoïds in ultramafic complexes.
carbonatite	carbonatites	Carbonatites are intrusive carbonate-mineral-rich igneous rocks, many of which contain distinctive abundances of apatite, magnetite, barite, and fluorite, that may contain economic or anomalous concentrations of rare earth elements, phosphorus, niobium,

		uranium, thorium, copper, iron, titanium, barium, fluorine, zirconium, and other rare or incompatible elements. They may also be sources of mica or vermiculite. Carbonatites may form central plugs within zoned alkalic intrusive complexes, or as dikes, sills, breccias, and veins.
pegmatite	pegmatite	Pegmatites tend to occur in the aureoles of granites in most cases, and are usually granitic in character, often closely matching the compositions of nearby granites. Pegmatites should thus represent exsolved granitic material which crystallises in the country rocks. However, an origin of pegmatite fluids by devolatilisation (dewatering) of metamorphic rocks is also envisaged. Pegmatites are coarse-grained rocks, mainly composed of quartz, feldspar and mica and are important because they often contain rare earth minerals and gemstones, such as aquamarine, tourmaline, topaz, fluorite, apatite and corundum, often along with tin and tungsten minerals, among others.
metamorphicHosted	metamorphic-hosted	Mineral deposits associated to deep metamorphism, more than ten km, in a context in which carbonic and aqueous fluids may give birth to gold veins.
gemsOrSemipreciousStones	gems and semi-precious stones	A piece of mineral, which, in cut and polished form, is used to make jewelry or other adornments.
industrialRocks	industrial rocks	Industrial minerals are geological materials which are mined for their commercial value, which are

		not fuel minerals and are not sources of metallic minerals. They are used in their natural state or after beneficiation either as raw materials or as additives in a wide range of applications.

20.3.3.9. Mineral Deposit Type (MineralDepositTypeValue)

Values indicating the style of mineral occurrence or deposit.

The allowed values for this code list comprise any values defined by data providers.

Data providers may use the values specified in the INSPIRE Technical Guidance document on Mineral Resources.

20.3.3.10Mineral Occurrence Type (MineralOccurrenceTypeValue)

The type of mineral occurrence.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.
Values for the code list MineralOccurrenceTypeValue

Value	Name	Definition
mineralDeposit	mineral deposit	A mass of naturally occurring mineral material, e.g. metal ores or non-metallic minerals, usually of economic value, without regard to mode of origin. Accumulations of coal and petroleum may or may not be included.
oreDeposit	ore deposit	The naturally occurring material from which a mineral or minerals of economic value can be extracted at a reasonable profit.
occurrence	occurrence	Any ore or economic mineral in any concentration found in bedrock or as float.
prospect	prospect	An area that is a potential site of mineral deposits, based on preliminary exploration, previous exploration. A geologic or geophysical anomaly, especially one recommended for additional exploration.

province	province	Geologic provinces classified by mineral resources.
district	district	Geologic districts classified by mineral resources.
field	field	A region or area that possesses or is characterized by a particular mineral resource.
lode	lode	A mineral deposit consisting of a zone of veins, veinlets, disseminations, or planar breccias.

20.3.3.11 Mining Activity Type (MiningActivityTypeValue)

The type of mining activity, processing activity, or production.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.

Values for the code list MiningActivityTypeValue

Value	Name	Definition
adit	adit	A horizontal passage from the surface into a mine.
alluvial	alluvial	Said of a placer formed by the action of running water, as in a stream channel or alluvial fan; also, said of the valuable mineral, e.g. gold or diamond, associated with an alluvial placer.
decline	decline	Passage or adit driven on a decline from the surface to provide access to a mine.
diggings	diggings	A term applied in the western U.S. to diggings for gold or other precious minerals located on a bar or in the shallows of a stream, and worked when the water is low.
dredging	dredging	A form of open pit mining in which the digging machinery and processing plant are situated on a floating barge or hull.
multiple	multiple	A multiple activity.

openPit	open pit	An open-sky excavation (also open-sky mine) for the extraction of metallic ores and /or commodities.
openPitAndUnderground	open pit and underground	Covers both the open pit and underground mining activity.
quarry	quarry	Open workings, usually for the extraction of stone.
reworking	reworking	New mining activities carried out on already explored mines.
shaft	shaft	A vertical or inclined excavation through which a mine is worked.
sluicing	sluicing	Concentrating heavy minerals, e.g., gold or cassiterite, by washing unconsolidated material through boxes (sluices) equipped with riffles that trap the heavier minerals on the floor of the box.
solutionMining	solution mining	(a) The in-place dissolution of water-soluble mineral components of an ore deposit by permitting a leaching solution, usually aqueous, to trickle downward through the fractured ore to collection galleries at depth. b) The mining of soluble rock material, esp. salt, from underground deposits by pumping water down wells into contact with the deposit and removing the artificial brine thus created.

surfaceMining	surface mining	Broad category of mining in which soil and rock overlying the mineral deposit (the overburden) are removed.
surfaceMiningAndUnderground	surface mining and underground	Covers both surface and underground mining.
underground	underground	An underground excavation for the extraction of mineral deposits, in contrast to surface excavations

20.3.3.12 Processing Activity Type (ProcessingActivityTypeValue)

Values indicating the type of processing carried out during a mining activity.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.

Data providers may also use the narrower values specified for this code list in the INSPIRE Technical Guidance document on Mineral Resources.

Values for the code list ProcessingActivityTypeValue

Value	Name	Definition
physicalTreatment	physical treatment	Sorting process using physical separation methods.
physicalChemicalTreatment	physical chemical treatment	Sorting process combining physical and chemical separation methods.
chemicalTreatment	chemical treatment	Sorting process using chemical separation methods.
unknownTreatment	unknown treatment	Sorting process – treatment is unknown.

20.3.3.13 Reserve Category (ReserveCategoryValue)

The level of confidence of the estimate of the reserve.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.

Values for the code list ReserveCategoryValue

Value	Name	Definition
provedOreReserves	proved ore reserves	A “Proved Ore Reserve” is the economically mineable part of a Measured Mineral Resource. It includes diluting materials and allowances for losses which may occur when the material is mined.

probableOreReserves	probable ore reserves	A “Probable Ore Reserve” is the economically mineable part of an Indicated, and in some circumstances, a measured mineral resource. It includes diluting materials and allowances for losses which may occur when the material is mined.
provedAndProbableOreReserves	proved and probable ore reserves	Covers both the Proved Ore Reserves and Probable Ore Reserves.
inaccessibleDocumentation	inaccessible documentation	Ore reserve without any accessible documentation.

20.3.3.14Resource Category (ResourceCategoryValue)

Indication whether the resource is measured, indicated or inferred.

The allowed values for this code list comprise the values specified in the table below and additional values at any level defined by data providers.
Values for the code list ResourceCategoryValue

Value	Name	Definition
measuredMineralResource	measured mineral resource	The part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a high level of confidence.
indicatedMineralResource	indicated mineral resource	The part of a Mineral Resource for which tonnage, densities, shape, physical characteristics, grade and mineral content can be estimated with a reasonable level of confidence.
inferredMineralResource	inferred mineral resource	The part of a Mineral Resource for which tonnage, grade and mineral content can be estimated with a low level of confidence. It is inferred from geological evidence and assumed but not verified geological and/or grade continuity.

measuredAndIndicatedMineralResource	measured and indicated mineral resource	A combination of measured mineral resource and indicated mineral resource.
measuredIndicatedAndInferredMineralResource	measured, indicated and inferred mineral resource	A combination of measured mineral resource, indicated mineral resource and inferred mineral resource.
indicatedAndInferredMineralResource	indicated and inferred mineral resource	A combination of indicated mineral resource and inferred mineral resource.
poorlyDocumented	poorly documented	Poorly estimated or documented mineral resource.

20.4. Theme-specific Requirements

The type MappedFeature specified in Section 4.2.1.10 of Annex III shall be used to describe the geometric properties of MineralOccurrence spatial objects.

20.5. Layers

Layers for the spatial data theme Mineral Resources

Layer Name	Layer Title	Spatial object type
MR.Mine	Mines	MiningFeatureOccurrence
MR.MineralOccurrence	Mineral Occurrences	MappedFeature (spatial objects whose specification property is of type MineralOccurrence)

(**1**) OJ L 321, 1.12.2008, p. 1.

(**2**) OJ L 164, 25.6.2008, p. 19.

(**3**) OJ L 140, 5.6.2009, p. 16.