INSPIRE
Infrastructure for Spatial Information in Europe

D2.8.I.3 Data Specification on Geographical Names – Draft Guidelines

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Foreword
How to read this document?

This document describes the INSPIRE draft data specification on *Geographical names* as developed by the Thematic Working Group using both natural and conceptual schema language.

This document includes two executive summaries that provide a quick overview of the INSPIRE data specification process in general, and the content of the data specification on *Geographical names* in particular. We highly recommend that managers, decision makers, and all those new to the INSPIRE process and/or information modelling should read these executive summaries in the first place.

The UML diagrams given in 5.1.1 offer a rapid way to see the main elements of the specifications and their relationships. The definition of the spatial objects, attributes, and relationships are included in the Feature Catalogue in 5.1.2. People having thematic expertise but not familiar with UML can fully understand the content of the data model focusing on the Feature Catalogue. Users might also find the Feature Catalogue especially useful to check if it contains the data necessary for the applications that they run. The technical details are expected to be of prime interest to those organisations that are/will be responsible for implementing INSPIRE within the field of *Geographical names.*

The technical provisions and the underlying concepts are often illustrated by examples. Smaller examples are within the text of the specification, while longer explanatory examples are attached in the annexes.

Spatial Data Interest Communities and Legally Mandated Organisations are invited to comment on the proposed structure and content of the forthcoming Implementing Rule on Interoperability of Spatial Data Sets and Services. In order to do so we recommend that they read this draft data specification and the questions of the consultation document in parallel.

Interoperability of Spatial Data Sets and Services
General Executive Summary

The challenges regarding the lack of availability, quality, organisation, accessibility, and sharing of spatial information are common to a large number of policies and activities and are experienced across the various levels of public authority in Europe. In order to solve these problems it is necessary to take measures of coordination between the users and providers of spatial information. The Directive 2007/2/EC of the European Parliament and of the Council adopted on 14 March 2007 aims at establishing an Infrastructure for Spatial Information in the European Community (INSPIRE) for environmental policies, or policies and activities that have an impact on the environment.

INSPIRE will be based on the infrastructures for spatial information that are created and maintained by the Member States. To support the establishment of a European infrastructure, Implementing Rules addressing the following components of the infrastructure are being specified: metadata, interoperability of spatial data themes (as described in Annexes I, II, III of the Directive) and spatial data services, network services and technologies, data and service sharing, and monitoring and reporting procedures.

INSPIRE does not require collection of new data. However, after the period specified in the Directive[1] Member States have to make their data available according to the Implementing Rules.

Interoperability in INSPIRE means the possibility to combine spatial data and services from different sources across the European Community in a consistent way without involving specific efforts of humans or machines. It is important to note that “interoperability” is understood as providing access to spatial data sets through network services, typically via Internet. Interoperability may be achieved by either changing (harmonising) and storing existing data sets or transforming them via services for publication in the INSPIRE infrastructure. It is expected that users will spend less time and efforts on understanding and integrating data when they build their applications based on data delivered within INSPIRE.

In order to benefit from the endeavours of international standardisation bodies and organisations established under international law their standards and technical means have been referenced, whenever possible.

To facilitate the implementation of INSPIRE, it is important that all stakeholders have the opportunity to participate its specification and development. For this reason, the Commission has put in place a consensus building process involving data users, and providers together with representatives of industry, research and government. These stakeholders, organised through Spatial Data Interest Communities (SDIC) and Legally Mandated Organisations (LMO)[2], have provided reference materials, participated in the user requirement and technical[3] surveys, proposed experts for the Data Specification Drafting Team[4] and Thematic Working Groups[5], expressed their views on the drafts of the technical documents of the data specification development framework[6] and are invited to comment the draft Implementing Rule on Interoperability of Spatial Data Sets and Services.

The development framework elaborated by the Data Specification Drafting Team aims at keeping the data specifications of the different themes coherent. It summarises the methodology to be used for the data specifications and provides a coherent set of requirements and recommendations to achieve interoperability. The pillars of the framework are four technical documents:

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1 For Annex I data: within two years of the adoption of the corresponding Implementing Rules for newly collected and extensively restructured data and within 5 years for other data in electronic format still in use

2 Number of SDICs and LMOs on 21/11/2008 was 276 and 162 respectively

3 Surveys on unique identifiers and usage of the elements of the spatial and temporal schema,

4 The Data Specification Drafting Team has been composed of experts from Austria, Belgium, Czech Republic, France, Germany, Greece, Italy, Netherlands, Norway, Poland, Switzerland, UK, and the European Environmental Agency

5 The Thematic Working Groups of Annex I themes have been composed of experts from Belgium, Czech Republic, Denmark, France, Finland, Germany, Hungary, Italy Netherland, Norway, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland, UK, the European Commission, and the European Environmental Agency

6Four documents describing common principles for data specifications across all spatial data themes. See further details in the text.

- The Definition of Annex Themes and Scope[7] describes in greater detail the spatial data themes defined in the Directive, and thus provides a sound starting point for the thematic aspects of the data specification development.

- The Generic Conceptual Model[8] defines the elements necessary for interoperability and data harmonisation including cross-theme issues. It specifies requirements and recommendations with regard to data specification elements of common use, like the spatial and temporal schema, unique identifier management, object referencing, a generic network model, some common code lists, etc. Those requirements of the Generic Conceptual Model that are directly implementable will be included in the Implementing Rule on Interoperability of Spatial Data Sets and Services.

- The Methodology for the Development of Data Specifications[9] defines a repeatable methodology. It describes how to arrive from user requirements to a data specification through a number of steps including use-case development, initial specification development and analysis of analogies and gaps for further specification refinement.

- The "Guidelines for the Encoding of Spatial Data"[10] defines how geographic information can be encoded to enable transfer processes between the systems of the data providers in the Member States. Even though it does not specify a mandatory encoding rule it sets GML (ISO 19136) as the default encoding for INSPIRE.

Based on the data specification development framework, the Thematic Working Groups have created the INSPIRE data specification for each Annex I theme. The data specifications follow the structure of "ISO 19131 Geographic information - Data product specifications" standard. They include the technical documentation of the application schema, the spatial object types with their properties, and other specifics of the spatial data themes using natural language as well as a formal conceptual schema language[11].

A consolidated model repository, feature concept dictionary, and glossary are being maintained to support the consistent specification development and potential further reuse of specification elements. The consolidated model consists of the harmonised models of the relevant standards from the ISO 19100 series, the INSPIRE Generic Conceptual Model, and the application schemas[12] developed for each spatial data theme. The multilingual INSPIRE Feature Concept Dictionary contains the definition and description of the INSPIRE themes together with the definition of the spatial object types present in the specification. The INSPIRE Glossary defines all the terms (beyond the spatial object types) necessary for understanding the INSPIRE documentation including the terminology of other components (metadata, network services, data sharing, and monitoring).

By listing a number of requirements and making the necessary recommendations, the data specifications enable full system interoperability across the Member States, within the scope of the application areas targeted by the Directive. They are published as technical guidelines and provide the basis for the content of the Implementing Rule on Interoperability of Spatial Data Sets and Services for data themes included in Annex I of the Directive. The Implementing Rule will be extracted from the data specifications keeping in mind short and medium term feasibility as well as cost-benefit considerations. The Implementing Rule will be legally binding for the Member States.

In addition to providing a basis for the interoperability of spatial data in INSPIRE, the data specification development framework and the thematic data specifications can be reused in other environments at local, regional, national and global level contributing to improvements in the coherence and interoperability of data in spatial data infrastructures.

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7 http://inspire.jrc.ec.europa.eu/reports/ImplementingRules/DataSpecifications/D2.3_Definition_of_Annex_Themes_and_scope_v3.0.pdf

8 http://inspire.jrc.ec.europa.eu/reports/ImplementingRules/DataSpecifications/D2.5_v3.1.pdf

9 http://inspire.jrc.ec.europa.eu/reports/ImplementingRules/DataSpecifications/D2.6_v3.0.pdf

10 http://inspire.jrc.ec.europa.eu/reports/ImplementingRules/DataSpecifications/D2.7_v3.0.pdf

11 UML – Unified Modelling Language

12 Conceptual models related to specific areas (e.g. INSPIRE themes)

Geographical names
Executive Summary

Geographical names are included in Annex I, which means that they are considered as reference data, i.e. data that constitute the spatial frame for recognising geographical location in general, as well as linking to and/or pointing at other information that belong to specific thematic fields such as environment, addresses, area management, human health and many others.

Geographical names are widely used in every-day communication for referring to various natural and man-made objects in the real world. Consequently they are interconnected with many themes listed in INSPIRE. Administrative units, addresses, elements of hydrography (lakes, rivers etc.), transport networks (airports, bridges etc.) and protected sites are usually referred to by their geographical names.

Geographical names are used extensively when searching for information in web-services (including geoportals), navigating, referencing thematic information to a location (geocoding), visualising geographic information on maps and screens, as well as when processing spatial data sets comprising of historical data. Correct usage of geographical names is a principal aspect of everyday communication, consequently the status (official, historic…) linguistic properties (language, spelling, eventual translation and transliteration) are a prime interest of many users, including press agencies, map publishers, spatial analysts, authorities, etc.

The INSPIRE data specification on geographical names has been prepared following the participative principle of a consensus building process. The stakeholders, based on their registration as a Spatial Data Interest Community (SDIC) or a Legally Mandated Organisation (LMO), had the opportunity to bring forward user requirements and reference materials, propose experts for the specification development, and to participate in the review of the data specifications. The Thematic Working Group responsible for the specification development of *Geographical names* was composed of experts coming from Belgium, Germany, Finland, France, Norway, and Spain. The specification process took place according to the methodology elaborated for INSPIRE respecting the requirements and the recommendation of the INSPIRE Generic Conceptual Model, which is one of the elements that ensures a coherent approach and cross-theme consistency with other themes in the Directive.

In everyday life, the same place can be referred to by several names. In order to reflect this approach the central element of the INSPIRE geographical names data model is the spatial object ("named place") that can carry one or more names. Such spatial objects should be preferably modelled as part of other INSPIRE data themes. However, in case of necessity when a name is outside the scope of INSPIRE[13], it can also be defined within the *Geographical names* spatial data theme.

A named place is characterised by its type[14], geometrical representation[15], and if available, identifier, reference point, indicative level of detail, local type, and any related spatial objects. The latter helps to preserve consistency between data at different levels of detail. In addition, life-cycle information[16] should be given if available.

Geographical names are proper nouns applied to real world entities, which are included in the INSPIRE geographical names data model as a data type. They carry information about the source and the status[17] of the name. As part of linguistic information, the spelling of the name must be given. When the information is available, it must be specified whether a geographical name is an endonym[18]

[13] Such named places may relate to landforms (land elevation and depressions, etc), various terrain features (wetlands, deserts, islands, coastal formations) man-made facilities (districts, hamlets, recreation areas, industrial parks, economic structures, etc) and others.
[14] Primary types (like administrative units, airports etc.) are taken from the INSPIRE Feature Concept Dictionary. They are completed by other types specific to geographical names (like, mountain ranges, islands, etc)
[15] either as a reference point or the projected footprint
[16] when the named place has been inserted / changed, or eventually superseded / retired in the spatial data set
[17] official, standardised, historic, other
[18] Name of a spatial object in an official or well established language occurring in that area where the feature is situated.

or exonym[19]. The properties of the geographical names are completed with the language, spelling, pronunciation, and the grammatical gender and number. The spelling of the name is further detailed, if available, by information on the script[20] used, and the transliteration[21] scheme.

Interoperability is also supported by a common reference system[22] and provisions for visualisation. For the latter simple rules for default portrayal are given. According to this, all geographical names have to be displayed in one layer using the Arial font in 10pt. The reference point of text placement is the centre of the named places. The typefaces and fonts used for the portrayal of geographical names shall fully and correctly reproduce all the letters and diacritics/accents present in the spellings of the geographical names to be visualised.

The main value of the INSPIRE geographical names model is it is a simple yet flexible structure that allows geographical names to be used as an attribute of a spatial object, either modelled within the geographical names theme or in any other theme of INSPIRE. The possibility of linking more names with the same named places gives the opportunity to integrate minority languages and exonymes, which are an important contribution to European multilingualism.

As the specification on INSPIRE geographical names is the result of a detailed analysis of user requirements and involves strong consideration of existing initiatives[23] that went beyond the strictly environmental scope, it is expected that it will also be a solid element of a multi-purpose European spatial data infrastructure.

19 Name used in a specific language for a geographical feature situated outside the area where that language is widely spoken, and differing in its form from the respective endonym(s) in the area where the geographical feature is situated.

20 Set of graphic symbols employed in writing in a particular language like Latin, Cyrillic, Greek, etc.

21 Method of conversion between different scripts

22 ETRS89 or (when applicable) ITRS

23 For example UNGEGN and EuroGeoNames project

Table of contents

1 Scope

This document specifies a harmonised data specification for the spatial data theme *Geographical names* as defined in Annex I of the INSPIRE Directive.

This data specification provides the basis for the drafting of Implementing Rules according to Article 7 (1) of the INSPIRE Directive [Directive 2007/2/EC]. The entire data specification will be published as implementation guidelines accompanying these Implementing Rules.

2 Overview

2.1 Name and acronyms

INSPIRE data specification for the spatial data theme *Geographical names*.

2.2 Informal description

Definition:

Names of areas, regions, localities, cities, suburbs, towns or settlements, or any geographical or topographical feature of public or historical interest.
[Directive 2007/2/EC]

Description:

This data specification describes concepts related with geographical names, i.e. proper nouns applied to a natural, man-made or cultural real world entity. The data specification is guided by the multi-language and multi-scriptural situation in Europe: a geographic entity can have different names in one or several languages, and each name can have different spellings in one or several scripts.

In some cases names can be applied as attributes of appropriately modelled spatial objects in other themes defined by INSPIRE. However, often the definition, classification, geometry and other attributes of these objects do not necessary correspond with the respective named objects as defined by this data specification, which focuses on the names aspects. Besides, commonly named geographic entities such as elevations, islands, natural shoreline elements and stretches of water bodies are seldom modelled as spatial objects in other themes, while they are modelled as named places in this specification.

Geographical names serve as a means to identify locations. They may be used, together with appropriate information on the named entity, in different products like maps and gazetteers as well as respective services. *Gazetteers* and gazetteer services associate the names with corresponding features – or locations – by means of co-ordinates, feature types and/or other necessary information. Among other needs, this data specification aims at answering to the need of a multi-lingual gazetteer (service) that shall most probably be established as a part of INSPIRE.

2.3 Normative References

Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 establishing an Infrastructure for Spatial Information in the European Community (INSPIRE)

EN ISO 19103:2005, Geographic information -- Conceptual schema language

EN ISO 19107:2005, Geographic Information – Spatial Schema

EN ISO 19113:2005, Geographic Information – Quality principles

EN ISO/TS 19138:2006, Geographic Information – Data quality measures

EN ISO 19109:2005, Geographic Information – Rules for Application Schemas

EN ISO 19112:2003, Geographic information -- Spatial referencing by geographic identifiers

EN ISO 19115:2005, Geographic information — Metadata

EN ISO 639-2:1998, Codes for the Representation of Names of Languages-Part 2: Alpha-3 Code. (updates to ISO 639-2 by the United States Library of Congress as mandated by ISO)

EN ISO 15924:2004, Codes for the representation of names of scripts

Commission Regulation (EC) No 1205/2008 of 3 December 2008 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata

2.4 Information about the creation of the specification

Document title: INSPIRE Data Specification *Geographical names*
Reference date: 2008-12-04
Responsible party: INSPIRE TWG Geographical Names
Language: English

2.5 Terms and definitions

Terms and definitions necessary for understanding this document are defined in the INSPIRE Glossary https://inspire-registry.jrc.ec.europa.eu .

2.6 Symbols and abbreviations

UNGEGN United Nations Group of Experts on Geographical Names.

2.7 Notation of requirements and recommendations

To make it easier to identify the mandatory requirements and the recommendations for spatial data sets in the text, they are highlighted and numbered.

Requirement X Requirements are shown using this style.

Recommendation X Recommendations are shown using this style.

3 Specification scopes

This data specification has only one scope, the general scope.

4 Identification information

Table 1 – Information identifying the INSPIRE data specification *Geographical names*

Title	INSPIRE data specification *Geographical names*.
Abstract	This specification describes geographical names, i.e. proper nouns applied to a natural, man-made or cultural feature on Earth. In order to express which different names are used to designate one given place, the product is feature oriented. In other words, the entry points of the product are the 'named places' and not the 'geographical names' themselves. However, the product focuses on the description of names rather than the description of features: it particularly describes characteristics of names like their language, and spellings in different scripts
Topic categories	Location
Geographic description	This INSPIRE data specification covers spatial data sets which relate to an area where a Member State has and/or exercises jurisdictional rights.
Purpose	The purpose of this document is to specify a harmonised data specification for the spatial data theme *Geographical names* as defined in Annex I of the INSPIRE Directive. Typically, geographical names are useful… - as search criteria (location), e.g. in a geoportal, for rescue services, geocoding, geoparsing and navigation. - as geographical identifiers, e.g. in gazetteer services. - for visualisation, e.g. as information layer in viewing services. - in standardisation, translation, and compilation of maps, reports, documents and articles. For instance, reliable information on the correct spelling and the status of names is required by press agencies and map producers. - for the processing of spatial data sets, e.g. for integration of historical data. in human and social science, e.g. in linguistic research, onomastic science, archaeology and etymology.
Spatial representation type	Vector
Spatial resolution	*Geographical names* data is used at all levels of resolution, from Local level to European level. The spatial resolution of a geographical name data set is typically described by the scale of the map where it has been captured from, or for which it has been captured. Note1: At the data set level and for geographical names, the most significant aspect related to spatial resolution is the density of features, i.e. the number of named places per area. Other aspects related to the concept of spatial resolution, like the precision or granularity of geometries of named places, are also relevant but generally of secondary importance for most use cases. Note2: The spatial resolution of a named database is usually heterogeneous (a data set may contain names of mountains together with names of hamlets). In this specification, the relevance of a given named place at a given scale may thus be described at the feature level (see attribute 'indicativeLoD' in the section 5.1.2.1.1). Note3: Beyond the spatial resolution, the richness of a geographical names data set may also be acknowledged through the number of names associated to each

	named place and their related properties (like names in different languages, or various forms of names such as complete and short forms of country and administrative unit names).
Supplemental information	The schema, and more precisely the class *GeographicalName*, together with its related class *SpellingOfName*, can be used for modelling names in any other INSPIRE theme. However, this specification does not specify requirements on how other themes may model geographical names.

5 Data content and structure

In the application schemas in this section several stereotypes are used that have been defined as part of a UML profile for use in INSPIRE [INSPIRE DS-D2.5]. These are explained in Table 2 below.

Table 2 – Stereotypes (adapted from [INSPIRE DS-D2.5])

Stereotype	**Model element**	**Description**
applicationSchema	Package	An INSPIRE application schema according to ISO 19109 and the Generic Conceptual Model.
featureType	Class	A spatial object type.
dataType	Class	A structured data type without identity.
enumeration	Class	A fixed list of valid identifiers of named literal values. Attributes of an enumerated type may only take values from this list.
codeList	Class	A flexible enumeration that uses string values for expressing a list of potential values.
voidable	Attribute, association role	If a characteristic of a spatial object is not present in the spatial data set, but may be present or applicable in the real world, the property shall receive this stereotype. If and only if a property receives this stereotype, the value of void may be used as a value of the property which shall imply that the characteristic is not present in the spatial data set, but may be present or applicable in the real world. It is possible to qualify a value of void in the data with a reason using the VoidValueReason type. The VoidValueReason type is a code list, which includes the following pre-defined values: - *Unknown*: The correct value for the specific spatial object is not known to, and not computable by the data provider. However, a correct value may exist. For example when the “elevation of the water body above the sea level” of a certain lake has not been measured, then the reason for a void value of this property would be ‘Unknown’. This value is applied on an object-by-object basis in a spatial data set. - *Unpopulated*: Same as ‘Unknown’ with the difference that the property is unknown for <u>all</u> spatial objects of that spatial object type within the spatial data set. NOTE It is expected that additional reasons will be identified in the future, in particular to support reasons / special values in coverage ranges.
lifeCycleInfo	Attribute, association role	If in an application schema a property is considered to be part of the life-cycle information of a spatial object, the property shall receive this stereotype.

Requirement 1	Spatial data sets related to the theme *Geographical names* shall be provided using the spatial object types and data types specified in the application schema in this section.

Requirement 2	Each spatial object shall comply with all constraints specified for its spatial object type or data types used in values of its properties, respectively.

Recommendation 1	The reason for a void value should be provided where possible using a listed value from the VoidValueReason code list to indicate the reason for the missing value.

NOTE The application schema specifies requirements on the properties of each spatial object including its multiplicity, domain of valid values, constraints, etc. All properties have to be reported, if the relevant information is part of the data set. Most properties may be reported as “void”, if the data set does not include relevant information. See the Generic Conceptual Model [INSPIRE DS-D2.5] for more details.

5.1 Application schema Geographical names

5.1.1 Description

5.1.1.1 Narrative description

Overview:

The entry point of the schema is the feature type *NamedPlace*, representing any real world entity referred to by one or several proper nouns.

Each feature *NamedPlace* is associated with one or several geographical names, i.e. proper nouns applied to the feature, modelled with the data type *GeographicalName*. The different geographical names of one given feature may be names in different languages or in different forms (e.g. complete and short forms of country and administrative unit names).

Each *GeographicalName* may have one or several spellings, i.e. proper ways of writing it, in one or several scripts like the Latin/Roman, Greek and Cyrillic scripts, modelled with the data type *SpellingOfName.*

For example:

- The city of Athens may be modelled in the schema as one *NamedPlace*.
- The endonym “Athína” (Greek language) and exonym “Athens” (English language) are two different GeographicalNames of this unique NamedPlace..
- “Αθnva" (Greek script) and its standard romanisation "Athína" (Latin script) are two different spellings of the same GeographicalName.

Narrative summary of individual classes:

More complete and precise definitions of the types and attributes are given in the following sections describing the schema. However, to summarize:

- One *NamedPlace,* representing any real world entity referred to by one or several proper nouns, is described by the following attributes:
  - One or several *name* (mandatory), referring the *NamedPlace.*
  - One *geometry* (mandatory), describing the footprint or a reference point of the *NamedPlace.*
  - One *type* (mandatory), characterising the kind of entity represented by the *NamedPlace,* chosen from a harmonised list of types.

- One *identifier* (optional but strongly recommended).
- One *relatedSpatialObject* (optional), which is the identifier of a spatial object representing the same entity than the *NamedPlace* but appearing in other themes of INSPIRE.
- One *referencePointMeaning* (optional) that may describe the rule applied by the data provider for determining the geometry of the *NamedPlace,* if and only if this geometry is a reference point.
- One *levelOfDetail* (optional but recommended), representing an indicative level-of-detail for this object, that may be used in particular for facilitating a relevant display of names.
- One *typeLocal (*optional), which is a characterisation of the kind of feature represented by the *NamedPlace*, as defined by the data provider.
- One *beginLifespanVersion* (optional) and one *endLifespanVersion* (optional)*,* representing when this version of the spatial object was inserted / changed / deleted / superseded in the spatial data set.

- One *GeographicalName,* representing a proper noun of the *NamedPlace,* is described by the following attributes:
  - One or several *spelling* (mandatory), representing proper ways of writing the *GeographicalName*.
  - One *language* (optional but strongly recommended), representing the language of the *GeographicalName*, coded as defined ISO 639-2.
  - One *nativeValue* (optional but recommended, values ‘endonym’ or ‘exonym’, see section 5.1.2.3.3), enabling to acknowledge if the name is the one that is/was used in the area where the feature is situated at the instant when the name is/was in use.
  - One *status* (optional), enabling to discern which credit should be given to the *GeographicalName* with respect to its standardisation and/or its topicality.
  - One *sourceOfName* (optional), representing the (original) data source from which the geographical name is taken from (e.g. gazetteer, geographical names database).
  - One *pronunciationIPA* (optional), representing the proper, correct or standard pronunciation of the *GeographicalName* expressed in the International Phonetic Alphabet.
  - One *grammaticalGender* (optional), which indicates whether the *GeographicalName* is of 'masculine', 'feminine', 'neuter' or 'common' gender.
  - One *grammaticalNumber* (optional), which indicates whether the *GeographicalName* is ‘singular', 'plural', or 'dual'.
- One *SpellingOfName*, representing the proper way of writing a *GeographicalName*, is described by the following attributes:
  - One *text* (mandatory), which is the textual spelling itself.
  - One *script* (optional), representing the script in which the *Spelling* is rendered..
  - The *transliterationScheme* (optional, but recommended for any transliterated spellings) defining the method used for the conversion of the spelling from one script to another.

5.1.1.2 UML Overview

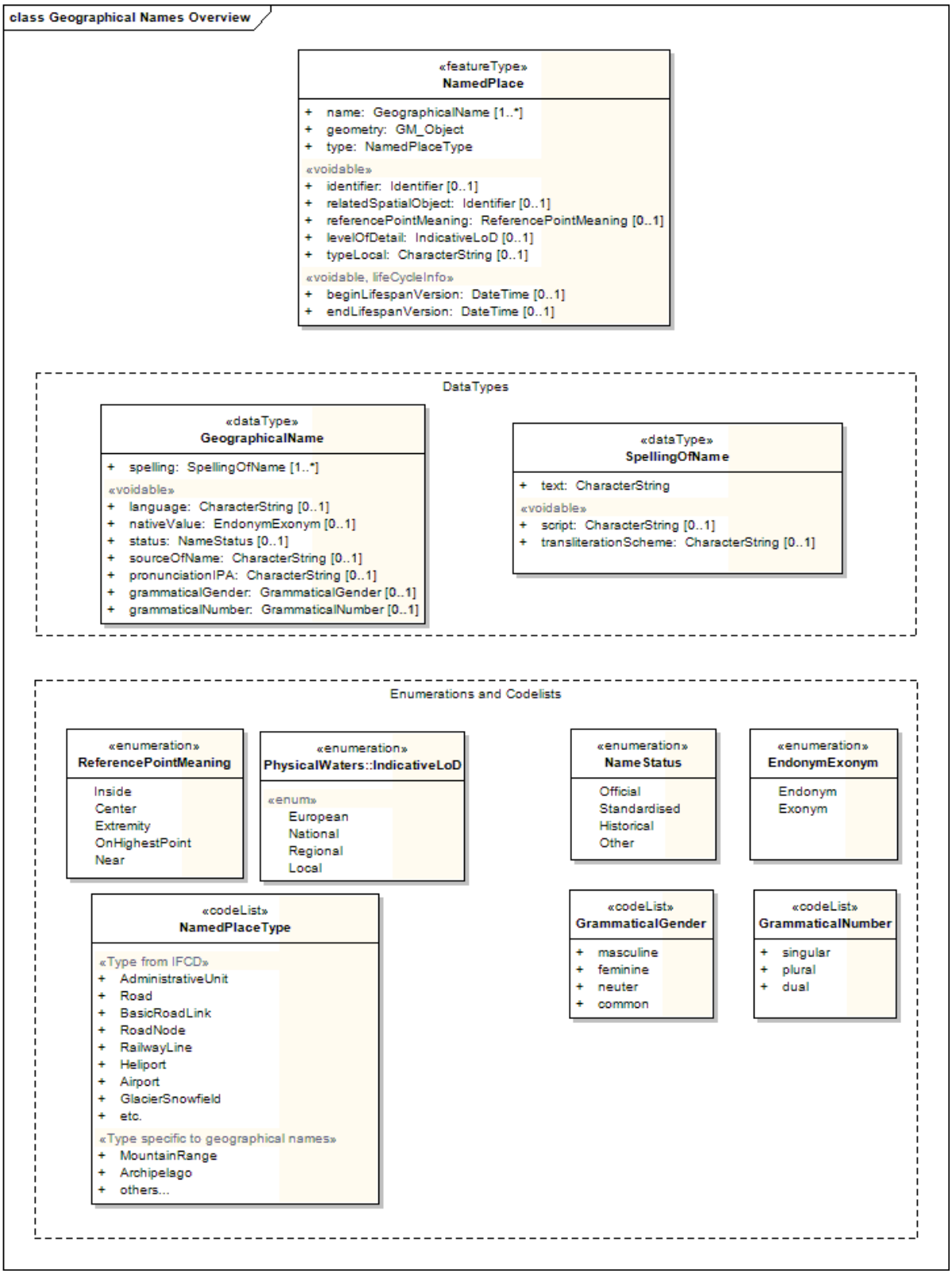


Figure 1 – UML class diagram: Overview of the *Geographical names* application schema

5.1.1.3 Consistency between spatial data sets

5.1.1.3.1 Consistency across borders

Explanation of context
Each Member State may provide geographical names associated to spatial objects. The Danube river example (a spatial entity crossing borders and associated with several names, endonyms as well as exonyms, see below and more detail in Annex B.7) illustrates the complexity of related geographical names issues for border-crossing spatial objects.

Although the linkage of the border-crossing spatial objects will be dealt within each data specification for the respective INSPIRE themes (e.g. hydrography for Danube), it can be assumed that the correct relation of geographical names with those border-crossing spatial objects requires a solid understanding and experience of this multi-lingual issue and seems not to be manageable without a coordinated approach on a European level.

Example
Within the EuroGeoNames project it has been decided that the participating NMCAs do provide one "compiled" spatial object for each national part of the Danube river. The respective endonyms are then associated to each national part of the Danube river. The number of these endonyms mainly depends on the languages spoken in that area where the spatial object is situated. In addition, the existing exonyms are linked to all related (national) "compiled" spatial objects across Europe.

- *Endonyms appearing in the respective countries (NMCA data sets): Donau (DE, AT), Dunaj (SK), Duna (HU), Dunav (HR), Dunav (SZ), Dunav (BG), Dunărea (RO), Dunărea (MD), Dunaj (UA)*
- *Exonyms appearing in the respective languages (exonyms database): Danube (eng.), Dunava (scc.), etc.*

Recommendation
The linkage of border-crossing spatial objects will be dealt within each data specification for the respective INSPIRE themes.
For geographical names a special situation appears: the Member States are mainly responsible for providing the endonyms, whereas language communities take care of the collection of exonyms. Moreover, the mutual consent between the data providers of the Member States and the custodians of language groups are not yet established on a multi-lateral level.

Recommendation 2 The correct relation of geographical names (endonyms and exonyms) with border-crossing spatial objects requires a solid understanding and experience of multi-lingual issues. Therefore, a coordinated approach on a European level should be preferred.

Note for cross-borders issues within national data sets
The same situation reported here for cross-international borders may appear within one member state, and then within one single data set following this specification. Indeed, some spatial objects may cross different language areas within one state. It is thus let to the data providers to decide which more significant spatial objects should be delivered for holding names according to the situation in each state (e.g. only one spatial object for a full river in a country, or one spatial object for each part of the river in an administrative/linguistic area, or one spatial object for each river section…).

5.1.1.3.2 Consistency between different INSPIRE themes

Geometry is the only information that can be used to find out in which administrative units a named place is located. However, this is very important information when using names, for example as a search criterion. As a consequence, a special care should be made on the consistency of geometries between the 'Administrative Units' and '*Geographical names*' INSPIRE spatial data themes.

Recommendation 3 The geometry of the named place should be consistent with the geometry of administrative units depicted in the INSPIRE theme 'Administrative Units'. More precisely: 1/ if the geometry depicts a reference point of a *NamedPlace*, it should lie inside the geometry of the lowest level administrative unit containing the full named real world entity; 2/ if the geometry depicts the footprint of a *NamedPlace*, it should intersect the geometries of the administrative units, from the lowest level to the highest level ones, that contain parts of the named real world entity.

Besides, the same spatial entity may be represented by different spatial objects in different INSPIRE theme, which raises the following recommendation.

Recommendation 4 If a spatial entity is modelled as a *NamedPlace* but also as another feature type defined in another INSPIRE theme, this multiple representation should be made explicit by filling the *Geographical names* application schema attribute *relatedSpatialObject* that contains the identifier of the other theme's spatial object in question.

5.1.1.3.3 Consistency across levels of detail

One single real world entity may appear in different local/national names data sets with different levels of detail. In this case, data providers could decide to deliver one or several spatial objects corresponding to the same real world entity in one compiled data set, or in several data sets, each one representing a certain level of detail.

This specification does not put any requirement on this issue: avoiding multiplicity of occurrences is the best way to avoid redundancies and inconsistencies; however in some situations different representations of the same spatial object may be useful to reflect different points of views. In any case, whatever the solution chosen by data providers, a special attention should be paid on consistency between levels of details.

5.1.1.4 Identifier management

Identifiers at *NamedPlace* are optional. The requirements from the Generic Conceptual Model apply if identifiers are introduced.

Recommendation 5 Provision of identifiers is strongly recommended to support data management (e.g. change-only updates) and links with external databases.

5.1.1.5 Modelling of object references

See Recommendation 4 in section 5.1.1.3.2 about *Consistency between different INSPIRE themes*.

5.1.1.6 Geometry representation

This data specification does not restrict the geometry types of *NamedPlace* objects. The most common geometry types for a *NamedPlace* are a reference point (of type GM_Point) or a more precise geometry of the footprint (typically GM_Curve or GM_Surface). See more details about geometries of NamedPlace in the feature catalogue in section 5.1.2.1.1.

See also Recommendation 3 in section 5.1.1.3.2 about *Consistency between different INSPIRE themes*.

5.1.1.7 Temporality representation

The attribute "beginLifespanVersion" specifies the date and time at which this version of the spatial object was inserted or changed in the spatial data set. The attribute "endLifespanVersion" specifies the date and time at which this version of the spatial object was superseded or retired in the spatial data set.

NOTE 1 The attributes specify the beginning of the lifespan of the version in the spatial data set itself, which is different from the temporal characteristics of the real-world phenomenon described by the spatial object. This lifespan information, if available, supports mainly two requirements: First, knowledge about the spatial data set content at a specific time; second, knowledge about changes to a data set in a specific time frame. The lifespan information should be as detailed as in the data set (i.e., if the lifespan information in the data set includes seconds, the seconds should be represented in data published in INSPIRE) and include the time zone information.

NOTE 2 Changes to the attribute "endLifespanVersion" does not trigger a change in the attribute "beginLifespanVersion".

Recommendation 6 If life-cycle information is not maintained as part of the spatial data set, all spatial objects belonging to this data set should provide a void value with a reason of "unknown".

5.1.2 Feature catalogue

Table 3 – Feature catalogue metadata

Feature catalogue name	INSPIRE feature catalogue *Geographical names*
Scope	Geographical names
Field of application	INSPIRE
Version number	2.0
Version date	2008-12-04
Definition source	INSPIRE Data specification *Geographical names*

Table 4 – Types defined in the feature catalogue

Type Name	Stereotypes	Section
EndonymExonym	«enumeration»	5.1.2.3.3
GeographicalName	«dataType»	5.1.2.2.1
GrammaticalGender	«codeList»	5.1.2.3.5
GrammaticalNumber	«codeList»	5.1.2.3.6
NameStatus	«enumeration»	5.1.2.3.4
NamedPlace	«featureType»	5.1.2.1.1
NamedPlaceType	«codeList»	5.1.2.3.1
ReferencePointMeaning	«enumeration»	5.1.2.3.2
SpellingOfName	«dataType»	5.1.2.2.2

5.1.2.1 Feature Type

This specification contains only one feature type, *NamedPlace*, which is the entry point of the schema.

5.1.2.1.1 NamedPlace

Class: «featureType» NamedPlace	
Definition:	Any real world entity referred to by one or several proper nouns.
Subtype of:	
Status:	Proposed
Stereotypes:	«featureType»
Attribute: name	
Definition:	Name referring the *NamedPlace*.
Value type:	GeographicalName

Multiplicity: 1..*
Stereotypes:

Attribute: geometry

Definition: Any geometry associated to the *NamedPlace*. This data specification does not restrict the geometry types. The most common geometry types for a *NamedPlace* are a reference point (of type GM_Point) or a more precise geometry of the footprint (typically GM_Curve or GM_Surface).

Recommendation 7 If the geometry is a reference point, the meaning of this point should be precised in the attribute referencePoint meaning.

See also Recommendation 3 in section 5.1.1.3.2 about consistency with administrative units.

Note: if the geometry depicts the spatial footprint of the named place, a reference point and a bounding box could be derived from it. However, this specification does not require the explicit provision of bounding boxes nor reference points.

Value type: GM_Object
Multiplicity: 1..1
Stereotypes:

Attribute: type

Definition: Characterisation of the kind of entity represented by the *NamedPlace*.

Recommendation 8 This attribute should be consistent with the attribute *relatedSpatialObject*. More precisely, if the attribute *relatedSpatialObject* is filled in, the attribute *type* should be filled in, and its value should be the feature type of the *relatedSpatialObject*.

Value type: NamedPlaceType
Multiplicity: 1..1
Stereotypes:

Attribute: identifier

Definition: Identifier of the named place.

See also Recommendation 5 in section 5.1.1.4 that recommends providing identifiers.

Value type: Identifier
Multiplicity: 0..1
Stereotypes: «voidable»

Attribute: relatedSpatialObject

Definition: Identifier of the spatial object representing the same entity but appearing in other themes of INSPIRE, if any.

See also Recommendation 4 in section 5.1.1.3.2 about consistency between INSPIRE themes.
Note: If no identifier is provided with features of other INSPIRE themes, those features can of course not be referred by the *NamedPlace*.

Value type: Identifier

Multiplicity: 0..1
Stereotypes: «voidable»

Attribute: referencePointMeaning

Definition: The rules applied by the data provider for determining the reference point geometry of the *NamedPlace*.

Examples: If the reference point for a lake is situated in the center of the lake, then the value 'Center' will be assigned. If the reference point for a river is situated in its mouth, then the value 'Extremity' will be assigned.

Constraint: This attribute may only be filled if the geometry of the *NamedPlace* is of type GM_Point.

Value type: ReferencePointMeaning
Multiplicity: 0..1
Stereotypes: «voidable»

Attribute: levelOfDetail

Definition: An indicative 'level-of-detail' for this feature.

This information may be used to determine if the *NamedPlace* should be displayed at a given scale of display.

Recommendation 9 The geometry of the *NamedPlace* should have a spatial resolution roughly compatible with this level of detail.

Recommendation 10 This attribute should be filled as much as possible, as it is particularly important for all uses related to portrayal / mapping of names.

Value type: IndicativeLoD
Multiplicity: 0..1
Stereotypes: «voidable»

Attribute: typeLocal

Definition: A characterisation of the kind of feature represented by the *NamedPlace*, as defined by the data provider.
Value type: CharacterString
Multiplicity: 0..1
Stereotypes: «voidable»

Attribute: beginLifespanVersion

Definition: Date and time at which this version of the spatial object was inserted or changed in the spatial data set.
Value type: DateTime
Multiplicity: 0..1
Stereotypes: «voidable,lifeCycleInfo»

Attribute: endLifespanVersion

Definition: Date and time at which this version of the spatial object was superseded or retired in the spatial data set.
Value type: DateTime
Multiplicity: 0..1

Stereotypes:	«voidable,lifeCycleInfo»

5.1.2.2 Data Types

This specification contains two data types, *GeographicalName* and *SpellingOfName*, which are used to describe in detail each name of a *NamedPlace*

5.1.2.2.1 GeographicalName

Class: «dataType» GeographicalName	
Definition:	Proper noun applied to a real world entity.
Subtype of:	
Status:	Proposed
Stereotypes:	«dataType»

Attribute: spelling

Definition:	A proper way of writing the *GeographicalName*.
Value type:	SpellingOfName
Multiplicity:	1..*
Stereotypes:	

Attribute: language

Definition: Code of the language used by the community that uses the geographical name.

Requirement 3 The code shall be one of the three letters codes defined by ISO 639-2.

Recommendation 11 It is strongly recommended that the language of the name should be filled in most cases, except if the data producer does not know in which language the names are.

Recommendation 12 The code "mul" for "multilingual" should not be used in general. However it can be used in rare cases like official names composed of two names in different languages.

Example: "Vitoria - Gasteiz" is such a multilingual official name in Spain.

Recommendation 13 Bibliographic codes (B) from ISO639-2 should be preferred to Terminologic codes (T) in order to take into account the current context (national situations, existing European harmonised data sets, INSPIRE metadata Implementing Rule).

Note1: the rationale behind the choices related to linguistic codes is detailed in section 12.2.

Note2: the list of ISO 639-2 language codes is a living list that may be updated by the United States Library of Congress as mandated by ISO. The code list should be maintained in an INSPIRE register.

Value type: CharacterString
Multiplicity: 0..1
Stereotypes: «voidable»

Attribute: nativeValue

Definition: Information enabling to acknowledge if the name is the one that is/was used in the area where the feature is situated at the instant when the name is/was in use (see definitions of endonym and exonym for more information, section 5.1.2.3.3).

Recommendation 14 This attribute should be filled in most cases if the information is available.

Value type: EndonymExonym
Multiplicity: 0..1
Stereotypes: «voidable»

Attribute: status

Definition: Qualitative information enabling to discern which credit should be given to the name with respect to its standardisation and/or its topicality.

Note: The *Geographical names* application schema does not explicitly make a preference between different names (e.g. official endonyms) of a specific real world entity. The necessary information for making the preference (e.g. the linguistic status of the administrative or geographic area in question), for a certain use case, must be obtained from other data or information sources. For example, the status of the language of the name may be known through queries on the geometries of named places against the geometry of administrative units recorded in a certain source with the language statuses information.

Value type: NameStatus
Multiplicity: 0..1
Stereotypes: «voidable»

Attribute: pronunciationIPA

Definition: The proper, correct or standard pronunciation (standard within the linguistic community concerned) expressed in International Phonetic Alphabet (IPA).

Rationale for IPA: another option to model the pronunciation could have been a soundfile rather than a text in the International Phonetic Alphabet. However, soundfiles raise more issues for GML transfer and interoperability than textual attributes.

Value type: CharacterString
Multiplicity: 0..1
Stereotypes: «voidable»

Attribute: grammaticalGender

Definition: Grammatical gender of the geographical name, which indicates whether it is of 'masculine', 'feminine', 'neuter' or 'common' gender.

Value type: GrammaticalGender
Multiplicity: 0..1
Stereotypes: «voidable»

Attribute: grammaticalNumber

Definition:	Grammatical number of the name, which indicates whether it is 'singular', 'plural', or 'dual'.
Value type:	GrammaticalNumber
Multiplicity:	0..1
Stereotypes:	«voidable»

5.1.2.2.2 SpellingOfName

Class: «dataType» SpellingOfName

Definition:	A proper way of writing a name. Note: Proper spelling means the writing of a name with the correct capitalisation and the correct letters and diacritics present in an accepted standard order (adapted from UNGEGN 2006).
Subtype of:	
Status:	Proposed
Stereotypes:	«dataType»

Attribute: text

Definition:	The way the name is written.
Value type:	CharacterString
Multiplicity:	1..1
Stereotypes:	

Attribute: script

Definition: The script in which the spelling of the name is rendered (the set of graphic symbols employed in writing or printing a particular language, differing from another set not only by typeface or font).

Requirement 4 Four letters codes defined in ISO 15924 shall be used. In particular, "Latn" shall be used for Latin (Roman) script, "Cyrl" shall be used for Cyrillic script, and "Grek" shall be used for Greek script.

Recommendation 15 In rare cases other codes could be used (for other scripts than Latin, Greek and Cyrillic). However, this should mainly apply for historical names in historical scripts.

Recommendation 16 This attribute should be filled in most cases, because this information is important in the multi-scriptural context of Europe.

Value type:	CharacterString
Multiplicity:	0..1
Stereotypes:	«voidable»

Attribute: transliterationScheme

Definition: The method used for the conversion of the spelling from one script to another.

Recommendation 17 This attribute should be filled for any transliterated

	spellings. If the transliteration scheme used is recorded in codelists maintained by ISO or UN, those codes should be preferred. See rationale for this recommendation and for coding transliteration scheme as CharacterString in section 12.3.
Value type:	CharacterString
Multiplicity:	0..1
Stereotypes:	«voidable»

5.1.2.3 Enumerations and codeLists

This specification contains three codelists/enumerations used to describe one *NamedPlace*: *NamedPlaceType* and *ReferencePointMeaning* that are specifically defined for geographical names (see sections 5.1.2.3.1 and 5.1.2.3.2), and *IndicativeLoD* defined in the INSPIRE common base types (see section 5.1.2.4.5).

This specification also contains four codelists/enumerations used to describe one *GeographicalName*: *EndonymExonym*, *NameStatus*, *GrammaticalNumber* and *GrammaticalGender* (see sections 5.1.2.3.3 to 5.1.2.3.6).

5.1.2.3.1 NamedPlaceType

Class: «codeList» NamedPlaceType	
Definition:	Type of a *NamedPlace*. **Important note: this list of types is under definition and the final list will only be available for v3.0**, as some consistency checking has to be performed after that the Inspire Feature Concept Dictionary (IFCD) is finalised. Principles for defining the list: o First, this list will contain the existing Annex I FeatureTypes defined in the IFCD, and later it will be extended for Annex II and III), certainly restricted to feature types holding names. o This list will also contain other commonly named geographic entities such as elevations, islands, natural shoreline elements and stretches of water bodies, probably not explicitly modelled as spatial objects in other themes. **For information on the future content of this list, some <u>temporary</u> elements are listed below.** **NB: This is a temporary list, made for <u>illustration</u> purposes only, from draft documents. For any comment on a thematic aspect referring to any other INSPIRE themes (administrative unit, addresses, cadastral parcels, hydrography, protected sites, and transport networks), please refer to the corresponding specifications.** 1/ <u>Temporary</u> feature types from the IFCD holding names in the respective specifications for Annex I (will most probably be included in the list) : o Types related to the 'administrative units' theme: → Administrative unit, Administrative unit lowest level, Administrative unit upper level. o Types related to the 'addresses' theme: → Admin Unit Name, Address Area Name, Thoroughfare Name. o Types related to the 'cadastral parcels' theme

→ *None*

- Types related to the 'hydrography' theme
  - → Surface water, Watercourse, Glacier or Snowfield, Wetland, Shore, Basin, Catchment area, Watercourse Node, Watercourse Segment, Constriction, Inland water, Lake, River, Coastal water, Body of groundwater, Body of surface water, Transitional water, Body of water, Falls, Fluvial point, Hydrolographic points of interest, Rapids, Sinkhole, Spring or seep, Crossing, Dam or weir, Embankment, Ford, Interior manmade object, lock, Man made object, Shoreline construction, Sluice, Subsurface crossing, Surface crossing, Hydrographic facility, Standing water.
- Types related to the 'protected sites' theme
  - → *none*
- Types related to the 'transport networks' theme (All)
  - → Aggregated Transport Link, Transport Link, Transport Node, Significant Point, Network Connection.
- Types related to the 'transport networks' theme (Air)
  - → Air Route, Air Route Segment, Airport, Heliport, Air Connector, Standard Arrival Route, Standard Instrument Departure, Published Instrument Approach Procedure.
- Types related to the 'transport networks' theme (Road)
  - → Basic Road Link, Road, Road Area, Road Link, Road Node, Road Service Area, Vehicle Traffic Area.
- Types related to the 'transport networks' theme (Rail)
  - → Basic Railway Link, Railway Area, Railway Line, Railway Link, Railway Station Area, Railway Station Node, Railway Yard Node.
- Types related to the 'transport networks' theme (Water)
  - → Watercourse Segment, Ferry Line, Waterway, Waterway Link, Waterway Node,
- Other types to be defined for the INSPIRE Annex II and III
  - → *Will only be defined later…*

2/ Temporary feature types from the IFCD not holding names in the respective specifications for annex I (will most probably NOT be included in the list, but this is not yet decided):

- Types related to the 'administrative units' theme: Administrative unit
  - → NUTS region, Administrative unit area, Administrative boundary.
- Types related to the 'addresses' theme
  - → Address, Address Component, Postal Descriptor, Locator.
- Types related to the 'cadastral parcels' theme
  - → Cadastral Parcel, Parcel Boundary, Cadastral IndexSet.
- Types related to the 'hydrography' theme
  - → Land-Water boundary.
- Types related to the 'protected sites' theme
  - → Activities in Protected Area, Agency involved in Site Management Plan, Funding Source (Protected Sites), Habitat Classification, IUCN Categorisation, Protected Area, Protected Area Classification, Protection for Habitat, Protection for Other Reason, Protection for Species, Reasons for Protection, Responsible Agency.
- Types related to the 'transport networks' theme (All)
  - → Transport Area, Constraint Area, Prohibited Area, Restricted Area, Danger Area.
- Types related to the 'transport networks' theme (Air)
  - → Aerodrome Area, Air Space Navigation Area, Runway Area, CTA - Control Area or Control Terminal Area, CTR - Control Zone, TMA - Terminal Control Area or Terminal Maneuvering Area, ATZ - Aerodrome Traffic Zone, FIR - Flight Information Region, Control Tower Placeholder.

3/ Types not from the IFCD, but specifically added for types of geographical names (will most probably be included in the list, but this is a very preliminary list that needs to be defined more precisely):

- Populated places
  - → Settlements, Houses, Others.
- Governmental, environmental, economic and cultural structures and facilites
  - → Governmental and social services and facilities, Environmental monitoring structures and facilities, Industrial, production and economic structures and facilities, Cultural and recreational structures and facilities.
- Landforms
  - → Islands, Coastal land formations, Land elevations, Land depressions, Mountain or mountain ranges, Various landforms.
- Terrain cover features
  - → Forests, Low vegetation areas, Wetlands, Agricultural areas, Various terrain cover features.

- Miscellaneous features

Status: Proposed
Stereotypes: «codeList»

5.1.2.3.2 ReferencePointMeaning

Class: «enumeration» ReferencePointMeaning	
Definition:	The rules applied by the data provider for determining reference point geometry for a given *NamedPlace*.
Status:	Proposed
Stereotypes:	«enumeration»
Value: Inside	
Definition:	The reference point is situated anywhere inside the footprint of the object. This value is a supertype of 'Center', 'Extremity' and 'OnHighestPoint' and should be used only if the data provider is not able to be more specific.
Code:	
Value: Center	
Definition:	The reference point is situated in the center of the footprint of the object.
Code:	
Value: Extremity	
Definition:	The reference point is situated in one extremity of the footprint of the object.
Code:	
Value: OnHighestPoint	
Definition:	The reference point is situated at the highest point of the object.
Code:	
Value: Near	
Definition:	The reference point is situated anywhere near the object or inside the footprint of the object.
Code:	

5.1.2.3.3 EndonymExonym

Class: «enumeration» EndonymExonym	
Definition:	Information enabling to acknowledge if the name is the one that is/was used in the area where the feature is situated at the instant when it was in use.
Status:	Proposed
Stereotypes:	«enumeration»
Value: Endonym	
Definition:	An endonym is a name for a geographical feature in an official or well-established language occurring in that area where the feature is situated (from UNGEGN 2007).
Code:	
Value: Exonym	
Definition:	An exonym is a name used in a specific language for a geographical feature situated outside the area where that language is widely spoken, and differing in form from the respective endonym(s) in the area where the geographical feature is situated (from UNGEGN 2007).
Code:	

5.1.2.3.4 NameStatus

Class: «enumeration» NameStatus	
Definition:	Qualitative information enabling to discern which credit should be given to the name with respect to its standardisation and/or its topicality.
Status:	Proposed
Stereotypes:	«enumeration»
Value: Official	
Definition:	Name in current use and officially approved or established by legislation.
Code:	
Value: Standardised	
Definition:	Name in current use and accepted or recommended by a body assigned advisory function and/or power of decision in matters of toponymy.
Code:	
Value: Historical	
Definition:	Historical name not in current use.
Code:	
Value: Other	
Definition:	Current, but not official, nor approved name.
Code:	

5.1.2.3.5 GrammaticalGender

Class: «codeList» GrammaticalGender	
Definition:	Linguistic notation for a geographical name, which indicates whether it is of

	'masculine', 'feminine', 'neuter' or 'common' grammatical gender.
Status:	Proposed
Stereotypes:	«codeList»
Value: masculine	
Definition:	Masculine grammatical gender. Examples: Sena (spa.), Schwarzwald (ger.)...
Code:	
Value: feminine	
Definition:	Feminine grammatical gender. Examples: Seine (fre.), Forêt-Noire (fre.)...
Code:	
Value: neuter	
Definition:	Neuter grammatical gender. Examples: Zwarte Woud (dut.), Rheinland (ger.)…
Code:	
Value: common	
Definition:	Common grammatical gender (the merging of 'masculine' and 'feminine'). Note: This gender exists in Swedish language. However, whether this is relevant for geographical names needs to be confirmed (undergoing work).
Code:	

5.1.2.3.6 GrammaticalNumber

Class: «codeList» GrammaticalNumber	
Definition:	Linguistic notation for a geographical name, which indicates whether it is 'singular', 'plural' or 'dual'.
Status:	Proposed
Stereotypes:	«codeList»
Value: singular	
Definition:	Singular grammatical number. Examples: Danube (eng.), Lac du Bourget (fre.), Praha (cze.), Nederland (dut.)...
Code:	
Value: plural	
Definition:	Plural grammatical number. Examples: Alps (eng.), Pays-Bas (fre.), Waddeneilanden (dut.), Cárpatos (spa.)...
Code:	
Value: dual	
Definition:	Dual grammatical number. Note: This number exists, e.g. in Slovenian and Lithuanian language. However, whether this is relevant for G*eographical names* needs to be confirmed (undergoing work).
Code:	

5.1.2.4 Imported Types (informative)

This section lists definitions for feature types, data types, enumerations and code lists that are defined in other documents. The section is purely informative and should help the reader understand the feature catalogue presented in section 5.1.2. For the normative documentation of these types, see the references in section 13.

Table 4 – Types defined in the feature catalogue

Type Name	Package Name	Stereotypes	Section
CharacterString	Text	«type»	5.1.2.4.1
DateTime	Date and Time	«type»	5.1.2.4.2
GM_Object	Geometry root	«type»	5.1.2.4.3
Identifier	Base Types	«dataType»	5.1.2.4.4
IndicativeLoD	Base Types	«enumeration»	5.1.2.4.5

5.1.2.4.1 CharacterString

Class: «type» Text.CharacterString
This type is defined in the specification of the Text package. See [INSPIRE DS-D2.5].

5.1.2.4.2 DateTime

Class: «type» Date and Time.DateTime
This type is defined in the specification of the Date and Time package. See [INSPIRE DS-D2.5].

5.1.2.4.3 GM_Object

Class: «type» Geometry root.GM_Object
This type is defined in the specification of the Geometry root package. See [INSPIRE DS-D2.5].

5.1.2.4.4 Identifier

Class: «dataType» Base Types.Identifier
This type is defined in the specification of the Base Types package. See [INSPIRE DS-D2.5].

5.1.2.4.5 IndicativeLoD

Class: «enumeration» Base Types.IndicativeLoD	
Definition:	This type is defined in the specification of the Base Types package. See [INSPIRE DS-D2.5]. Enumeration for INSPIRE levels of detail used in the Hydrography and *Geographical names* spatial data themes (a spatial object is relevant at a specific level of detail or greater). See [INSPIRE D2.6], recommendation 27.
Status:	Proposed
Stereotypes:	«enumeration»
Value: European	
Definition:	European level.
Code:	
Value: National	
Definition:	National level.
Code:	
Value: Regional	
Definition:	Regional level.
Code:	
Value: Local	
Definition:	Local level.
Code:	

6 Reference systems

6.1 Spatial reference system

Requirement 5	For the horizontal component, the European Terrestrial Reference System 1989 (ETRS89) shall be used. This coordinate reference system is linked to the Eurasian tectonic plate. For areas that are not on the stable part of the Eurasian tectonic plate, the International Terrestrial Reference System (ITRS) or other geodetic coordinate reference systems compliant with ITRS shall be used. The parameters of the GRS80 ellipsoid shall be used for the computation of latitude and longitude and for the computation of plane coordinates using a suitable mapping projection. For the vertical component, the European Vertical Reference System (EVRS) shall be used. Other vertical reference systems may be used in areas that are outside the geographical scope of EVRS.

Recommendation 18 For the representation of data in plane coordinates in general applications, the following projections should be used:

- Lambert Azimuthal Equal Area (ETRS-LAEA) for spatial analysis and display;
- Lambert Conformal Conic (ETRS-LCC) for conformal pan-European mapping at scales smaller or equal to 1:500,000;
- Transverse Mercator (ETRS-TMzn) for conformal pan-European mapping at scales larger than 1:500,000.

6.2 Temporal reference system

Requirement 6 Date values shall be provided using the Gregorian Calendar. Time values shall be provided either using the Coordinated Universal Time (UTC) or as local time including their time zone as an offset from UTC.

7 Data quality

As the INSPIRE TWG Geographical Names has analysed the use cases for geographical names it has not found significant quality requirements specific to INSPIRE *Geographical names* data. Therefore, this INSPIRE data specification limits the obligations for data producers to a single quality element, among other quality information that are already mandated with the general INSPIRE Metadata.

Completeness of data is essential information for the user. However, this cannot be measured to the INSPIRE data specification because INSPIRE specifies a model for publishing of data but does not spell out rules on data capture, on the content or on the level of detail. Therefore, the quality element "Omission" needs to be based on the specification of the source data set.

Conceptual Consistency with the INSPIRE data model is reported with the metadata element "conformity", which already is a mandatory part of the discovery metadata specified in the INSPIRE Metadata Regulation [REGULATION 1205./2008/EC].

Positional accuracy and temporal accuracy are difficult to determine for geographical names. Any quality measure would require detailed rules for the position and lifespan of names, which are out of scope for INSPIRE. The metadata element "spatial resolution" provides an indicative value for the positional accuracy. This metadata element is already part of the discovery metadata specified in the INSPIRE Metadata Regulation [REGULATION ../…/EC].

NOTE: ISO 19115 foresees much more quality elements than listed here, many of them defined mandatory for data providers. It needs to be discussed within the INSPIRE Drafting teams if the ISO list is adopted by INSPIRE in full. If so, then quality elements may be raised to the cross-theme level, making the content of this section redundant.

Table 4 – Data quality elements used in the theme *Geographical names*

INSPIRE Data Specification Geographical Name Section	Data quality element	Usage
7.1.1	Omission	Data set level

7.1 Completeness

This data quality element enables the assessment of the presence and absence of features, their attributes and relationships.

7.1.1 Omission

This quality sub-element shows the data absent from a data set.

7.1.1.1 Measure: rate of included items

Name	**rate of included items**
Alternative name	None
Data quality element	Completeness
Data quality sub element	Omission
Data quality basic measure	Error rate
Definition	Number of missing items in the data set in relation to the number of items that should have been present
Description	For each geographical names data set there shall be a rate of how many objects there are in the data set compared to the expected number of objects. The data quality measure shows the absent of items in the data set and it is calculated as the number of objects included to the data set compared to the total number of objects that should be in the data set according to its specification.
Parameter	None
Data quality value type	Percentage, ratio
Data quality value structure	None
Source reference	Data bases containing geographical names.
Example	98%
Measure identifier	1

8 Data set level Metadata

Metadata can be reported for each individual feature (feature-level metadata) or once for a complete dataset (dataset-level metadata). Feature-level metadata is fully described in the application schema (section 5). If data quality elements are used on a feature level, the documentation shall refer to the appropriate definition in section 7. This section only specifies dataset-level metadata elements.

Mandatory or conditional metadata elements are specified in Table 6. Optional metadata elements are specified in Table 7.

Requirement 7 The metadata describing a spatial data set or a spatial data set series related to the spatial data theme *Geographical names* shall comprise the metadata elements required by Regulation 1205/2008/EC (implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata) for spatial datasets and spatial dataset series (Table 5) as well as the theme-specific metadata elements specified in Table 6.

Recommendation 19 The metadata describing a spatial data set or a spatial data set series related to the spatial data theme *Geographical names* should comprise the theme-specific metadata elements specified in Table 7.

Table 5 – Metadata for spatial datasets and spatial dataset series specified in the INSPIRE Metadata Regulation [REGULATION 105/2008/EC]

Metadata Regulation Section	**Metadata element**	**Multiplicity**	**Condition**
1.1	Resource title	1	
1.2	Resource abstract	1	

1.3	Resource type	1	
1.4	Resource locator	0..*	Mandatory if a URL is available to obtain more information on the resource, and/or access related services.
1.5	Unique resource identifier	1..*	
1.7	Resource language	0..*	Mandatory if the resource includes textual information.
2.1	Topic category	1..*	
3	Keyword	1..*	
4.1	Geographic bounding box	1..*	
5	Temporal reference	1..*	
6.1	Lineage	1	
6.2	Spatial resolution	0..*	Mandatory for data sets and data set series if an equivalent scale or a resolution distance can be specified.
7	Conformity	1..*	
8.1	Conditions for access and use	1..*	
8.2	Limitations on public access	1..*	
9	Responsible organisation	1..*	
10.1	Metadata point of contact	1..*	
10.2	Metadata date	1	
10.3	Metadata language	1	

Table 6 – Mandatory and conditional theme-specific metadata for the theme *Geographical names*

INSPIRE Data Specification *Geographical names* Section	**Metadata element**	**Multiplicity**	**Condition**
	Not yet specified		

Table 7 – Optional theme-specific metadata for the theme *Geographical names*

INSPIRE Data Specification *Geographical names* Section	**Metadata element**	**Multiplicity**
8.1	DQ_CompletenessOmission	0..1

Note for v2.0: Metadata elements potentially specific to geographical names have been listed in Annex C. However, the final list of metadata to be included in the specification has not yet been specified, apart from the data quality related metadata DQ_CompletenessOmission.

8.1 DQ_CompletenessOmission

Metadata element name	**DQ_CompletenessOmission**
Definition	See section 7.1.1
ISO 19115 number and name	110. DQ_CompletenessOmission
ISO/TS 19139 path	MD_Metadata.DQ_DataQuality.DQ_CompletenessOmission
INSPIRE obligation / condition	Optional
INSPIRE multiplicity	0..1
Data type	See section 7.1.1
Domain	See section 7.1.1
Example	See section 7.1.1

9 Delivery

9.1 Delivery medium

Data conformant to this INSPIRE data specification will be made available through services conformant to the Implementing Rules for Download Services. In these Implementing Rules, two types of Download services are defined:

1) a Download service providing access to pre-defined data set or pre-defined part of a data set
2) a Download service providing direct access to data and streaming data based upon user defined criteria called a filter

9.2 Encodings

9.2.1 Encoding for application schema *Geographical names*

Requirement 8	Data conformant to the application schema *Geographical names* shall be encoded using the encoding specified in section 9.2.1.1.

9.2.1.1 Default Encoding: GML Application Schema

Format name: *Geographical names* GML Application Schema
Version of the format: v2.0, GML, version 3.2.1
Reference to the specification of the format: ISO 19136:2007
Character set: UTF-8

The GML Application Schema is distributed in a zip-file separately from the data specification document.

10 Data Capture

Member States may capture geographical names data using their own processes and according to their own specifications and requirements, provided they can perform the necessary transformations to provide INSPIRE-compliant *Geographical names* data to fulfil INSPIRE Directive obligations.

11 Portrayal

This clause defines the rules for layers and styles to be used for portrayal of the spatial object types defined for this theme.

Requirement 9	If an INSPIRE view services supports the portrayal of data related to the spatial data theme *Geographical names*, it shall provide the layers specified in this section.

Requirement 10	If an INSPIRE view services support the portrayal of data related to the spatial datamtheme *Geographical names*, it shall support all (default and other well-defined) styles specified in this section.

Requirement 11	If no user-defined style is specified in a portrayal request to an INSPIRE view service, the default style specified in this section shall be used.

Requirement 12	The typefaces and fonts used for the portrayal of geographical names shall fully and correctly reproduce all the letters and diacritics present in the spellings of geographical names to be visualised.

11.1 Layers

This theme contains only one layer.

Layer Name	GeographicalNames.*NamedPlace*	
Layer Title	Geographical names	
Content	Names of areas, regions, localities, cities, suburbs, towns or settlements, or any geographical or topographical feature of public or historical interest.	
Keywords	Geographical name, place name, location name, feature name, spatial object name, toponym, exonym, endonym.	
Default Style	Name	GeographicalNames
	Title	Geographical names
	Abstract	All names are displayed in black, with font Arial 10pt, and located at the centre of the related spatial object *NamedPlace*. If a *NamedPlace* is referred by several names (more precisely different names or different spellings of the same name), all texts are displayed on the same line.
	Symbology	Note: displaying the full list of all spellings associated to the same NamedPlace seems to be an issue for the sld standard (style layer description). While this issue has not been analysed sufficiently in detail for the current version of these specifications, no sld description is provided.
Minimum & maximum scales	Names could be displayed at any scale, from local to European level of detail. Note that the attribute *levelOfDetail* of a NamedPlace, when provided in the data, can be used to help defining efficient displays at various levels of detail.	

11.2 Layers organization

Not applicable: this theme contains only one layer.

12 Additional information

12.1 Mapping INSPIRE Geographical names and INSPIRE Gazetteer

The INSPIRE Generic Conceptual Model provides a schema for the INSPIRE Gazetteer shown in the following figure. This section explains how to map geographical names modelled in this specification to the main elements of the gazetteer.

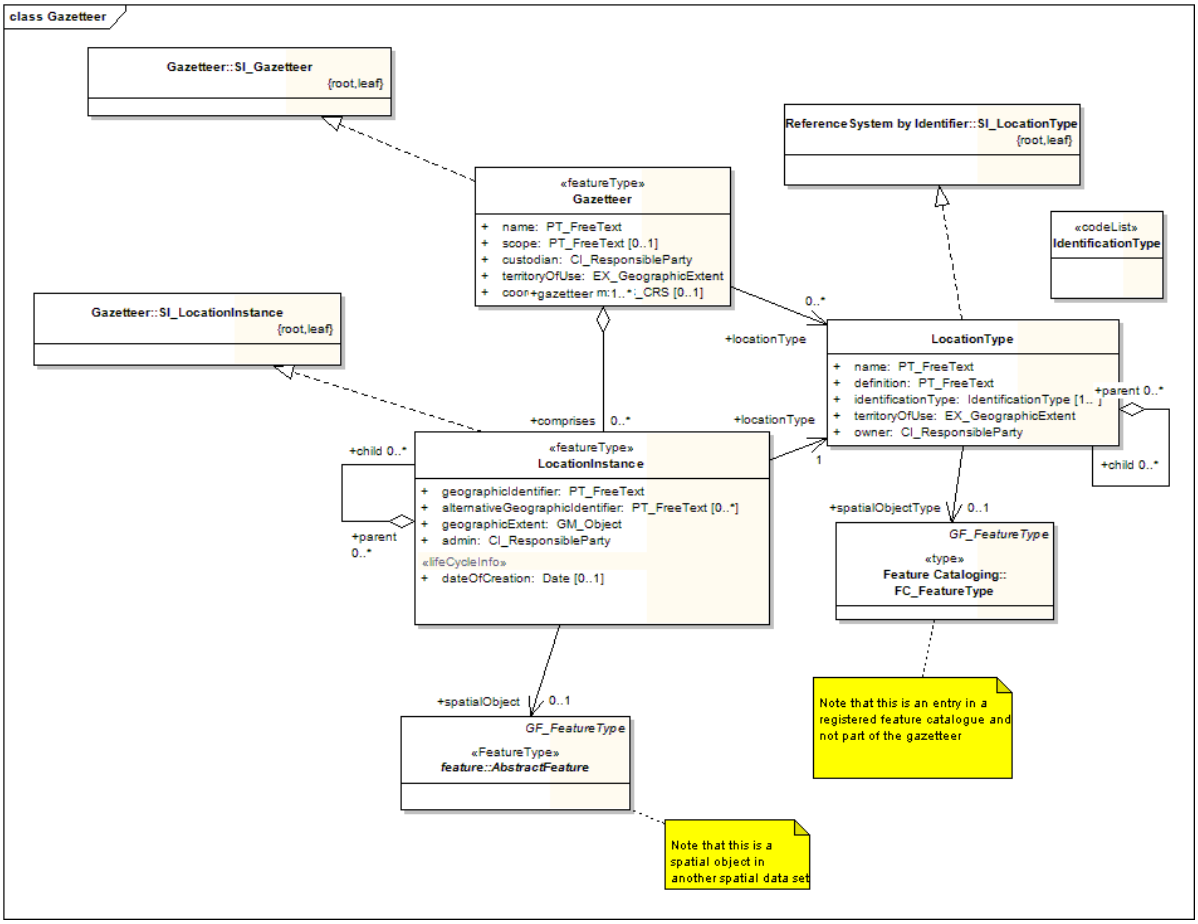


Figure 2 – Schema for INSPIRE Gazetteer [INSPIRE DS-D2.5]

Table 8 – Mapping INSPIRE gazetteer to INSPIRE *Geographical names*

Element of the gazetteer schema	Element of the *Geographical names* schema	Comment
<<FeatureType>> Gazetteer	*None*	The full INSPIRE gazetteer will be build from the different data sets of INSPIRE *Geographical names* and/or the data elements of spatial objects in different INSPIRE themes.
<<FeatureType>> LocationInstance	<<DataType>> Spelling	Following ISO 19112 principles, if a multi-names and multi-lingual geographical names gazetteer shall be established, then for each Spelling, a LocationInstance is built, and the Spelling.text is the geographicIdentifier. The links between the different spellings are not lost because they are related with each other via the same abstract feature / named place. All spellings can also be cross-related with each other through alternativeGeographicIdentifier.
<<FeatureType>> LocationInstance	<<FeatureType>> NamedPlace or <<DataType>> Spelling	Different strategies can be followed, each one raising an issue: - For each NamedPlace, one LocationInstance is built, and one among its multiple spellings is chosen as the geographicIdentifier, while the other spellings will be alternativeGeographicIdentifiers. In this case one spelling has to be chosen as a reference which may be problematic and theoretically incorrect. - For each Spelling, a LocationInstance is built, and the Spelling.text is the geographicIdentifier. In this case, links between spellings is lost. - For each Spelling, a LocationInstance is built, and the Spelling.text is the geographicIdentifier; while all other related spellings are its alternativeGeographicIdentifiers. In this case, the gazetteer is very redundant.
LocationInstance. geographicIdentifier LocationInstance. alternativeGeographicIdentifier	Spelling.text + other info (metadata, NamedPlace.geometry...)	Building identifier will not be straightforward: geographicIdentifier should be unique, while spellings are not. The identifiers should then be build from the spelling plus other info, among which the country of the NamedPlace that can be derived from the data set metadata (at the country level) or through geometric queries.
LocationInstance. geographicExtent	NamedPlace.geometry	Building a geographicExtent from referencePoint may only be very approximate as the size of the object is not known in this case.
LocationInstance. admin	CI_ResponsibleParty in data set metadata	
LocationInstance. dateOfCreation	NamedPlace. beginLifespanVersion	

LocationInstance. spatialObject	NamedPlace or relatedSpatialObject	If the NamedPlace has a related spatial object in other INSPIRE themes, the gazetteer should refer to this object; otherwise the gazetteer can refer to the NamedPlace itself.
LocationInstance. locationType	NamedPlace.type	Both the geographical names schema and the gazetteer will refer to the INSPIRE feature concept dictionary.
LocationInstance. parent/child	NamedPlace. relatedSpatialObject	The hierarchical organisation of LocationInstance can only be derived from the hierarchical organisation of related objects in other INSPIRE themes, if any.

12.2 Rationale behind requiring ISO 639-2/B language codes

The choice of language codes raises some issues. As no code list has been assessed as ideal in the context of this specification, a pragmatic approach has been recommended and is explained below.

12.2.1 Language codes: ISO 639-2 vs. other versions

Different lists of language codes exist

a) ISO 639-1:2002 indicates 2 letters codes for language families/groups and for individual languages. It does not go into sufficient detail to distinguish all the individual European languages.

b) ISO 639-2:1998 indicates 3-letters codes for language families/groups and for individual languages (number of entries: 400). It still does not go into sufficient detail to distinguish all the individual European languages (even for languages recognised as official in some administrative units of Europe).

c) ISO 639-2:1998, updated list from 2007 (i.e. the code list of ISO 639-2 updated in 2007 by the United States Library of Congress), introduces several changes/modifications to ISO 639-2:1998. It integrates most of the European languages that have been neglected in 639-2:1998, but not all of them.

d) ISO 639-3:2007 is the most comprehensive list (number of entries: 7000) with the aim to cover all known natural languages. It has the disadvantage of not providing codes for language families.

e) ISO 639-5:2008 supplements the coding of language groups and language families in ISO 639-2. It introduces a hierarchical relationship between languages, but does not add more detail to ISO 639-2.

Discussion

The INSPIRE Implementing Rule on metadata mandates ISO 639-2.

It appears that most spatial data sets in Europe use ISO 639-2 as a reference for language of geographical names. Prominent examples are EuroGeoNames and all EuroGeographics products (EuroRegionalMap, EuroGlobalMap and EuroBoundaryMap).

However, ISO 639-2 does not allow for sufficient detail to distinguish all existing, even official languages in Europe (official in parts of Europe, a typical example). An example on Saami languages spoken in Northern Europe:

- ISO 639-2:1998 does not separate the ten Saami languages from each other (common code ‘smi’) but practically all Saami languages are individual, not mutually intelligible languages;
- ISO 639-2:1998, updated list from 2007, encodes five Saami languages separately, while the other five are grouped as ‘Other Saami languages’ (code ‘smi’);
- Only ISO 639-3 separates all Saami languages from each other.

ISO 639-3:2007 has the disadvantage of not providing codes for language families. That may cause problems, for instance in Germany where topographic data sets refer to ‘Sorbian languages’ as a minority language, while ISO 639-3 only offers codes ‘Lower Sorbian’ and ‘Upper Sorbian’. Therefore it would not be possible to map the current German data with ISO 639-3, while this is possible for ISO 639-2.

Conclusion
For pragmatic reasons (codes mandated in INSPIRE Implementing Rule on metadata, codes used in most national databases), this specification mandate ISO 639-2, as no other solution in fully satisfying. However, we strongly recommend to push ISO for a useful combination of the various versions of ISO 639.

12.2.2 Language codes: bibliographic code versus terminology code

ISO 639-2 offers two options:

- the "bibliographic" code (ISO 639-2/B), which is derived from the English name for the language and was a necessary legacy feature,
- the "terminology" code (ISO 639-2/T), which is derived from the native name for the language.

The European language names for which the two codes of ISO 639-2 differ are (B/T): Albanian (alb/sqi), Basque (baq/eus), Czech (cze/ces), Dutch (dut/nld), French (fre/fra), German (ger/deu), Greek (gre/ell), Icelandic (ice/isl), Macedonian (mac/mkd), Romanian (rum/ron), Slovak (slo/slk), Welsh (wel/cym).

Discussion
Generally there is no technical problem to map ISO 639-2/B to the ISO 639-2/T. However, according to the ISO standard the bibliographic or terminology code set shall be used in its entirety.

The INSPIRE Implementing Rule on metadata mandates the bibliographic code ISO 639-2/B.

A survey among 10 members of the EuroGeoNames consortium revealed that the ISO 639-2/B version is more in use (not only by libraries).

However, among cartographers / toponymy experts there seem to be more sympathy for the use of the ISO 639-2/T version because this approach is more “correct” from the theoretical point of view, in a multilingual situation where no particular language is considered as a reference.

Conclusion
For pragmatic reasons (codes mandated in INSPIRE Implementing Rule on metadata, codes used in most national databases) this specification mandates the bibliographic code, even if the terminology code would be preferred in a theoretical point of view.

12.3 Rationale behind not restricting the codelist of transliteration schemes.

Different codelists for transliteration schemes exist
It appears that there now exist no sufficiently comprehensive and widely accepted unique codelist of transliteration schemes maintained by some organisation like ISO or United Nations.

More, some transliteration schemes not recorded in United Nations codelist are in use in Europe. In particular, the Bulgarian current official system is different from the United Nations approved one. For example, different spellings exist for 'the city of Shumen’ in Bulgaria:

- "Шумен" (endonym)
  - language: Bulgarian
  - script: Cyrillic
  - transliterationScheme: *void*
- "Šumen"
  - language: Bulgarian
  - script: Roman/Latin
  - transliterationScheme: UN 1977
- "Shumen"
  - language: Bulgarian
  - script: Roman/Latin
  - transliterationScheme: national 2006

Conclusion
For these reasons, this specification does not recommend one unique particular codelist for coding transliteration scheme.

13 Bibliography

INSPIRE DS-D2.5, Generic Conceptual Model, v3.0.

INSPIRE DS-D2.6, Methodology for the development of data specifications, v3.0.

UNGEGN 2006, Manual for the National Standardization of Geographical Names. United Nations Group of Experts on Geographical Names, ISBN: 92-1-161490-2

UNGEGN 2007, Glossary of Terms for the Standardization of Geographical Names & addendum, United Nations Group of Experts on Geographical Names, ref. ST/ESA/STAT/SER.M/85 and ST/ESA/STAT/SER.M/85/Add.1.

Annex A
(normative)

Abstract Test Suite

This conformance clause tests for conformance to the INSPIRE data specification *Geographical names*, **not** to the Implementing Rule/Regulation on *Geographical names* that will be derived from it.

The test purpose is to verify that a data set is conformant with the INSPIRE data specification *Geographical names*.

A.1 General requirements

1. General requirements about conformance to the *Geographical names* schema (see details in 5 below):
   1.1. Spatial data sets related to the theme spatial data theme *Geographical names* shall be provided using the spatial object types and data types specified in the application schema. (Requirement 1)
   1.2. Each spatial object shall comply with all constraints specified for its spatial object type or data types used in values of its properties, respectively. (Requirement 2)
2. General requirements about reference systems:
   2.1. For the horizontal component, the European Terrestrial Reference System 1989 (ETRS89) shall be used. This coordinate reference system is linked to the Eurasian tectonic plate. For areas that are not on the stable part of the Eurasian tectonic plate, the International Terrestrial Reference System (ITRS) or other geodetic coordinate reference systems compliant with ITRS shall be used. The parameters of the GRS80 ellipsoid shall be used for the computation of latitude and longitude and for the computation of plane coordinates using a suitable mapping projection. (Requirement 5).
   2.2. Date values shall be provided using the Gregorian Calendar. Time values shall be provided either using the Coordinated Universal Time (UTC) or as local time including their time zone as an offset from UTC. (Requirement 6)
3. General requirements about metadata:

The metadata describing a spatial data set or a spatial data set series related to the theme Geographical names shall comprise the metadata elements required Commission Regulation (EC) No 1205/2008 of 3 December 2008 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards metadata (Table 5) as well as the theme-specific metadata elements specified in Table 6. (Requirement 7)

4. General requirements about delivery:
   4.1. 3.1.Data conformant to the application schema *Geographical names* shall be encoded using the encoding specified in section 9.2.1.1. (Requirement 8)
5. General requirements about portrayal:
   5.1. If an INSPIRE view services supports the portrayal of data related to the spatial data theme *Geographical names*, it shall provide the layers specified in this specification. (Requirement 9)
   5.2. If an INSPIRE view services support the portrayal of data related to the theme *Geographical names*, it shall support all (default and other well-defined) styles specified in this specification. (Requirement 10)

5.3. If no user-defined style is specified in a portrayal request to an INSPIRE view service, the default style specified in this specification shall be used. (Requirement 11)

5.4. The typefaces and fonts used for the portrayal of geographical names shall fully and correctly reproduce all the letters and diacritics present in the spellings of geographical names to be visualised (Requirement 12).

A.2 Summary of requirements and main recommendations for schema conformance

6. The only spatial objects contained in the data set shall be typed *NamedPlace* (see application schema).
7. Each *NamedPlace* shall contain at least the following attributes:

   7.1. one or several *name*, typed *GeographicalName* (mandatory element of the schema);

   7.2. one *geometry*, typed *GM_Object* (mandatory element of the schema);

   7.3. one *type*, typed *NamedPlaceType* (mandatory element of the schema).
8. Even if not formally required, it is strongly recommended that each *NamedPlace* contains the following attributes:

   8.1. one *identifier*, typed *Identifier;*

   Reminder: the requirements from the Generic Conceptual Model apply if identifiers are introduced.

   8.2. one *levelOfDetail*, typed *IndicativeLoD.*
9. Each *GeographicalName* shall contain the following attributes

   9.1. One or several *spelling*, typed *SpellingOfName* (mandatory element of the schema).
10. Even if not formally required, it is strongly recommended that each *GeographicalName* contains the following attributes:

    10.1. one *language*, typed *CharacterString;*

    If the *language* is provided, the code for the *language* shall be one of the three letters codes defined by ISO 639-2, with preference to Bibliographic code to Terminology codes. (Requirement 3, Recommendation 11, Recommendation 13).

    10.2. one *nativeValue*, typed *EndonymExonym.* (Recommendation 14)
11. Each *SpellingOfName* shall contain the following attributes

    11.1. one *text*, typed *CharacterString* (mandatory element of the schema).
12. Even if not formally required, it is recommended that each *SpellingOfName* contains the following attributes:

    12.1. one *script*, typed *CharacterString* (Recommendation 16).

    If the script is provided, the code for the script shall be one of the four letters codes defined in ISO 15924 (Requirement 4).

A.2.1 References

This document (INSPIRE Data Specification for the spatial data theme *Geographical names*).

INSPIRE DS-D2.5, Generic Conceptual Model, v3.0.

Annex B
(informative)
Examples

This Annex contains informative examples of typical situations for names.

B.1 Estany de Banyoles – 'simple' name

B.1.1 Description

The Estany de Banyoles is one of the big natural lakes of Catalonia. This place name is the origin of the name of the 'comarca' (minor region) 'Pla de l'Estany'. The city of Banyoles is located near the lake and it is the capital of the Pla de l'Estany 'comarca'. The lake was the site of rowing competitions at the Olympic Games of 1992.

B.1.2 Data to be delivered

NamedPlace
identifier: ICC.BTCv4.48701
geometry: UTMX47952582, UTMY466459166 (31-Zone) [referencePoint]
type: 'Lake'
typeLocal: 'hidrografia' [*Hydrography*]
relatedSpatialObject: <null>
referencePointMeaning: 'center'

GeographicalName
language : [Catalan]
ISO 639-2: cat
nativeValue: endonym
status: Official
sourceOfName: Official Gazetteer of Major Toponymy of Catalonia

Spelling
text: Estany de Banyoles
script: Latin (Roman)
transliterationScheme: <null>

B.1.3 GML encoding

```
<?xml version="1.0" encoding="UTF-8"?>
<wfs:FeatureCollection gml:id="ES.ICC.BTCv4.0"
  xmlns="urn:x-inspire:specification:gmlas:GeographicalNames:2.0"
  xmlns:base="urn:x-inspire:specification:gmlas:BaseTypes:3.1"
  xmlns:xlink="http://www.w3.org/1999/xlink"
  xmlns:wfs="http://www.opengis.net/wfs/2.0"
  xmlns:gml="http://www.opengis.net/gml/3.2"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:x-inspire:specification:gmlas:GeographicalNames:2.0
                      ./GeographicalNames.xsd">
  <gml:boundedBy>
    <gml:Envelope srsName="urn:ogc:def:crs:EPSG::4326">
      <gml:lowerCorner>-20.0 30.0</gml:lowerCorner>
      <gml:upperCorner>10.0 45.0</gml:upperCorner>
    </gml:Envelope>
  </gml:boundedBy>
  <gml:featureMember>
    <NamedPlace gml:id="ES.ICC.BTCv4.48701">
      <identifier>
        <base:Identifier>
          <base:localId>48701</base:localId>
          <base:namespace>ES.ICC.BTCv4R</base:namespace>
        </base:Identifier>
```

```
      </identifier>
      <name>
        <GeographicalName>
          <language>cat</language>
          <nativeValue>Endonym</nativeValue>
          <status>Official</status>
          <sourceOfName>Official Gazetteer of Major Toponymy of Catalonia</sourceOfName>
          <spelling>
            <SpellingOfName>
              <text>Estany de Banyoles</text>
              <script>Latn</script>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <geometry>
        <gml:Point gml:id="ES.ICC.BTCv4R.P01" srsName="urn:ogc:def:crs:EPSG::4326">
          <gml:pos>0.03 40.83</gml:pos>
        </gml:Point>
      </geometry>
      <type>Lake</type>
      <relatedSpatialObject nilReason=""/>
      <typeLocal>hidrografia</typeLocal>
    </NamedPlace>
  </gml:featureMember>
</wfs:FeatureCollection>
```

B.2 City of Athens - named only in the Greek language and script

B.2.1 Description

English: Athens (IPA: [□æθənz]); Greek: Αθήνα, Athina, (IPA: [a□θina]), the capital and largest city of Greece.

B.2.2 GML encoding

```
<?xml version="1.0" encoding="UTF-8"?>
<wfs:FeatureCollection gml:id="NO.SK.SSR.0"
  xmlns="urn:x-inspire:specification:gmlas:GeographicalNames:2.0"
  xmlns:base="urn:x-inspire:specification:gmlas:BaseTypes:3.1"
  xmlns:xlink="http://www.w3.org/1999/xlink"
  xmlns:wfs="http://www.opengis.net/wfs/2.0"
  xmlns:gml="http://www.opengis.net/gml/3.2"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:x-inspire:specification:gmlas:GeographicalNames:2.0
                      ./GeographicalNames.xsd">
  <gml:boundedBy>
    <gml:Envelope srsName="urn:ogc:def:crs:EPSG::4326">
      <gml:lowerCorner>18.0 30.0</gml:lowerCorner>
      <gml:upperCorner>28.0 42.0</gml:upperCorner>
    </gml:Envelope>
  </gml:boundedBy>
  <gml:featureMember>
    <NamedPlace gml:id="GR.NN.PNR.329546">
      <identifier>
        <base:Identifier>
          <base:localId>329546</base:localId>
          <base:namespace>GR.NN.PNR</base:namespace>
        </base:Identifier>
      </identifier>
      <name>
        <GeographicalName>
          <language>gre</language>
          <nativeValue>Endonym</nativeValue>
          <status>Official</status>
          <spelling>
            <SpellingOfName>
              <text>Αθήνα</text>
              <script>Grek</script>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
```

```
      <geometry>
        <gml:Point gml:id="GR.NN.PNR.P329546" srsName="urn:ogc:def:crs:EPSG::4326">
          <gml:pos>23.66 37.96</gml:pos>
        </gml:Point>
      </geometry>
      <type>Administrative unit</type>
    </NamedPlace>
  </gml:featureMember>
</wfs:FeatureCollection>
```

B.3 City of Athens – Greek endonym in two scripts, and English exonym

B.3.1 GML encoding

```
<?xml version="1.0" encoding="UTF-8"?>
<wfs:FeatureCollection gml:id="GR.NN.PNR .0"
  xmlns="urn:x-inspire:specification:gmlas:GeographicalNames:2.0"
  xmlns:base="urn:x-inspire:specification:gmlas:BaseTypes:3.1"
  xmlns:xlink="http://www.w3.org/1999/xlink"
  xmlns:wfs="http://www.opengis.net/wfs/2.0"
  xmlns:gml="http://www.opengis.net/gml/3.2"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:x-inspire:specification:gmlas:GeographicalNames:2.0
                                  ./GeographicalNames.xsd">
  <gml:boundedBy>
    <gml:Envelope srsName="urn:ogc:def:crs:EPSG::4326">
      <gml:lowerCorner>18.0 30.0</gml:lowerCorner>
      <gml:upperCorner>28.0 42.0</gml:upperCorner>
    </gml:Envelope>
  </gml:boundedBy>
  <gml:featureMember>
    <NamedPlace gml:id="GR.NN.PNR.329546">
      <identifier>
        <base:Identifier>
          <base:localId>329546</base:localId>
          <base:namespace>GR.NN.PNR</base:namespace>
        </base:Identifier>
      </identifier>
      <name>
        <GeographicalName>
          <language>gre</language>
          <nativeValue>Endonym</nativeValue>
          <status>Official</status>
          <spelling>
            <SpellingOfName>
              <text>Αθήνα</text>
              <script>Grek</script>
            </SpellingOfName>
          </spelling>
          <spelling>
            <SpellingOfName>
              <text>Athina</text>
              <script>Latn</script>
              <transliterationScheme>standard Greek romanisation</transliterationScheme>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <name>
        <GeographicalName>
          <language>eng</language>
          <nativeValue>Exonym</nativeValue>
          <status>Other</status>
          <spelling>
            <SpellingOfName>
              <text>Athens</text>
              <script>Latn</script>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <geometry>
        <gml:Point gml:id="GR.NN.PNR.P329546" srsName="urn:ogc:def:crs:EPSG::4326">
```

```
            <gml:pos>23.66 37.96</gml:pos>
          </gml:Point>
        </geometry>
        <type>Administrative unit</type>
      </NamedPlace>
    </gml:featureMember>
</wfs:FeatureCollection>
```

B.4 Finland - several names in different languages (Helsinki, Helsingfors)

B.4.1 Description

Helsinki is the capital of Finland and officially bilingual (Finnish–Swedish) municipality with a Finnish-speaking majority. Since municipality names have official status in Finland, both Helsinki (Finnish) and Helsingfors (Swedish) are official names of the capital.

B.4.2 Data to be delivered

NamedPlace
identifier: FI.NLS.GNR.10342733
geometry: N 60.16648, E 24.94344 [referencePoint]
type: 'Populated place'
typeLocal: 'Kaupunki' [*Populated place/City*]
relatedSpatialObject: <null>
referencePointMeaning: 'Inside'

GeographicalName
language: [Finnish]
ISO 639-2:2007: fin
nativeValue: endonym
status: Official
sourceOfName: Geographical Names Register of the National Land Survey of Finland
beginLifespanVersion: 2001-01-01
endLifespanVersion: <null>

Spelling
text: Helsinki
script: Latin (Roman)
transliterationScheme: <null>

GeographicalName
language: [Swedish]
ISO 639-2:2007: swe
nativeValue: endonym
status: Official
sourceOfName: Geographical Names Register of the National Land Survey of Finland
beginLifespanVersion: 2001-01-01
endLifespanVersion: <null>

Spelling
text: Helsingfors
script: Latin (Roman)
transliterationScheme: <null>

B.4.3 GML encoding

```
<?xml version="1.0" encoding="UTF-8"?>
<wfs:FeatureCollection gml:id="FI.NLS.GNR .0"
  xmlns="urn:x-inspire:specification:gmlas:GeographicalNames:2.0"
  xmlns:base="urn:x-inspire:specification:gmlas:BaseTypes:3.1"
  xmlns:xlink="http://www.w3.org/1999/xlink"
  xmlns:wfs="http://www.opengis.net/wfs/2.0"
  xmlns:gml="http://www.opengis.net/gml/3.2"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
```

```
  xsi:schemaLocation="urn:x-inspire:specification:gmlas:GeographicalNames:2.0
                                  ./GeographicalNames.xsd">
  <gml:boundedBy>
    <gml:Envelope srsName="urn:ogc:def:crs:EPSG::4326">
      <gml:lowerCorner>20.0 55.0</gml:lowerCorner>
      <gml:upperCorner>35.0 75.0</gml:upperCorner>
    </gml:Envelope>
  </gml:boundedBy>
  <gml:featureMember>
    <NamedPlace gml:id="FI.NLS.GNR.10342733">
      <identifier>
        <base:Identifier>
          <base:localId>10342733</base:localId>
          <base:namespace>FI.NLS.GNR</base:namespace>
        </base:Identifier>
      </identifier>
      <name>
        <GeographicalName>
          <language>fin</language>
          <nativeValue>Endonym</nativeValue>
          <status>Standardised</status>
          <spelling>
            <SpellingOfName>
              <text>Helsinki</text>
              <script>Latn</script>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <name>
        <GeographicalName>
          <language>swe</language>
          <nativeValue>Endonym</nativeValue>
          <status>Standardised</status>
          <spelling>
            <SpellingOfName>
              <text>Helsingfors</text>
              <script>Latn</script>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <geometry>
        <gml:Point gml:id="FI.NLS.GNR.P10342733" srsName="urn:ogc:def:crs:EPSG::4326">
          <gml:pos>24.94344 60.16648</gml:pos>
        </gml:Point>
      </geometry>
      <type>Administrative unit</type>
      <referencePointMeaning>Inside</referencePointMeaning>
      <typeLocal>Kaupunki</typeLocal>
      <beginLifespanVersion>2001-01-01T12:00:00</beginLifespanVersion>
    </NamedPlace>
  </gml:featureMember>
</wfs:FeatureCollection>
```

B.5 Finland - several names in different languages (Ivalojoki, Avviljohka, Avveeljuuhâ)

B.5.1 Description

Ivalojoki (Finnish), Avviljohka (North Saami) and Avveeljuuhâ (Inari Saami) are the names of a major river in Inari municipality, Finnish Lapland. While Finnish and Swedish are the official state languages, North Saami, Inari Saami and Skolt Saami are officially recognized minority languages in Inari municipality. The names of rivers are not official in Finland but their spellings have been standardised by a national body assigned advisory function in matters of toponymy.

B.5.2 Data to be delivered

NamedPlace

identifier: FI.NLS.GNR.10889831
geometry: N 68.704911, E 27.610181 [referencePoint]

type: 'Flowing water'/'River'
typeLocal: 'Joki' [*River*]
relatedSpatialObject: <null>
referencePointMeaning: 'Extremity' [mouth of the river]

GeographicalName
language: [Finnish]
ISO 639-2:2007: fin
nativeValue: endonym
status: Standardised
sourceOfName: Geographic Names Register of the National Land Survey of Finland
beginLifespanVersion: 2001-01-01
endLifespanVersion: <null>
Spelling
text: Ivalojoki
script: Latin (Roman)
transliterationScheme: <null>

GeographicalName
language: [North Saami]
ISO 639-2:2007: sme ['Northern Sami']
(note other codes from ISO: ISO 639-1:2002: se; ISO 639-2:1998: smi ['Sami Languages']; ISO 639-3:2007: sme ['Northern Sami'])
nativeValue: endonym
status: Standardised
sourceOfName: Geographical Names Register of the National Land Survey of Finland
beginLifespanVersion: 2001-01-01
endLifespanVersion: <null>
Spelling
text: Avviljohka
script: Latin (Roman)
transliterationScheme: <null>

GeographicalName
language: [Inari Saami]
ISO 639-2:2007: smn ['Inari Sami']
(note other codes from ISO: ISO 639-1:2002: <none>; ISO 639-2:1998: smi ['Sami Languages']; ISO 639-3:2007: smn ['Inari Sami'])
nativeValue: endonym
status: Standardised
sourceOfName: Geographical Names Register of the National Land Survey of Finland
beginLifespanVersion: 2001-01-01
endLifespanVersion: <null>
Spelling
text: Avveeljuuhâ
script: Latin (Roman)
transliterationScheme: <null>

B.5.3 GML encoding

```
<?xml version="1.0" encoding="UTF-8"?>
<wfs:FeatureCollection gml:id="FI.NLS.GNR.0"
  xmlns="urn:x-inspire:specification:gmlas:GeographicalNames:2.0"
  xmlns:base="urn:x-inspire:specification:gmlas:BaseTypes:3.1"
  xmlns:xlink="http://www.w3.org/1999/xlink"
  xmlns:wfs="http://www.opengis.net/wfs/2.0"
  xmlns:gml="http://www.opengis.net/gml/3.2"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:x-inspire:specification:gmlas:GeographicalNames:2.0
                                  ./GeographicalNames.xsd">
  <gml:boundedBy>
    <gml:Envelope srsName="urn:ogc:def:crs:EPSG::4326">
      <gml:lowerCorner>20.0 55.0</gml:lowerCorner>
      <gml:upperCorner>35.0 75.0</gml:upperCorner>
```

```
    </gml:Envelope>
  </gml:boundedBy>
  <gml:featureMember>
    <NamedPlace gml:id="FI.NLS.GNR.10889831">
      <identifier>
        <base:Identifier>
          <base:localId>10889831</base:localId>
          <base:namespace>FI.NLS.GNR</base:namespace>
        </base:Identifier>
      </identifier>
      <name>
        <GeographicalName>
          <language>fin</language>
          <nativeValue>Endonym</nativeValue>
          <status>Standardised</status>
          <spelling>
            <SpellingOfName>
              <text>Ivalojoki</text>
              <script>Latn</script>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <name>
        <GeographicalName>
          <language>sme</language>
          <nativeValue>Endonym</nativeValue>
          <status>Standardised</status>
          <spelling>
            <SpellingOfName>
              <text>Avviljohka</text>
              <script>Latn</script>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <name>
        <GeographicalName>
          <language>smn</language>
          <nativeValue>Endonym</nativeValue>
          <status>Standardised</status>
          <spelling>
            <SpellingOfName>
              <text>Avveeljuuhâ</text>
              <script>Latn</script>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <geometry>
        <gml:Point gml:id="FI.NLS.GNR.P10889831" srsName="urn:ogc:def:crs:EPSG::4326">
          <gml:pos>27.610181 68.704911</gml:pos>
        </gml:Point>
      </geometry>
      <type>Flowing water/River</type>
    </NamedPlace>
  </gml:featureMember>
</wfs:FeatureCollection>
```

B.6 Oslo - several names with different status, and with multipoint geometry

B.6.1 Description

Oslo (called **Christiania** from 1624 to 1878, and **Kristiania** from 1878 to 1924) is the capital and largest city of Norway.

B.6.2 GML encoding

```
<?xml version="1.0" encoding="UTF-8"?>
<wfs:FeatureCollection gml:id="NO.SK.SSR.0"
  xmlns="urn:x-inspire:specification:gmlas:GeographicalNames:2.0"
  xmlns:base="urn:x-inspire:specification:gmlas:BaseTypes:3.1"
  xmlns:xlink="http://www.w3.org/1999/xlink"
```

```
  xmlns:wfs="http://www.opengis.net/wfs/2.0"
  xmlns:gml="http://www.opengis.net/gml/3.2"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:x-inspire:specification:gmlas:GeographicalNames:2.0
                                  ./GeographicalNames.xsd">
  <gml:boundedBy>
    <gml:Envelope srsName="urn:ogc:def:crs:EPSG::4326">
      <gml:lowerCorner>5.0 58.0</gml:lowerCorner>
      <gml:upperCorner>35.0 85.0</gml:upperCorner>
    </gml:Envelope>
  </gml:boundedBy>
  <wfs:featureMember>
    <NamedPlace gml:id="NO.SK.SSR.111111">
      <identifier>
        <base:Identifier>
          <base:localId>111111</base:localId>
          <base:namespace>NO.SK.SSR</base:namespace>
        </base:Identifier>
      </identifier>
      <name>
        <GeographicalName>
          <language>nor</language>
          <nativeValue>Endonym</nativeValue>
          <status>Official</status>
          <sourceOfName>Town council decree 1925-01-01</sourceOfName>
          <pronunciationIPA></pronunciationIPA>
          <spelling>
            <SpellingOfName>
              <text>Oslo</text>
              <script>Latn</script>
            </SpellingOfName>
          </spelling>
          <grammaticalGender>masculine</grammaticalGender>
          <grammaticalNumber>singular</grammaticalNumber>
        </GeographicalName>
      </name>
      <name>
        <GeographicalName>
          <language>nor</language>
          <nativeValue>Endonym</nativeValue>
          <status>Historical</status>
          <spelling>
            <SpellingOfName>
              <text>Kristiania</text>
              <script>Latn</script>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <name>
        <GeographicalName>
          <language>nor</language>
          <nativeValue>Endonym</nativeValue>
          <status>Historical</status>
          <spelling>
            <SpellingOfName>
              <text>Christiania</text>
              <script>Latn</script>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <geometry>
        <gml:MultiPoint gml:id="NO.SK.SSR.P01" srsName="urn:ogc:def:crs:EPSG::4326">
          <gml:pointMember>
            <gml:Point gml:id="NO.SK.SSR.P02">
              <gml:pos>10.51 59.55</gml:pos>
            </gml:Point>
          </gml:pointMember>
          <gml:pointMember>
            <gml:Point gml:id="NO.SK.SSR.P03">
              <gml:pos>10.52 59.54</gml:pos>
            </gml:Point>
          </gml:pointMember>
          <gml:pointMember>
```

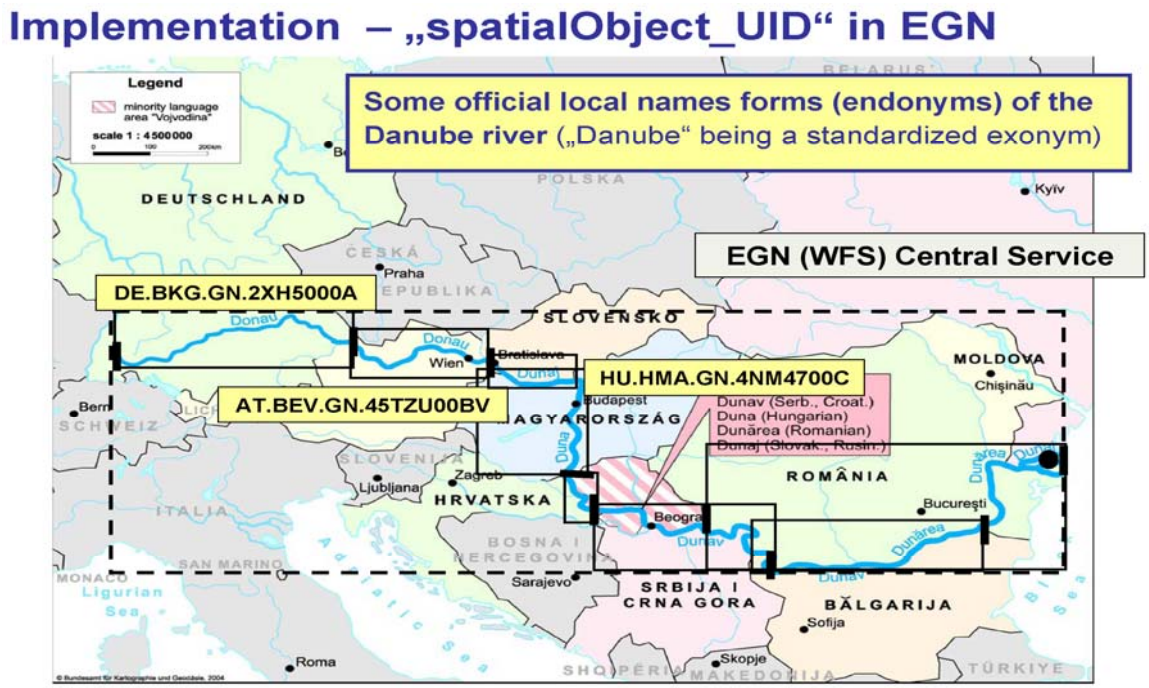
```
            <gml:Point gml:id="NO.SK.SSR.P04">
              <gml:pos>10.53 59.56</gml:pos>
            </gml:Point>
          </gml:pointMember>
        </gml:MultiPoint>
      </geometry>
      <type>Administrative unit</type>
      <relatedSpatialObject>
        <base:Identifier>
          <base:localId>222222</base:localId>
          <base:namespace>NO.SK.CITY</base:namespace>
        </base:Identifier>
      </relatedSpatialObject>
      <referencePointMeaning>Inside</referencePointMeaning>
      <levelOfDetail>European</levelOfDetail>
      <typeLocal>Hovedstad</typeLocal>
      <beginLifespanVersion>1989-01-01T12:00:00</beginLifespanVersion>
    </NamedPlace>
  </wfs:featureMember>
</wfs:FeatureCollection>
```

B.7 Donau (EGN) - illustrating the benefit of establishing cross border capabilities

B.7.1 Description

EuroGeoNames (EGN) solution for the Danube river, crossing several countries and with several names:
Link between EGN Central Service and EVN-DB

1) The objective of EuroGeonames



Typical usage of the EGN service: a German user wants to get the information about the Danube river and starts his single inquiry with “Donau”. He aims at getting information (all names and the geographic extent) about the complete spatial object (which may be a combination of 9 spatial objects from 9 national datasets).

2) EGN Local Services

Assuming that all EGN Local Services needed are running, the EGN Local Services do provide the following information:

Country	SpatialObject_UID	Endonyms	geographicIdentifier	GeographicExtent
Germany	DE.BKG.GN.2XH5000A	**Donau**	Donau;DE.98673ABC	BoundingBoxDE
Austria	AT.BEV.GN.45TZU00BV	**Donau**	Donau;AT.786543C	BoundingBoxAT
Slovakia	SK.SMA.GN.87958377	**Dunaj**	Dunaj;SI.72468764	BoundingBoxSI
Hungary	HU.HMA.GN.4NM4700C	**Duna**	Duna;HU.21342315	BoundingBoxHU
Croatia	HR.HMA.GN.985463	**Dunav**	Dunav;HR.564838	BoundingBoxHR
Serbia	SZ.SMA.GN.9945344	**Dunav**	Dunav;SZ.ATRG778	BoundingBoxSZ
Bulgaria	BG.BMA.GN.33578788	**Дунав**	Dunav;BG.4238745	BoundingBoxBG
Bulgaria	BG.BMA.GN.33578788	**Dunav**	Dunav;BG.4238745	BoundingBoxBG
Romania	RO.RMA.GN.56TZHN8	**Dunărea**	Dunărea;RO.6364287	BoundingBoxRO
Moldava	MD.MMA.GN.85867987	**Dunărea j**	Dunărea;MD.76ZZTH9	BoundingBoxMD
Ukraine	UA.xy	**Dunaj**	Dunay;UA.xy	BoundingBoxUA
Ukraine	UA.xy	**Дунай**	Dunay;UA.xy	BoundingBoxUA

One country/NMCA may provide more than one geographical name associated to the respective spatialObject_UID.

The linkage between the “national” pieces of the whole spatial object (border-crossing spatial objects) is done within the Exonyms and other Variant Names database – EVN-DB.
The EGN Central Service does provide the respective national pieces from the EGN Local Services together with the information stored and maintained in the EVN-DB.

3) Relation to the Exonyms and other variant names database – EVN-DB

SpatialObject_UID	Endon.	eng	geog.Identifier1	fre	geog.Identifier2	[…]
DE.BKG.GN.2XH5000A	Donau	Danube	Danube;EU.567493	Danub	Danub;EU.45637	dito
AT.BEV.GN.45TZU00BV	Donau	Danube	dito	dito	dito	dito
SK.SMA.GN.87958377	Dunaj	Danube	dito	dito	dito	dito
HU.HMA.GN.4NM4700C	Duna	Danube	dito	dito	dito	dito
HR.HMA.GN.985463	Dunav	Danube	dito	dito	dito	dito
SZ.SMA.GN.9945344	Dunav	Danube	dito	dito	dito	dito
BG.BMA.GN.33578788	Dunav	Danube	dito	dito	dito	dito
RO.RMA.GN.56TZHN8	Dunărea	Danube	dito	dito	dito	dito
MD.MMA.GN.85867987	Dunărea	Danube	dito	dito	dito	dito
UA.xy	Dunav	Danube	dito	dito	dito	dito

The EVN_DB stores one set of exonyms and variant names [1..*] which will be associated to all (national) spatialObject_UIDs with cardinality [1..*].
As for the Danube river 1 set of exonyms and variants are stored for 9 spatial objects – which will be linked together through the EVN-DB only.
The English exonym or variant name is always introduced if available.
Border-crossing spatial objects without associated exonyms are not linked within the EU-funded period.

4) Results provided through the EGN Central Service in combination with the EGN Reference Application (according to the EGN data model):

Endonym	geographicIdentifier	alternativeGeographicIdentifier

Donau	Donau;DE.98673ABC	Donau;AT.786543C, Dunaj;SK.72468764 Duna;HU.21342315 Dunav;HR.564838 Dunav;SZ.ATRG778 Dunav;BG.4238745 Dunărea;RO.6364287 Dunărea;MD.76ZZTH9 Dunaj; UA.xy Danube;EU.567493 Dunava;EU.45637 […]

The example may be extracted from a cascading WFS-server who has routed the WFS request to all participating nationally managed WFS-servers, and then gathered all the responses into the same feature collection in a combined GML dataset.

B.7.2 GML encoding

```
<?xml version="1.0" encoding="UTF-8"?>
<wfs:FeatureCollection gml:id="EG.EGN.0"
  xmlns="urn:x-inspire:specification:gmlas:GeographicalNames:2.0"
  xmlns:base="urn:x-inspire:specification:gmlas:BaseTypes:3.1"
  xmlns:xlink="http://www.w3.org/1999/xlink"
  xmlns:wfs="http://www.opengis.net/wfs/2.0"
  xmlns:gml="http://www.opengis.net/gml/3.2"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:x-inspire:specification:gmlas:GeographicalNames:2.0
                      ./GeographicalNames.xsd">
  <gml:boundedBy>
    <gml:Envelope srsName="urn:ogc:def:crs:EPSG::4326">
      <gml:lowerCorner>5.00008 40.001026</gml:lowerCorner>
      <gml:upperCorner>35.198694 55.099392</gml:upperCorner>
    </gml:Envelope>
  </gml:boundedBy>

  <gml:featureMember>
    <NamedPlace gml:id="DE.98673ABC">
      <identifier>
        <base:Identifier>
          <base:localId>98673ABC</base:localId>
          <base:namespace>DE</base:namespace>
        </base:Identifier>
      </identifier>
      <name>
        <GeographicalName>
          <language>deu</language>
          <nativeValue>Endonym</nativeValue>
          <status>Official</status>
          <pronunciationIPA>[□do□na□]</pronunciationIPA>
          <spelling>
            <SpellingOfName>
              <text>Donau</text>
              <script>Latn</script>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <geometry>
        <gml:Point gml:id="DE.P01" srsName="urn:ogc:def:crs:EPSG::4326">
          <gml:pos>13.4 48.5</gml:pos>
        </gml:Point>
      </geometry>
      <type>Flowing water/River</type>
      <relatedSpatialObject>
        <base:Identifier>
          <base:localId>2XH5000A</base:localId>
          <base:namespace>DE.BKG.GN</base:namespace>
        </base:Identifier>
      </relatedSpatialObject>
      <typeLocal>Fluss</typeLocal>
```

```
    </NamedPlace>
  </gml:featureMember>

  <gml:featureMember>
    <NamedPlace gml:id="AT.786543C">
      <identifier>
        <base:Identifier>
          <base:localId>786543C</base:localId>
          <base:namespace>AT</base:namespace>
        </base:Identifier>
      </identifier>
      <name>
        <GeographicalName>
          <language>ger</language>
          <nativeValue>Endonym</nativeValue>
          <status>Official</status>
          <spelling>
            <SpellingOfName>
              <text>Donau</text>
              <script>Latn</script>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <geometry>
        <gml:Point gml:id="AT.P01" srsName="urn:ogc:def:crs:EPSG::4326">
          <gml:pos>17.0 48.2</gml:pos>
        </gml:Point>
      </geometry>
      <type>Flowing water/River</type>
      <relatedSpatialObject>
        <base:Identifier>
          <base:localId>45TZU00BV</base:localId>
          <base:namespace>AT.BEV.GN</base:namespace>
        </base:Identifier>
      </relatedSpatialObject>
      <typeLocal>Fluss</typeLocal>
    </NamedPlace>
  </gml:featureMember>

  <gml:featureMember>
    <NamedPlace gml:id="SI.72468764">
      <identifier>
        <base:Identifier>
          <base:localId>72468764</base:localId>
          <base:namespace>SI</base:namespace>
        </base:Identifier>
      </identifier>
      <name>
        <GeographicalName>
          <language>slo</language>
          <nativeValue>Endonym</nativeValue>
          <status>Official</status>
          <spelling>
            <SpellingOfName>
              <text>Dunaj</text>
              <script>Latn</script>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <geometry>
        <gml:Point gml:id="SI.P01" srsName="urn:ogc:def:crs:EPSG::4326">
          <gml:pos>18.8 47.9</gml:pos>
        </gml:Point>
      </geometry>
      <type>Flowing water/River</type>
      <relatedSpatialObject>
        <base:Identifier>
          <base:localId>87958377</base:localId>
          <base:namespace>SK.SMA.GN</base:namespace>
        </base:Identifier>
      </relatedSpatialObject>
    </NamedPlace>
  </gml:featureMember>
```

```
<gml:featureMember>
  <NamedPlace gml:id="HU.21342315">
    <identifier>
      <base:Identifier>
        <base:localId>21342315</base:localId>
        <base:namespace>HU</base:namespace>
      </base:Identifier>
    </identifier>
    <name>
      <GeographicalName>
        <language>hun</language>
        <nativeValue>Endonym</nativeValue>
        <status>Official</status>
        <spelling>
          <SpellingOfName>
            <text>Duna</text>
            <script>Latn</script>
          </SpellingOfName>
        </spelling>
      </GeographicalName>
    </name>
    <geometry>
      <gml:Point gml:id="HU.P01" srsName="urn:ogc:def:crs:EPSG::4326">
        <gml:pos>18.8 45.9</gml:pos>
      </gml:Point>
    </geometry>
    <type>Flowing water/River</type>
    <relatedSpatialObject>
      <base:Identifier>
        <base:localId>4NM4700C</base:localId>
        <base:namespace>HU.HMA.GN</base:namespace>
      </base:Identifier>
    </relatedSpatialObject>
  </NamedPlace>
</gml:featureMember>

<gml:featureMember>
  <NamedPlace gml:id="HR.564838">
    <identifier>
      <base:Identifier>
        <base:localId>564838</base:localId>
        <base:namespace>HR</base:namespace>
      </base:Identifier>
    </identifier>
    <name>
      <GeographicalName>
        <language>hrv</language>
        <nativeValue>Endonym</nativeValue>
        <status>Official</status>
        <spelling>
          <SpellingOfName>
            <text>Dunav</text>
            <script>Latn</script>
          </SpellingOfName>
        </spelling>
      </GeographicalName>
    </name>
    <geometry>
      <gml:Point gml:id="HR.P01" srsName="urn:ogc:def:crs:EPSG::4326">
        <gml:pos>19.3 45.2</gml:pos>
      </gml:Point>
    </geometry>
    <type>Flowing water/River</type>
    <relatedSpatialObject>
      <base:Identifier>
        <base:localId>985463</base:localId>
        <base:namespace>HR.HMA.GN</base:namespace>
      </base:Identifier>
    </relatedSpatialObject>
  </NamedPlace>
</gml:featureMember>

<gml:featureMember>
  <NamedPlace gml:id="SZ.ATRG778">
```

```
      <identifier>
        <base:Identifier>
          <base:localId>ATRG778</base:localId>
          <base:namespace>SZ</base:namespace>
        </base:Identifier>
      </identifier>
      <name>
        <GeographicalName>
          <language>srp</language>
          <nativeValue>Endonym</nativeValue>
          <status>Official</status>
          <spelling>
            <SpellingOfName>
              <text>Dunav</text>
              <script>Latn</script>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <geometry>
        <gml:Point gml:id="SZ.P01" srsName="urn:ogc:def:crs:EPSG::4326">
          <gml:pos>22.7 44.2</gml:pos>
        </gml:Point>
      </geometry>
      <type>Flowing water/River</type>
      <relatedSpatialObject>
        <base:Identifier>
          <base:localId>9945344</base:localId>
          <base:namespace>SZ.SMA.GN</base:namespace>
        </base:Identifier>
      </relatedSpatialObject>
    </NamedPlace>
  </gml:featureMember>

  <gml:featureMember>
    <NamedPlace gml:id="BG.4238745">
      <identifier>
        <base:Identifier>
          <base:localId>4238745</base:localId>
          <base:namespace>BG</base:namespace>
        </base:Identifier>
      </identifier>
      <name>
        <GeographicalName>
          <language>bul</language>
          <nativeValue>Endonym</nativeValue>
          <status>Official</status>
          <spelling>
            <SpellingOfName>
              <text>Дунав</text>
              <script>Cyrl</script>
            </SpellingOfName>
          </spelling>
          <spelling>
            <SpellingOfName>
              <text>Dunav</text>
              <script>Latn</script>
              <transliterationScheme>standard romanisation</transliterationScheme>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <geometry>
        <gml:Point gml:id="BG.P01" srsName="urn:ogc:def:crs:EPSG::4326">
          <gml:pos>23.7 44.1</gml:pos>
        </gml:Point>
      </geometry>
      <type>Flowing water/River</type>
      <relatedSpatialObject>
        <base:Identifier>
          <base:localId>33578788</base:localId>
          <base:namespace>BG.BMA.GN</base:namespace>
        </base:Identifier>
      </relatedSpatialObject>
    </NamedPlace>
```

```
  </gml:featureMember>

  <gml:featureMember>
    <NamedPlace gml:id="RO.6364287">
      <identifier>
        <base:Identifier>
          <base:localId>6364287</base:localId>
          <base:namespace>RO</base:namespace>
        </base:Identifier>
      </identifier>
      <name>
        <GeographicalName>
          <language>rom</language>
          <nativeValue>Endonym</nativeValue>
          <status>Official</status>
          <spelling>
            <SpellingOfName>
              <text>Dunărea</text>
              <script>Latn</script>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <geometry>
        <gml:Point gml:id="RO.P01" srsName="urn:ogc:def:crs:EPSG::4326">
          <gml:pos>29.7 45.2</gml:pos>
        </gml:Point>
      </geometry>
      <type>Flowing water/River</type>
      <relatedSpatialObject>
        <base:Identifier>
          <base:localId>56TZHN8</base:localId>
          <base:namespace>RO.RMA.GN</base:namespace>
        </base:Identifier>
      </relatedSpatialObject>
    </NamedPlace>
  </gml:featureMember>

  <gml:featureMember>
    <NamedPlace gml:id="MD.76ZZTH9">
      <identifier>
        <base:Identifier>
          <base:localId>76ZZTH9</base:localId>
          <base:namespace>MD</base:namespace>
        </base:Identifier>
      </identifier>
      <name>
        <GeographicalName>
          <language>mol</language>
          <nativeValue>Endonym</nativeValue>
          <status>Official</status>
          <spelling>
            <SpellingOfName>
              <text>Dunărea j</text>
              <script>Latn</script>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <geometry>
        <gml:Point gml:id="MD.P01" srsName="urn:ogc:def:crs:EPSG::4326">
          <gml:pos>28.2 45.5</gml:pos>
        </gml:Point>
      </geometry>
      <type>Flowing water/River</type>
      <relatedSpatialObject>
        <base:Identifier>
          <base:localId>85867987</base:localId>
          <base:namespace>MD.MMA.GN</base:namespace>
        </base:Identifier>
      </relatedSpatialObject>
    </NamedPlace>
  </gml:featureMember>

  <gml:featureMember>
```

```
    <NamedPlace gml:id="UA.xy">
      <identifier>
        <base:Identifier>
          <base:localId>xy</base:localId>
          <base:namespace>UA</base:namespace>
        </base:Identifier>
      </identifier>
      <name>
        <GeographicalName>
          <language>ukr</language>
          <nativeValue>Endonym</nativeValue>
          <status>Official</status>
          <spelling>
            <SpellingOfName>
              <text>Дунай</text>
              <script>Cyrl</script>
            </SpellingOfName>
          </spelling>
          <spelling>
            <SpellingOfName>
              <text>Dunaj</text>
              <script>Latn</script>
              <transliterationScheme>standard romanisation</transliterationScheme>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <geometry>
        <gml:Point gml:id="UA.P01" srsName="urn:ogc:def:crs:EPSG::4326">
          <gml:pos>29.7 45.2</gml:pos>
        </gml:Point>
      </geometry>
      <type>Flowing water/River</type>
      <relatedSpatialObject>
        <base:Identifier>
          <base:localId>xy</base:localId>
          <base:namespace>UA</base:namespace>
        </base:Identifier>
      </relatedSpatialObject>
    </NamedPlace>
  </gml:featureMember>

  <gml:featureMember>
    <NamedPlace gml:id="UK.xy">
      <identifier>
        <base:Identifier>
          <base:localId>xy</base:localId>
          <base:namespace>UK</base:namespace>
        </base:Identifier>
      </identifier>
      <name>
        <GeographicalName>
          <language>eng</language>
          <nativeValue>Exonym</nativeValue>
          <status>Other</status>
          <spelling>
            <SpellingOfName>
              <text>Danube</text>
              <script>Latn</script>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <geometry>
        <gml:Point gml:id="UK.P01" srsName="urn:ogc:def:crs:EPSG::4326">
          <gml:pos>29.7 45.2</gml:pos>
        </gml:Point>
      </geometry>
      <type>Flowing water/River</type>
      <relatedSpatialObject>
        <base:Identifier>
          <base:localId>xy</base:localId>
          <base:namespace>UK</base:namespace>
        </base:Identifier>
      </relatedSpatialObject>
```

```
    </NamedPlace>
  </gml:featureMember>

</wfs:FeatureCollection>
```

B.8 Vitoria-Gasteiz - double language name

B.8.1 Description

“Vitoria-Gasteiz” is a multilingual official name, Vitoria is in the Spanish language and Gasteiz is in the Basque language. When a place has two official geographical names in different language and these are the same importance then they are used for the same feature at the same time. These geographic names are due to by the politic agreements.

In Spain, the parts of this type of names are separated by the hyphen sign: “Vitoria-Gasteiz”

B.8.2 Data to be delivered

NamedPlace
identifier: SPA.IGN.NG.EN.GE2TANRXGA3A
geometry: W2.6696057, N42.8421121 [referencePoint]
typeLocal: ’Capital de Provincia’ [*Populated place/City*]
type: ‘Administrative units’
relatedSpatialObject: <null>
referencePointMeaning: ‘Center’ [*“The reference point is situated in the centre of the footprint of the object”*]

GeographicalName
language: [Multiple Languages]
ISO 639-2: mul
(note other codes from ISO: ISO 639-1: --; ISO 639-3: mul)
nativeValue: endonym
status: Official
sourceOfName: Data Base of Geographical Names of National Geographic Institute (Spain)
beginLifespanVersion: 2000-01-01
endLifespanVersion: <null>

Spelling
text: Vitoria-Gasteiz
script: Latin (Roman)
transliterationScheme: <null>

B.8.3 GML encoding

```
<?xml version="1.0" encoding="UTF-8"?>
<wfs:FeatureCollection gml:id="NO.SK.SSR.0"
  xmlns="urn:x-inspire:specification:gmlas:GeographicalNames:2.0"
  xmlns:base="urn:x-inspire:specification:gmlas:BaseTypes:3.1"
  xmlns:xlink="http://www.w3.org/1999/xlink"
  xmlns:wfs="http://www.opengis.net/wfs/2.0"
  xmlns:gml="http://www.opengis.net/gml/3.2"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="urn:x-inspire:specification:gmlas:GeographicalNames:2.0
                      ./GeographicalNames.xsd">
  <gml:boundedBy>
    <gml:Envelope srsName="urn:ogc:def:crs:EPSG::4326">
      <gml:lowerCorner>-20.0 30.0</gml:lowerCorner>
      <gml:upperCorner>10.0 45.0</gml:upperCorner>
    </gml:Envelope>
  </gml:boundedBy>
  <gml:featureMember>
    <NamedPlace gml:id="SPA.IGN.NG.EN.GE2TANRXGA3A">
      <identifier>
        <base:Identifier>
          <base:localId>GE2TANRXGA3A</base:localId>
          <base:namespace>SPA.IGN.NG.EN</base:namespace>
```

```
        </base:Identifier>
      </identifier>
      <name>
        <GeographicalName>
          <language>mul</language>
          <nativeValue>Endonym</nativeValue>
          <status>Official</status>
          <spelling>
            <SpellingOfName>
              <text>Vitoria-Gasteiz</text>
              <script>Latn</script>
            </SpellingOfName>
          </spelling>
        </GeographicalName>
      </name>
      <geometry>
        <gml:Point gml:id="P01" srsName="urn:ogc:def:crs:EPSG::4326">
          <gml:pos>2.6696057 42.8421121</gml:pos>
        </gml:Point>
      </geometry>
      <type>Administrative units</type>
    </NamedPlace>
  </gml:featureMember>
</wfs:FeatureCollection>
```

Annex C
(informative)
Potential metadata elements for *Geographical names*

Note for v2.0: This annex contains a list of metadata elements that may be specified in section 8 as specifically useful for *Geographical names*. However the list as not yet been fully discussed and the final list needs to be specified for next versions of this specification.

C.1 Quality additional metadata

ISO 19115 defines the DQ_DataQuality entity for the description of the whole package of data quality metadata and stated that this class should be optional, so it is not mandatory for Member States to fill out these quality metadata elements. However if any of them decide to consider them, then it should complete the metadata elements described in this section.

The metadata elements below defined are the mandatory quality metadata elements according with ISO 19115:2003. Each element should be filled out to each quality sub-elements described in chapter 7 Data Quality. Therefore, the following quality metadata:

- Lineage
- ValueUnit, value (from DQ_Result / DQ_QuantitativeResult)

Should be produced for every quality sub-element:

- Completeness
  - Omission (DQ_CompletenessOmission)
  - Commission (DQ_CompletenessCommission)
- Logical consistency
  - Conceptual consistency (DQ_ConceptualConsistency)
  - Domain consistency (DQ_DomainConsistency)
- Positional accuracy
  - Absolute or external accuracy (DQ_AbsoluteExternalPositionalAccuracy)
- Temporal accuracy
  - Temporal consistency (DQ_TemporalConsistency)
- Thematic accuracy
  - Classification correctness (DQ_ThematicClassificationCorrectness)
  - Non-quantitative attributes correctness (NonQuantitativeAttributeAccuracy)

C.1.1 Scope of quality / Level

Metadata element name	**Scope**
Definition	hierarchical level of the data specified by the scope
ISO 19115 number and name	139 level
ISO/TS 19139 path	dataQalityInfo/DQ_DataQuality/scope/DQ_Scope/level
INSPIRE obligation / condition	mandatory
INSPIRE multiplicity	*1*
Data type	Class
Domain	Dataset, from MD_ScopeCode (Codelist B5.25 of ISO 19115)
Implementing instructions	Quality metadata should be at dataset level.
Example	**Geographic Names dataset**
Comment	

C.1.2 DQ_Result / DQ_QuantitativeResult: valueUnit

Metadata element name	**valueUnit**
Definition	Value unit for reporting a data quality result
ISO 19115 number and name	135. valueUnit
ISO/TS 19139 path	dataQualityInfo/*/report/*/result/DQ_QuantitativeResult/valueUnit
INSPIRE obligation / condition	Mandatory
INSPIRE multiplicity	1
Data type	Class
Domain	UnitOfMeasure (B.4.3.)
Implementing instructions	
Example	**Meter** (positional accuracy of an named place)
Comment	

C.1.3 DQ_Result / DQ_QuantitativeResult: value

Metadata element name	**value**
Definition	Quantitative value or values, content determined by the evaluation procedure used.
ISO 19115 number and name	137. value
ISO/TS 19139 path	dataQualityInfo/*/report/*/result/DQ_QuantitativeResult/value
INSPIRE obligation / condition	Mandatory
INSPIRE multiplicity	N
Data type	Class
Domain	Record (B.4.3)
Implementing instructions	
Example	**2** (positional accuracy of an named place)
Comment	

C.2 Dataset and series scope

C.2.1 Dataset character set

Metadata element name	**Metadata dataset character set**
Definition	Full name of the character coding standard used for the dataset.
ISO 19115 number and name	40. characterSet
ISO/TS 19139 path	IdentificationInfo/*/characterSet
INSPIRE obligation / condition	Conditional, if is distinct to ISO/IEC 10646-1
INSPIRE multiplicity	[0..*]
Data type	MD_CharacterSetCode
Domain	Codelist (See B.5.10 of ISO 19115)
Implementing instructions	None
Example	**utf8**
Comment	

C.2.2 Distribution format

Metadata element name	**Distribution format**
Definition	Provides a description of the format of the data to be distributed.
ISO 19115 number and name	271. distributionFormat
ISO/TS 19139 path	distributionInfo/*/distributionFormat
INSPIRE obligation / condition	Optional
INSPIRE multiplicity	[0..*]
Data type	MD_Format
Domain	The following properties are expected: name: CharacterString Version: CharacterString

Implementing instructions	None
Example	**Name: xls** **Version: 1.0**
Comment	

C.2.3 Reference system information

Metadata element name	**Reference system information**
Definition	Description of the spatial and temporal reference systems used in the dataset.
ISO 19115 number and name	13. referenceSystemInfo
ISO/TS 19139 path	referenceSystemInfo
INSPIRE obligation / condition	Optional
INSPIRE multiplicity	[0..*]
Data type	MD_ReferenceSystem
Domain	The following properties are expected: authority: CI_Citation. title code: CharacterString
Implementing instructions	None
Example	**EPSG: 4258 (**Geographic Lat/Lon with ETRS89 datum**)**
Comment	

C.2.4 Spatial representation type

Metadata element name	Spatial representation type
Definition	Method used to spatially represent geographic information
ISO 19115 number and name	37. spatialRepresentationType
ISO/TS 19139 path	identificationInfo/*/ spatialRepresentationType
INSPIRE obligation / condition	Optional
INSPIRE multiplicity	[0..*]
Data type	MD_SpatialRepresentationTypeCode
Domain	Codelist (See B.5.26 of ISO 19115)
Implementing instructions	None
Example	**vector**
Comment	

C.2.5 GraphicOverview

Metadata element name	**Resource title**
Definition	Name of the file that contains a graphic that provides an illustration of the dataset
ISO 19115 number and name	49. fileName
ISO/TS 19139 path	GraphicOverview/*/fileName
INSPIRE obligation / condition	Mandatory
INSPIRE multiplicity	[1]
Data type	CharacterString
Domain	Free text
Implementing instructions	None
Example	**GraphicGazetteer.dgn**
Comment	

C.2.6 Maintenance and update frequency

Metadata element name	**Resource abstract**
Definition	Frequency with which changes and additions are made to the resource after the initial resource is completed
ISO 19115 number and name	143. maintenanceAndUpdateFrequency
ISO/TS 19139 path	identificationInfo/ /ResourceMaintenance/*/maintenanceAndUpdateFrequency

INSPIRE obligation / condition	Mandatory
INSPIRE multiplicity	[1]
Data type	Class
Domain	CodelList:MD_MaintenanceFrequency (B.5.18 in ISO 19115)
Implementing instructions	None
Example	**Biannually**
Comment	

C.2.7 Transfer Size

Metadata element name	**Resource Type**
Definition	Estimated size of a unit in the specified transfer format, expressed in megabytes.
ISO 19115 number and name	276. transferSize
ISO/TS 19139 path	distributionInfo/*/transferOptions/*/transferSize
INSPIRE obligation / condition	Optional
INSPIRE multiplicity	[1]
Data type	Real
Domain	The transfer size is > 0.0
Implementing instructions	None
Example	**100**
Comment	

C.3 Metadata scope

C.3.1 Metadata character set

Metadata element name	**Metadata character set**
Definition	Full name of the character coding standard used for the metadata set.
ISO 19115 number and name	4. characterSet
ISO/TS 19139 path	characterSet
INSPIRE obligation / condition	Conditional, if is distinct to ISO/IEC 10646-1
INSPIRE multiplicity	1
Data type	Class
Domain	Codelist (See B.5.10 of ISO 19115)
Implementing instructions	None
Example	**utf8**
Comment	

C.3.2 Metadata file identifier

Metadata element name	**Metadata file identifier**
Definition	Unique identifier for this metadata file
ISO 19115 number and name	2 fileIdentifier
ISO/TS 19139 path	fileidentifier
INSPIRE obligation / condition	Optional
INSPIRE multiplicity	1
Data type	CharacterString
Domain	Free text
Implementing instructions	None
Example	**EU_IGN_GeographicalNames_20080808**
Comment	

C.3.3 Metadata standard name

Metadata element name	**Metadata standard name**
Definition	Name of the metadata standard (including profile name) used
ISO 19115 number and name	o 10. metadataStandardName

ISO/TS 19139 path	metadataStandardName
INSPIRE obligation / condition	Optional
INSPIRE multiplicity	1
Data type	characterString
Domain	Free text
Implementing instructions	None
Example	**ISO 19115:2003**
Comment	

C.3.4 Metadata standard version

Metadata element name	**Metadata standard version**
Definition	Version (profile) of the metadata standard used
ISO 19115 number and name	11. metadataStandardVersion
ISO/TS 19139 path	metadataStandardVersion
INSPIRE obligation / condition	Optional
INSPIRE multiplicity	1
Data type	characterString
Domain	Free text
Implementing instructions	None
Example	**1.0**
Comment	