



INSPIRE

Infrastructure for Spatial Information in Europe

D2.8.1.9 INSPIRE Data Specification on Protected Sites – Guidelines

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Foreword

How to read the document?

This guideline describes the INSPIRE Data Specification on *Protected sites* as developed by the Thematic Working Group Protected sites using both natural and a conceptual schema languages. The data specification is based on the agreed common INSPIRE data specification template.

The guideline contains detailed technical documentation of the data specification highlighting the mandatory and the recommended elements related to the implementation of INSPIRE. 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. 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 *Protected sites*.

At the beginning of the document, two executive summaries are included that provide a quick overview of the INSPIRE data specification process in general, and the content of the data specification on *Protected sites* 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 first.

The UML diagrams (in Chapter 5) offer a rapid way to see the main elements of the specifications and their relationships. Chapter 5 also contains the Feature Catalogue including the definition of the spatial object types, attributes, and relationships. 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.

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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 Directive¹ 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 technical³ surveys, proposed experts for the Data Specification Drafting Team⁴ and Thematic Working Groups⁵, expressed their views on the drafts of the technical documents of the data specification development framework⁶; they have reviewed and tested the draft data specifications and have been invited to comment the draft structure of the 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

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 7 years for other data in electronic format still in use.

² The number of SDICs and LMOs on 21/08/2009 was 301 and 176 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, Finland, France, Germany, Hungary, Italy, Netherlands, Norway, Poland, Portugal, Slovenia, Spain, Sweden, Switzerland, UK, the European Commission, and the European Environmental Agency

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

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data specifications and provides a coherent set of requirements and recommendations to achieve interoperability. The pillars of the framework are four technical documents:

- The Definition of Annex Themes and Scope⁷ 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 Model⁸ 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 Specifications⁹ defines a repeatable methodology enabling 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 language¹¹.

A consolidated model repository, feature concept dictionary, and glossary are being maintained to support the consistent specification development process 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 schemas¹² 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 the technical 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

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)

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local, regional, national and global level contributing to improvements in the coherence and interoperability of data in spatial data infrastructures.

Protected sites -- Executive Summary

The Directive 2007/2/EC of the European Parliament and of the Council of 14 March 2007 (INSPIRE) sets generic rules for establishing an Infrastructure for Spatial Information in the European Community. As a building block of the infrastructure, provisions on the interoperability of spatial data sets and services are foreseen. The thematic areas affected by the Directive are listed in the Annexes of the Directive.

Theme *Protected sites* is included in Annex I, which means that it is considered as reference data, i.e. data that constitute the spatial frame for linking and/or pointing at other information that belongs to other thematic fields. There are strong interdependencies between this and some Themes listed in Annex III that are still to be fully developed like Area Management/Restriction/Regulation Zones and Reporting Units; Bio-geographical Regions; Habitats and Biotopes and Species Distribution.

The INSPIRE data specification on *Protected sites* 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 was composed of experts coming from Germany, United Kingdom, and the European Environment Agency. The specification process took place according to the methodology elaborated for INSPIRE respecting the requirements and the recommendation of the INSPIRE Generic Conceptual Model¹³, which is one of the elements that ensures a coherent approach and cross theme consistency with other themes in the Directive.

The INSPIRE Directive defines a Protected Site as an “Area designated or managed within a framework of international, Community and Member States’ legislation to achieve specific conservation objectives” [Directive 2007/2/EC]. According to the International Union for the Conservation of Nature (IUCN) a Protected Site is an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.

Within the INSPIRE context, Protected Sites may be located in terrestrial, aquatic and/or marine environments, and may be under either public or private ownership. They may include localities with protection targets defined by different sectors and based on different objectives. Objectives for protection may include: the conservation of nature; the protection and maintenance of biological diversity and of natural resources and the protection of person-made objects including buildings, pre-historic and historic archaeological sites, other cultural objects, or sites with specific geological, hydrogeological or geomorphological value. Protected Sites may receive protection due to more than one type of objective, and may have a double or multifarious designation status.

Protected sites may differ greatly in their reasons for protection, their designation and their management. Examples of legislation under which Protected Sites included in this INSPIRE theme are designated, managed and regulated include:

- the Habitats Directive (1992) (Directive 92/43/EC);
- the Birds Directive (1979) (Directive 79/409/EC);
- the Water Framework Directive (2000) (Directive 2000/60/EEC)
- the World Heritage Convention (1975);
- the Ramsar Convention (1971);
- the Barcelona Convention (1976);
- the Helsinki Convention (1974);
- the OSPAR Convention (1992) and
- the national laws of each European country and EU and international sector policies (for example, relating to nature conservation, forests or fisheries).

¹³ Both the methodology and the Generic Conceptual Model are part of the framework documents prepared by the Data Specification Drafting Team. These documents formed the basis for the data specification work of the Thematic Working Group.

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Based on the reference materials and the user requirements, the Thematic Working Group considered five use cases:

1. Generate European Protected Sites spatial data report, a Europe-wide application including Natura 2000 sites, for expert users including national and regional government, the European Commission and the European Environment Agency;
2. Naively query and view Protected Sites, applicable at local, regional and Europe-wide level, for non-expert/public users;
3. Expertly query, view, visualise and analyse Protected Sites at local, regional, cross-border levels, to support environmental impact assessment and decision making;
4. Download Protected Sites data, for expert or semi-expert users;
5. Provide Protected Sites data according to EU legal obligations and data-flows (EU Member States).

The data specification has been based, as far as possible, on existing standards. Apart from ISO standards, the TWG has also used the reference material and the user requirements, the majority of which are expressed through existing legislation as already mentioned. The specification is documented using ICT techniques such as the Unified Modelling Language (UML), Geography Markup Language (GML) and Object Constraint Language (OCL).

Natura2000 has been used as an input into the INSPIRE Protected Sites Data Product Specification. Under Natura2000, Member States are required to update information on Natura2000 sites to the European Commission at least every six years. This part of the reporting process has a number of mandatory attributes. In order to fulfil the objective of allowing Member States to use the INSPIRE model to meet their Natura2000 site reporting requirements, keeping a very simple and easy way for Member States to provide their Protected Areas information, three application schemas are included within the Protected sites data specification each for a different purpose:

- Simple: A very limited set of fundamental attributes, including geometry, identifier, name and legal foundation date and document reference. Only current Protected Sites are included.
- Full: The full model including all attributes and historical as well as current Protected Sites, but with most attributes being optional, so values may be omitted.
- Natura2000: The full model with all attributes and historical as well as current Protected Sites and with mandatory attributes required for updating and maintaining of Natura2000 site data by Member States. Member States may use this Application schema to provide Natura2000 site data, as it reflects the requirements by the date this data specification was developed and as long as those requirements keep valid.

Additional application schemas specific to other purposes may be created by Member States or other European organisations and added to the model. Specific application schemas may be updated as a result of decisions and agreements at European level.

In all cases, Protected Sites have a known location, boundary and area, based on formal, legal or administrative agreements or decisions. Protected Site boundaries are often defined relative to cadastral boundaries, natural boundaries or to some other feature, or sometimes they are approximately defined on the basis of the extent of the presence of a particular species. However, in the INSPIRE context, all Protected Sites have distinct boundaries of their own, rather than being defined relative to some other spatial object type.

As the specification on INSPIRE *Protected sites* is the result of detailed analysis of user requirements and strong consideration of existing initiatives, it is expected that it will also form a solid part of a multi-purpose European spatial data infrastructure.

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The Consolidated UML repository has been set up by Michael Lutz, Anders Friis-Christensen, and Clemens Portele. The INSPIRE Registry has been developed by Angelo Quaglia and Michael Lutz. The INSPIRE Feature Concept Dictionary and Glossary has been consolidated by Darja Lihteneger. The data specification testing has been coordinated by Martin Tuchyna. The Testing Wiki has been set up by Loizos Bailas, Karen Fullerton and Nicole Ostländer. Web communication and tools for the consultations have been developed by Karen Fullerton and Hildegard Gerlach.

The stakeholders participated, as Spatial Data Interested Communities (SDIC) or Legally Mandated Organisations (LMO), in different steps of the development of the data specification development framework documents and the technical guidelines, providing information on questionnaires and user surveys, participating in the consultation process and workshops, testing the draft data specifications and supporting the work of their members in the Thematic Working Groups and Drafting Team Data Specifications.

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1 Scope

This document specifies a harmonised data specification for the spatial data theme *Protected sites* 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 theme *Protected sites*

2.2 Informal description

Definition:

Area designated or managed within a framework of international, Community and Member States' legislation to achieve specific conservation objectives [Directive 2007/2/EC].

Description:

According to the International Union for the Conservation of Nature (IUCN) a Protected Site is **an area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.**

Within the INSPIRE context, Protected Sites may be located in terrestrial, aquatic and/or marine environments, and may be under either public or private ownership. They may include localities with protection targets defined by different sectors and based on different objectives. Objectives for protection may include: the conservation of nature; the protection and maintenance of biological diversity and of natural resources and the protection of person-made objects including buildings, pre-historic and historic archaeological sites, other cultural objects, or sites with specific geological, hydrogeological or geomorphological value. Protected Sites may receive protection due to more than one type of objective, and may have a double or multifarious designation status.

Protected sites may differ greatly in their reasons for protection, their designation and their management. Examples of legislation under which Protected Sites included in this INSPIRE theme are designated, managed and regulated include:

- the Habitats Directive (1992) (Directive 92/43/EC);
- the Birds Directive (1979) (Directive 79/409/EC);
- the Water Framework Directive (2000) (Directive 2000/60/EEC)
- the World Heritage Convention (1975);
- the Ramsar Convention (1971);
- the Barcelona Convention (1976);
- the Helsinki Convention (1974);
- the OSPAR Convention (1992) and
- the national laws of each European country and EU and international sector policies (for example, relating to forests or fisheries).

This overview description describes a wide range of Protected Sites, but in practise, each Site differs greatly in its reasons for protection, its designation and its management. In addition to this INSPIRE *Protected sites* Data Specification, a number of other specifications for Protected Sites exist at the

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national, European and international levels. Natura2000 is a particularly important specification that has been used as an input into the INSPIRE data specification on *Protected sites* and is referred to throughout this document, but a number of other specifications also informed this specification (for example, the Common Database on Designated Areas and the International Union for the Conservation of Nature categories).

This Specification identifies three application schemas of Protected Sites, each with a different purpose:

- Simple: A very limited set of fundamental attributes, including geometry, identifier, name and legal foundation date and document reference. Only current (non-historical) Protected Sites are included.
- Full: The full model including all attributes and historical as well as current Protected Sites, but with most attributes being optional, so values may be omitted.
- Natura2000: The full model with all attributes and historical as well as current Protected Sites, and with mandatory attributes required for updating and maintaining of Natura2000 site data by Member States. Member States may use this application schema to provide Natura2000 site data.

In all cases, Protected Sites have a known location, boundary and area, based on formal, legal or administrative agreements or decisions. In the INSPIRE context, all Protected Sites have distinct boundaries of their own, rather than being defined relative to some other spatial object type.

2.3 Normative References

[Directive 2007/2/EC] 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)

2.4 Information about the creation of the specification

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2.5 Terms and definitions

Terms and definitions necessary for understanding this document are defined in the INSPIRE Glossary¹⁴.

In addition the following terms and definitions are used:

(1) Natura2000

Natura 2000 is a European Union-wide network of nature protection areas established under the 1992 [Habitats Directive](#). The aim of the network is to assure the long-term survival of Europe's most valuable and threatened species and habitats. It is comprised of Special Areas of Conservation (SAC) designated by Member States under the Habitats Directive, and also incorporates Special Protection Areas (SPAs) designated under the 1979 [Birds Directive](#). The establishment of this network of protected areas also fulfils a Community obligation under the UN Convention on Biological Diversity.

(2) Protected Site

A Protected Site is an area designated or managed within a framework of international, Community and Member States' legislation to achieve specific conservation objectives. Protected Sites and Protected Areas are synonymous.

¹⁴ The INSPIRE Glossary is available from <http://inspire-registry.jrc.ec.europa.eu/registers/GLOSSARY>

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(3) Protected Area

Protected Sites and Protected Areas are synonymous.

(4) Annex I, II, III

Mentions of Annexes I, II and III in this specification refer to Annexes to the INSPIRE Directive. These Annexes identify the themes that fall within each Annex of the Directive [DS D2.3].

(5) Annex A, B, C, D, E, F

Mentions of Annexes A to F refer to Annexes to this specification. They appear at the end of this document.

2.6 Symbols and abbreviations

| | |
|------------|---|
| CDDA | Common Database on Designated Areas |
| EU | European Union |
| GML | Geographic Markup Language |
| INSPIRE | Infrastructure for Spatial Information in Europe |
| IUCN | International Union for the Conservation of Nature |
| Natura2000 | A European Union-wide network of nature protection areas established under the 1992 Habitats Directive and the 1979 Birds Directive . |
| OSPAR | Oslo and Paris Commissions |
| PS | Protected Site |
| SDF | Standard Data Form used by Natura2000 to collect Protected Sites data. |
| SLD | Styled Layer Descriptor |
| TWG | Thematic Working Group |
| UML | Unified Modeling Language |
| UN | United Nations |
| URI | Unified Resource Identifier |

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.

2.8 Conformance

Requirement 1 Any dataset claiming conformance with this INSPIRE data specification shall pass the requirements described in the abstract test suite presented in Annex A to this specification.

3 Specification scopes

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

4 Identification information

Table 1 – Information identifying the INSPIRE data specification *Protected sites*

| | |
|-----------------------------|---|
| Title | INSPIRE data specification <i>Protected sites</i> |
| Abstract | <p>Within the INSPIRE context, Protected Sites may be located in terrestrial, aquatic and/or marine environments, and may be under either public or private ownership. They may include localities with protection targets defined by different sectors and based on different objectives. Objectives for protection may include: the conservation of nature; the protection and maintenance of biological diversity and of natural resources and the protection of person-made objects including buildings, pre-historic and historic archaeological sites, other cultural objects, or sites with specific geological, hydrogeological or geomorphological value. Protected Sites may receive protection due to more than one type of objective, and may have a double or multifarious designation status.</p> <p>In all cases, Protected Sites have a known location, boundary and area, based on formal, legal or administrative agreements or decisions. Protected Site boundaries are often defined relative to cadastral boundaries, natural boundaries or to some other feature, or sometimes they are approximately defined on the basis of the extent of the presence of a particular species. However, in the INSPIRE context, all Protected Sites have distinct boundaries of their own, rather than being defined relative to some other spatial object type.</p> |
| Topic categories | Environment |
| Geographic description | <p>The INSPIRE data specification <i>Protected sites</i> covers spatial data sets which relate to an area where a Member State has and/or exercises jurisdictional rights. It may also cover other geographical areas within which INSPIRE is applied, even if they are not current EU Member States.</p> <p>Protected Sites may overlap if they are of a different designation, but do not necessarily provide complete and contiguous coverage of an entire Member State.</p> |
| Purpose | <p>The purpose of this document is to specify a harmonised data specification for the spatial data theme <i>Protected sites</i> as defined in Annex I of the INSPIRE Directive.</p> <p>Data products based on the <i>Protected sites</i> Data Specification are intended to be used for the following purposes:</p> <ol style="list-style-type: none"> 1. To generate European spatial data reports. 2. To allow the public to query and view information about Protected Sites locally and regionally. 3. To allow experts to visualise and analyse Protected Sites locally, regionally, nationally and Europe-wide. 4. To allow experts and semi-experts to download data from a single country, a subset of countries or across Europe. 5. To allow Member States to meet their Natura2000 reporting obligations. <p>Annex B to this specification contains the use cases for the Protected Sites data product.</p> |
| Spatial representation type | vector |
| Spatial resolution | <p>The INSPIRE <i>Protected sites</i> theme is designed to be used at all levels of spatial resolution: the European level, the National level, the Regional level and the Local level. For this reason, the highest available resolution is to be used.</p> <p>Spatial resolution varies widely across different Protected Sites and is largely dictated by the method of capture and the data source. Protected Sites are normally referenced to existing mapping of the cadastre and natural features, and thus the resolution of the Protected Site depends on the resolution of the underlying data source and the method of capture (often digitisation). Typical scales of capture range from larger than 1:5,000 (accuracy less than +/-1m) to 1:100,000 (accuracy +/-25m), corresponding to the local level and regional level respectively.</p> |

| | <p>Recommendation 1 It is recommended that data products complying with the INSPIRE <i>Protected sites</i> Data Specification contain the highest resolution data at the data source that the Member States can provide, as Protected Sites data may be used at a local level as well as broader scales.</p> | | | | |
|--|---|---------------|-------------------|--|---|
| Jurisdictional Scope | <p>The INSPIRE <i>Protected sites</i> data specification applies to all Protected Sites that are defined by the international, European Community or national legislation of Member States, even if the legislation is administered at the local or provincial level. Protected Sites that are not defined by legislation at any of these levels are not considered within the scope of the INSPIRE <i>Protected sites</i> theme.</p> <p>Requirement 2 Member States providing data to comply with the INSPIRE <i>Protected sites</i> theme must provide data on all Protected Sites defined by international, European Community or national legislation, subject to the other constraints described in this specification (refer particularly to Geographical Scope and Thematic Scope).</p> | | | | |
| Geographical Scope | <p>This INSPIRE <i>Protected sites</i> data specification covers spatial data sets that relate to an area where a Member State (or other State complying with INSPIRE) has and/or exercises jurisdictional rights, or where no jurisdictional rights exist (that is, in marine areas outside the jurisdiction of a particular Member State).</p> <p>Member States are responsible for the management of data about Protected Sites within their own jurisdiction. The assignment of Protected Sites to the jurisdiction of Member States may not coincide with Member State geographical boundaries, because neighboring Member States sometimes agree to assign the management of Protected Sites according to other criteria. For example, if a protected species inhabits two neighboring countries on either side of a river, the two Member States concerned may agree that each Member State will manage a Protected Site on their own side of the river protecting that species, even if the river does not coincide with the legal geographical boundary between the two Member States.</p> <p>Requirement 3 Member States providing data to comply with the INSPIRE <i>Protected sites</i> theme must provide data about Protected Sites under their management and administration, for which they are responsible.</p> | | | | |
| Thematic Scope | <p>The thematic scope of the INSPIRE data specification on <i>Protected sites</i> is defined on the basis of two criteria:</p> <ul style="list-style-type: none"> • The protection of the Site must be defined by legislation (whether international, European Community or national) and • The protection of the Site must be for specific conservation objectives, whether nature, cultural or other conservation. <p>In contrast, the closely related <i>AREA MANAGEMENT/RESTRICTION/REGULATION ZONES AND REPORTING UNITS</i> theme (from Annex III of the INSPIRE Directive) is concerned with areas that are designated for other purposes, or with non-legislative administrative mechanisms. Refer to [DS-D2.3] for more details.</p> <p>Table 2a – Examples of Protected Site exclusions and inclusions</p> <table border="1"> <thead> <tr> <th>In this theme</th> <th>Not in this theme</th> </tr> </thead> <tbody> <tr> <td> <ul style="list-style-type: none"> • protected archaeological sites; • protected buildings; • salmonid and cyprinid waters (Fresh </td> <td> <ul style="list-style-type: none"> • restricted areas around drinking water sources (Water Framework Directive); </td> </tr> </tbody> </table> | In this theme | Not in this theme | <ul style="list-style-type: none"> • protected archaeological sites; • protected buildings; • salmonid and cyprinid waters (Fresh | <ul style="list-style-type: none"> • restricted areas around drinking water sources (Water Framework Directive); |
| In this theme | Not in this theme | | | | |
| <ul style="list-style-type: none"> • protected archaeological sites; • protected buildings; • salmonid and cyprinid waters (Fresh | <ul style="list-style-type: none"> • restricted areas around drinking water sources (Water Framework Directive); | | | | |

| | |
|---------------------|---|
| | <p>Water Fish Directive);</p> <ul style="list-style-type: none"> • shellfish growing waters (Shellfish Growing Waters Directive). <ul style="list-style-type: none"> • nitrate-vulnerable zones (Nitrates Directive); • dumping sites; • noise reduction zones; • planning and land use controls; • prospecting and mining permit areas; • river basin districts; • coastal zone management areas; • bathing waters (Bathing Waters Directive); |
| Application schemas | <p>The INSPIRE data specification on <i>Protected sites</i> includes three application schemas:</p> <ul style="list-style-type: none"> • The Simple application schema includes basic, core information about Protected Sites. • The Full application schema contains a number of additional attributes, all of which are optional. • The Natura2000 application schema contains a number of attributes and additional constraints to ensure that data fulfilling the application schema also complies with Natura2000 reporting requirements. <p>Member State selection of the appropriate application schema to use should depend on internal processes and requirements, and on user requirements. As a minimum, the Simple application schema must be supported, but Member States may choose to support the Full application schema or the Natura2000 application schema in order to meet their internal requirements or wider reporting obligations.</p> <div style="border: 2px solid black; padding: 5px; margin: 10px 0;"> <p>Requirement 4 In order to comply with the INSPIRE data specification on <i>Protected sites</i>, at a minimum data must meet the Simple application schema.</p> </div> <p>Member States may choose to create their own application schemas for internal purposes by selecting subsets of the Full or Natura2000 application schemas or extending these application schemas with additional attributes. Refer to [DS-D2.5] for more information.</p> <div style="border: 1px dashed gray; padding: 5px; margin: 10px 0;"> <p>Recommendation 2 If Member States want to make available additional information on Protected Sites, they should use the Full application schemas (or an extension thereof).</p> </div> <p>The Natura2000 application schema provides an example of how a specific EU Directive and reporting obligation may be included in INSPIRE to reduce the burden on Member States. Over time new application schemas may be created for other EU Directives that have specific reporting requirements.</p> <div style="border: 1px dashed gray; padding: 5px; margin: 10px 0;"> <p>Recommendation 3 For making Protected Sites data available in conformance with the requirements of Natura2000, Member States should use the Natura2000 application schema.</p> </div> |

5 Data content and structure

Requirement 5 Spatial data sets related to the theme *Protected sites* shall be provided using the spatial object types and data types specified in the application schemas in this section.

Requirement 6 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 4 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 Basic notions

This section explains some of the basic notions used in the INSPIRE application schemas. These explanations are based on the GCM [DS-D2.5].

5.1.1 Placeholder and candidate types

This data specification may include types (typically spatial object types) that will be fully specified as part of an Annex II or III spatial data theme, but is already used as a value type of an attribute or association role of a type included in this data specification. Two kinds of such types are distinguished:

- A *placeholder type* acts as a placeholder for a spatial object type for which only a definition is specified (based on the requirements of the Annex I theme). It receives the stereotype «placeholder».
- A *candidate type* already has a preliminary specification comprising the definition as well as attributes and associations to other types. It does not receive a specific stereotype.

Both placeholder and candidate types are placed in the application schema package of the thematically related Annex II or III spatial data theme. Their specifications will be revisited during the specification work of the Annex II or III theme.

If the existing preliminary specification elements of such types fulfil the requirements of the spatial data themes of Annex II or II they are kept and, if necessary, are complemented with further attributes or association roles.

If the existing preliminary specifications of a placeholder or candidate type do not fulfil the requirements of the spatial data theme of Annex II or III the placeholder or the candidate type will be moved into the application schema of the Annex I theme, and, if necessary, their specification will be completed. For the Annex II or III spatial data theme a new spatial object will be created.

Placeholders and candidate types are listed in a separate subsection of the Feature Catalogue.

5.1.2 Voidable characteristics

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.

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If and only if a property receives this stereotype, the value of *void* may be used as a value of the property. A *void* value shall imply that no corresponding value is contained in the spatial data set maintained by the data provider or no corresponding value can be derived from existing values at reasonable costs, even though the characteristic 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:

- *Unpopulated*: The characteristic is not part of the dataset maintained by the data provider. However, the characteristic may exist in the real world. For example when the “elevation of the water body above the sea level” has not been included in a dataset containing lake spatial objects, then the reason for a void value of this property would be ‘Unpopulated’. The characteristic receives this value for all objects in the spatial data set.
- *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.

NOTE It is expected that additional reasons will be identified in the future, in particular to support reasons / special values in coverage ranges.

The «voidable» stereotype does not give any information on whether or not a characteristic exists in the real world. This is expressed using the multiplicity:

- If a characteristic may or may not exist in the real world, its minimum cardinality shall be defined as 0. For example, an if an Address may or may not have a house number, the multiplicity of the corresponding property shall be 0..1.
- If at least one value for a certain characteristic exists in the real world, the minimum cardinality shall be defined as 1. For example, if an Administrative Unit always has at least one name, the multiplicity of the corresponding property shall be 1..*.

In both cases, the «voidable» stereotype can be applied. A value (the real value or void) only needs to be made available for properties that have a minimum cardinality of 1.

5.1.3 Code lists and Enumerations

5.1.3.1 Style

All code lists and enumerations use the following modelling style:

- No initial value is specified, but only the attribute name part is used.
- The attribute name conforms to the usual rules for attributes names, i.e. is a lowerCamelCase name. Exceptions are words that consist of all uppercase letters (acronyms).

5.1.3.2 Governance

Two types of code lists can be distinguished:

- code lists that shall be managed centrally in the INSPIRE code list register and only values from that register may be used, and
- code lists that may be extended by data providers.

All code lists that are centrally managed shall receive the tagged value "codeList" with the preliminary value "urn:x-inspire:def:codeList:INSPIRE:<name of the class>".

5.1.4 Stereotypes

In the application schemas in this sections 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 3 below.

Table 3 – 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. |
| type | Class | A conceptual, abstract type that is not a spatial object type. |
| dataType | Class | A structured data type without identity. |
| union | Class | A structured data type without identity where exactly one of the properties of the type is present in any instance. |
| 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. |
| placeholder | Class | A placeholder class (see definition in section 5.1.1). |
| voidable | Attribute, association role | A voidable attribute or association role (see definition in section 5.1.2). |
| 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 type, the property shall receive this stereotype. |
| version | Association role | If in an application schema an association role ends at a spatial object type, this stereotype denotes that the value of the property is meant to be a specific version of the spatial object, not the spatial object in general. |

5.2 Application schemas

5.2.1 Description

5.2.1.1 Narrative description

The ProtectedSite class is the heart of the application schemas, containing a number of attributes with their own complex data types also defined within the schemas, including most importantly the features for which the Site is protected. Such features may include Habitats, Species or Buildings. A number of additional classes and data types are also included, all of which describe particular aspects or attributes of the ProtectedSite class.

There are interdependencies between the *Protected sites* data specification and some of the Annex III Data Specifications that are still to be developed. Specifically, the *HABITATS AND BIOTOPES*, *SPECIES DISTRIBUTION* and *BIO-GEOGRAPHICAL REGIONS* themes contain features on which the *Protected sites* theme depends. For this reason, these three themes have been temporarily modelled in the process of developing this data specification. They have been modelled in a way that will allow future development of the themes beyond the requirements of the *Protected sites* theme, but that will support current and future use of the *Protected sites* Data Specification. The *AREA MANAGEMENT/RESTRICTION/REGULATION ZONES AND REPORTING UNITS* theme in Annex III may also prove relevant to the *Protected sites* data specification when it is modelled, but is not addressed in this Specification directly.

Natura2000 is one of the most important Protected Sites initiatives in the European Union. Under Natura2000, Member States are required to update information on Natura2000 sites to the European Commission at least every six years. This part of the reporting process has a number of mandatory attributes. In order to meet the twin objectives of allowing Member States to use the INSPIRE model to meet their Natura2000 site reporting requirements and providing a very simple, easy option for Member States to provide their Protected Sites information to the INSPIRE process, three application schemas are included within the INSPIRE Protected Sites Data Specification. The three application schemas build on one-another. All INSPIRE-compliant data sets must use one of these application schemas and must specify which one is used (see Requirement 7). Additional application schemas

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specific to other purposes may be created by Member States or other European organisations. Specific application schemas may be updated as a result of decisions and agreements at European level.

Requirement 7 INSPIRE-compliant *Protected sites* data sets are required to use one of the three application schemas and to indicate which application schema they have used in their data set metadata (see Section 8.1.5).

5.2.1.2 UML diagrams of the three application schemas

The application schemas contain a central class called ProtectedSite. This contains Protected Sites of all types, possibly including multiple versions (depending on the application schema). Different versions of the same site can be differentiated using the objectIdentifier. The three application schemas each have their own version of the ProtectedSite class, the Simple application schema version representing the core, with the Full and Natura2000 application schemas describing further specialisations by including additional attributes and constraints.

In addition to the application schemas for each of the three application schemas, provisional application schemas for the three Annex III themes on which the *Protected sites* theme depends are included in Annexes D, E and F. This is because they are essential for the use of the *Protected sites* theme, but they have not yet been fully developed and published as Data Specifications in their own right. When this occurs, they will be removed from this Specification.

The Annex III themes that are connected to the *Protected sites* theme are:

- Habitats and Biotopes (Annex D): A Site may be protected because of the Habitats that occur on it, and the characteristics of such habitats are important for its protection.
- SpeciesDistribution (Annex E): A Site may be protected because of the Species that exist on it, and the characteristics of such species are important for its protection.
- Bio-geographical Regions (Annex F): Natura2000 reporting requires that the bio-geographical region within which a Protected Site falls be identified. This can be determined by spatial query against the Bio-geographical Regions theme, so is not explicitly included in the *Protected sites* application schema.
- Buildings: Buildings are a common reason for the creation of a Protected Site. These have not yet been modelled and so are not included as an Annex to this document. However, Protected Sites that have been created for the purpose of protecting a building may still be included within the Protected Sites theme.

5.2.1.2.1 The Simple application schema

The Simple application schema (Figure 1) contains a very limited set of fundamental attributes, including geometry, identifier, name, designation type, legal foundation date and document reference. Only current Protected Sites are included. The Simple application schema is a subset of the Full application schema and a less constrained subset of the Natura2000 application schema.

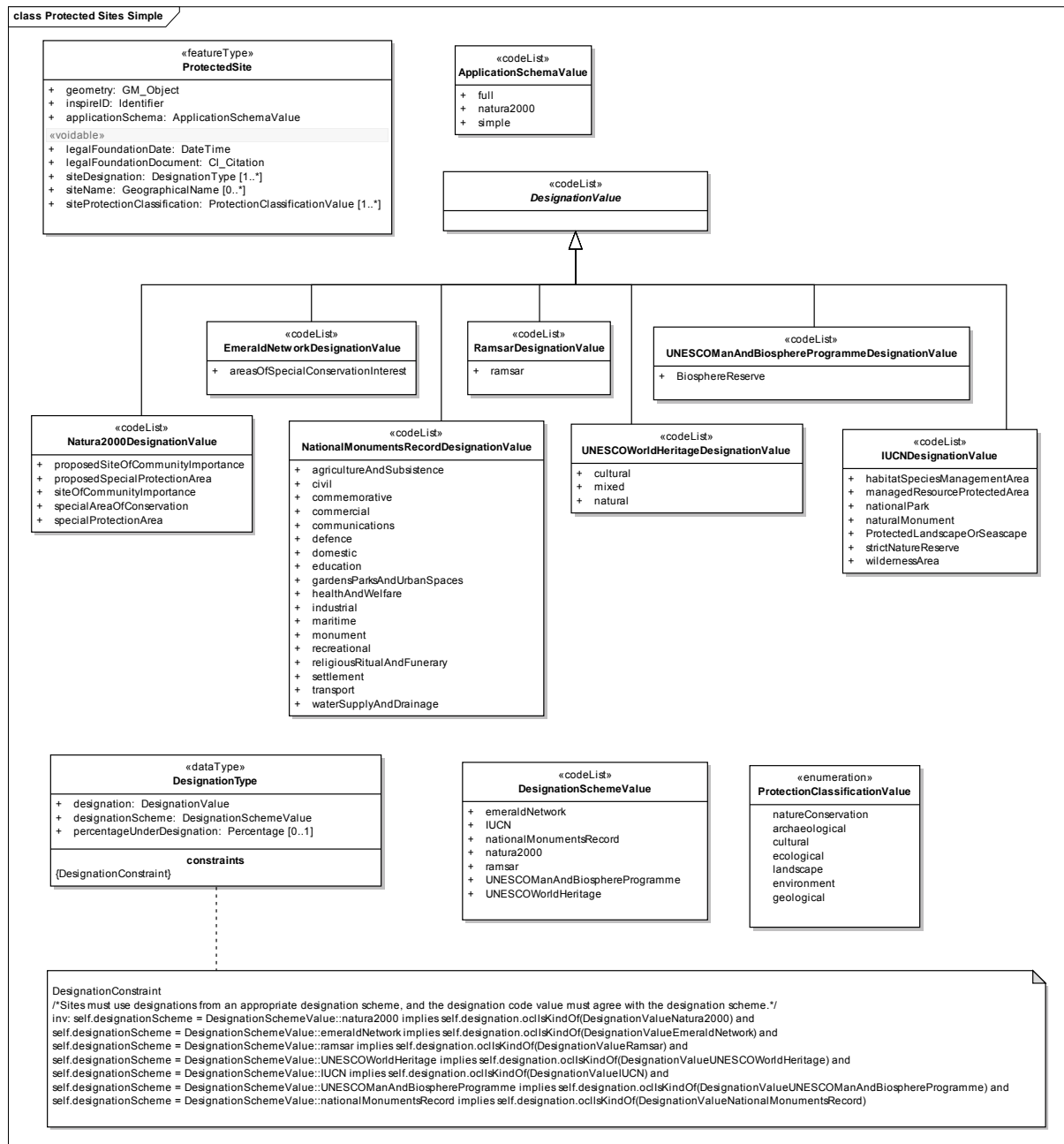


Figure 1 – UML Diagram: Simple application schema

5.2.1.2.2 The Full Application schema

The Full application schema (Figure 2) includes all attributes and historical as well as current Protected Sites, but most attributes are optional. Member States may populate subsets of attributes within this application schema to suit their requirements. In the diagram, additional elements (compared to the Simple application schema) are shown in blue, and elements imported from other application schemas in green.

NOTE For better readability, the sub-types of DesignationValue and the code list values of ActivityValue are not shown in the diagram.

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5.2.1.2.3 *The Natura2000 Application schema*

The Natura2000 application schema (Figure 3) includes all attributes and historical as well as current Protected Sites, and also contains a number of constraints, particularly specifying mandatory attributes required for updating and maintaining of Natura2000 site data by Member States. Member States may use this application schema to provide Natura2000 site data. The Natura2000 application schema is the same as the Full application schema but applies additional constraints. In the diagram, additional elements (compared to the Full application schema) are shown in yellow.

The Natura2000 application schema is intended to support Natura2000 reporting obligations. Annex C to this document shows the mapping from the Natura2000 Standard Data Form [Natura2000] to the Natura2000 application schema of the INSPIRE data specification on *Protected sites*. Annex C indicates how Member States can use the Natura2000 application schema to meet their Natura2000 reporting obligations.

The Natura2000 Standard Data Form is currently undergoing a process of revision, and it is hoped that in the future the INSPIRE *Protected sites* Natura2000 application schema and the Natura2000 Standard Data Form will converge so that two different specifications are no longer required.

| | | | |
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cadastral or natural boundaries, and in any case, the legal definition of a Protected Site remains fixed even if there are underlying changes to the cadastral boundary or the location of natural features.

5.2.1.4 Identifier management

The *Protected sites* data specification uses the Identifier dataType from the INSPIRE General Conceptual Model [DS-D2.5]. These identifiers include version number, so can be used to track changes to an object. The use of identifiers in combination with dates is described in more detail in Section 5.2.1.7.

Additional identifiers may also be represented with the sitelIdentifier attribute, which includes both the sitelIdentifier and the scheme within which the identifier is defined. This attribute may be used to store the Natura2000 site code in the case of Natura2000 sites, but may also contain the United Nations Environment Programme World Conservation Monitoring Centre identifiers (these are sometimes used for CDDA purposes), or other national identifiers, depending on the site.

5.2.1.5 Modelling of object references

References between classes within the *Protected sites* UML model are represented using the objectIdentifier attribute. References to data types are represented using attributes of the relevant data type. This also applies to references to other INSPIRE data themes (for example, the Geographical Names theme).

External references are represented as URIs or textual citations.

5.2.1.6 Geometry representation

Requirement 8 The value domain of spatial properties used in this specification is restricted to the Simple Feature spatial schema as defined by [OGC 06-103r3] (Implementation Specification for Geographic Information – Simple feature access – Part 1: Common Architecture v1.2.0).

NOTE The specification restricts the spatial schema to 0-, 1-, 2-, and 2.5-dimensional geometries where all curve interpolations are linear.

NOTE The topological relations of two spatial objects based on their specific geometry and topology properties can in principle be investigated by invoking the operations of the types defined in ISO 19107 (or the methods specified in OGC 06-103r3).

Recommendation 5 Protected Site geometries in INSPIRE-compliant *Protected sites* data sets may be point, line or polygon geometries. However, it is recommended that sites with an area of greater than 1 hectare be represented as polygons.

Recommendation 6 Protected Site geometries in INSPIRE-compliant *Protected sites* data sets that are polygons may be simple, single polygons or aggregated polygons, according to the shape of the actual Protected Site. That is, aggregated polygons are to be used if the Protected Site itself contains disjoint or island polygons. Simple polygon geometries are to be used if the Protected Site itself is a simple polygon.

Recommendation 7 All spatial objects should be provided at the source accuracy where possible.

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Recommendation 8 The accuracy should be specified for each spatial object using the spatialResolution attribute for the Full and Natura2000 application schemas.

Recommendation 9 All spatial objects should have a positional accuracy of 100 metres or better.

If a site has multiple designations, different features should be provided for each designation. Protected Sites features may overlap each other, but normally only if they are of different designation types. Usually sites of the same designation type do not overlap.

5.2.1.7 Temporality representation

The application schemas use the derived attributes "beginLifespanObject" and "endLifespanObject" to record the lifespan of a spatial object.

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 time zone information.

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

Recommendation 10 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 "unpopulated".

In addition to these system dates, the application schema also stores the real world date on which a change to the Protected Site occurs (legalFoundationDate). This is independent of anything that happens in any system.

The beginLifespanVersion stores the date on which the data instance representing the Protected Site was first created, and the endLifespanVersion is populated when some attribute or geometry of that instance changes. At this point, an entirely new instance is created repeating all of the attributes of the instance that have not changed, and providing new values for the attributes or geometries that have changed. The new instance uses the same value for objectIdentifier.localId and objectIdentifier.nameSpace, but has a new value for objectIdentifier.version. Using this method for representing temporality, all of the versions of a Protected Site can be established by looking for all the ProtectedSite instances with the same value for objectIdentifier.localID and objectIdentifier.namespace.

The system dates can also be used for incremental updates. Instances that have been added since the last update can be determined by finding instances whose beginLifespanVersion is after the date of the last update. Instances that have been changed since the last update can be determined by finding instances whose endLifespanVersion is after the date of the last update.

The Simple application schema does not include system lifecycle information and does not store historical versions of features. The Full application schema and Natura2000 application schemas include full temporality and historical versions.

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5.2.1.8 Protected Site names

Names are an important attribute of Protected Sites. The name attribute in the ProtectedSite class uses the GeographicalName data type from the INSPIRE Geographical Names Data Specification. This data type includes a number of attributes that specify the language and pronunciation of the name.

Recommendation 11 The language of the name should be filled in most cases, except if the data producer does not know the language of the name.

5.2.1.9 Habitats and Protected Sites

Annex 1 of the Habitat Directive specifies a number of habitat types for which a Protected Site may be established and should be protected. These habitats are an important aspect of Protected Sites and are required as part of Natura2000 reporting. Natura2000 reporting also requires that all of the habitats that exist on a Protected Site (whether protected or not) be described as part of the general information about the Site. However, these latter habitats may be described using more general categorisations.

The *Protected sites* application schemas model these two different connections using two different attributes with data types including references to the Habitat class from the Habitat and Biotopes theme.

1. The first attribute (protectedEntity) links a Protected Site with only those habitats (or alternatively Species or Buildings) that are protected and can be described using the categories in Annex 1 of the Habitats Directive. This association requires that the percentage of the Site covered by each habitat be described, but the total of all of these percentages may not equal 100% because the entire Site may not be covered with protected habitats.
2. The second association (presentHabitat) links a Protected Site with Habitat that exist on the site, whether or not they are protected. These habitats may be fully described using the categories from Annex 1 of the Habitat Directive, but must also be described (and may only be described) using more general habitat classes specified in the Natura2000 Standard Data Form. This may be required in some cases because habitat classes may need to be determined from land cover maps or imagery and the more detailed habit type from Annex 1 of the Habitats Directive is not known. The total of the percentages of all habitats linked to a particular Protected Site through this association must equal 100%.

It is possible that the same habitat will be linked to the same Protected Site through both associations. This may occur in the case of habitats that are protected under Annex 1 of the Habitat Directive. However, this would only occur if both the habitat class and habitat type for a given habitat were known. This is not currently common due to the lack of direct mapping between the general habitat classifications required by the second association and the more specific habitat types used by Annex 1 of the Habitats Directive. It is intended that as the Habitats and Biotopes Theme is developed and Member States work towards providing data that conforms to the models used in that Theme and in the *Protected sites* theme, these two types of habitats will start to be represented in similar ways, and thus the coding systems will merge. In this case, the direct association will only need to store links to habitats that are not protected, and the combination of the links through both associations will then be used to establish the entire set of habitats that exist on a Site.

5.2.1.10 Designations and Classifications

A large number of different classification schemes for Protected Sites have been devised, some of which are explicitly represented in the INSPIRE data specification on *Protected sites* (for example, IUCN Categories, Natura2000 designations) and all of which may be incorporated using the DesignationType data type.

There is no single classification scheme used for all purposes across all Protected Sites and this specification does not attempt to create such a classification scheme. Instead, the specification is flexible enough to accommodate all classification schemes (including those used within a Member State), requiring only a very simple classification based on the purpose of protection

(siteProtectionClassification). However, this may mean that comparison of specialised designations across Europe may be difficult in cases in which different designation schemes are used.

5.2.2 Feature catalogue – Simple application schema

Table 4 – Feature catalogue metadata

| | |
|------------------------|---|
| Feature catalogue name | INSPIRE feature catalogue Protected Sites Simple |
| Scope | Protected Sites Simple |
| Version number | 3.0 |
| Version date | 2009-09-07 |
| Definition source | INSPIRE data specification Protected Sites Simple |

Table 5 – Types defined in the feature catalogue

| Type | Package | Stereotypes | Section |
|--|------------------------|---------------|------------|
| DesignationSchemeValue | Protected Sites Simple | «codeList» | 5.2.2.3.2 |
| DesignationType | Protected Sites Simple | «dataType» | 5.2.2.2.1 |
| DesignationValue | Protected Sites Simple | «codeList» | 5.2.2.3.3 |
| DesignationValueEmeraldNetwork | Protected Sites Simple | «codeList» | 5.2.2.3.4 |
| DesignationValueIUCN | Protected Sites Simple | «codeList» | 5.2.2.3.5 |
| DesignationValueNationalMonumentsRecord | Protected Sites Simple | «codeList» | 5.2.2.3.6 |
| DesignationValueNatura2000 | Protected Sites Simple | «codeList» | 5.2.2.3.7 |
| DesignationValueRamsar | Protected Sites Simple | «codeList» | 5.2.2.3.8 |
| DesignationValueUNESCOManAndBiosphereProgramme | Protected Sites Simple | «codeList» | 5.2.2.3.9 |
| DesignationValueUNESCOWorldHeritage | Protected Sites Simple | «codeList» | 5.2.2.3.10 |
| ApplicationSchemaValue | Protected Sites Simple | «codeList» | 5.2.2.3.11 |
| ProtectedSite | Protected Sites Simple | «featureType» | 5.2.2.1.1 |
| ProtectionClassificationValue | Protected Sites Simple | «enumeration» | 5.2.2.3.1 |
| SpeciesAggregationUnit | Species Distribution | «featureType» | 5.2.2.4.1 |

5.2.2.1 Spatial object types

5.2.2.1.1 *ProtectedSite*

| ProtectedSite | |
|----------------------|--|
| Definition: | An area designated or managed within a framework of international, Community and Member States' legislation to achieve specific conservation objectives. |

ProtectedSite

Description: Each protected site has a boundary defined through formal, legal or administrative agreements or decisions. The establishment of a protected site is normally underpinned by legislation and thus given weight in decisions about land use change and spatial planning. Each Site is normally selected as a representative example of a wider resource and selected through a formal criterion based approach. A protected site can be a contiguous extent of land/sea or a collection of discrete areas that together represent a single formal Protected Site. This class has the attributes, constraints and associations that are part of the Simple application schema.

Status: Proposed

Stereotypes: «featureType»

Attribute: inspireID

Value type: Identifier

Definition: External object identifier of the protected site.

Description: NOTE An external object identifier is a unique object identifier published by the responsible body, which may be used by external applications to reference the spatial object. The identifier is an identifier of the spatial object, not an identifier of the real-world phenomenon.

Multiplicity: 1

Attribute: geometry

Value type: GM_Object

Definition: The geometry defining the boundary of the Protected Site.

Description: The geometry may be determined by a wide range of methods, including surveying, digitisation or visual reference to natural features or cadastral boundaries and may be defined by the legal document that creates the protected area. The geometry included in a data set that uses this data model is stored as a fixed geometry by coordinates, not by reference to natural, cadastral or administrative boundaries, although it may originally have been defined from these.

Multiplicity: 1

Attribute: siteProtectionClassification

Value type: ProtectionClassificationValue

Definition: The classification of the protected site based on the purpose for protection.

Description: The site may have more than one classification.

Multiplicity: 1..*

Stereotypes: «voidable»

Attribute: siteDesignation

Value type: DesignationType

Definition: The designation (type) of Protected Site.

Description: At least one designation is required, but designations may be available using a number of different designation schemes, all of which can be accommodated in the DesignationSchemeValue codelist.

Multiplicity: 1..*

Stereotypes: «voidable»

Attribute: legalFoundationDocument

Value type: CI_Citation

Definition: A URL or text citation referencing the legal act that created the Protected Site.

Multiplicity: 1

Stereotypes: «voidable»

Attribute: legalFoundationDate

Value type: DateTime

Definition: The date that the protected site was legally created. This is the date that the real world object was created, not the date that its representation in an information system was created.

| ProtectedSite | |
|---|--|
| Description: | NOTE In the case of Natura2000 sites, a protected site may go through several different stages (for example, proposed as SCI, confirmed as SCI, designated as SAC). A new version of the site is created for each of these different stages (because there is a change in the designation), and the new version should have the date on which the new stage was legally assigned as the legalFoundationDate (for example, when designated as a SAC, the version for the SAC would have the designation date as the legalFoundationDate). |
| Multiplicity: | 1 |
| Stereotypes: | «voidable» |
| Attribute: siteName | |
| Value type: | GeographicalName |
| Definition: | The name of the Protected Site. |
| Description: | NOTE 1 Several names in different languages may be expressed. NOTE 2 It is recommended that the language of the name (part of the GeographicalName data type) be filled where ever possible. This is an important identifying attribute of a Protected Site. |
| Multiplicity: | 0..* |
| Stereotypes: | «voidable» |
| Attribute: applicationSchema | |
| Value type: | ApplicationSchemaValue |
| Definition: | The INSPIRE protected sites application schema that the record complies with. |
| Multiplicity: | 1 |
| Association role: speciesAggregationUnit | |
| Value type: | SpeciesAggregationUnit |
| Definition: | A link to the SpeciesAggregationUnit feature type that represents the generic aspects of different types of units over which species may be distributed. |
| Multiplicity: | 0..1 |
| Stereotypes: | «voidable» |

NOTE The scope and definition of the applicationSchema attribute will be revisited in a future version of this data specification.

5.2.2.2 Data types

5.2.2.2.1 DesignationType

| DesignationType | |
|--|---|
| Definition: | A data type designed to contain a designation for the Protected Site, including the designation scheme used and the value within that scheme. |
| Status: | Proposed |
| Stereotypes: | «dataType» |
| Attribute: designationScheme | |
| Value type: | DesignationSchemeValue |
| Definition: | The scheme from which the designation code comes. |
| Multiplicity: | 1 |
| Attribute: designation | |
| Value type: | DesignationValue |
| Definition: | The actual Site designation. |
| Multiplicity: | 1 |
| Attribute: percentageUnderDesignation | |
| Value type: | Percentage |

DesignationType

Definition: The percentage of the site that falls under the designation. This is used in particular for the IUCN categorisation. If a value is not provided for this attribute, it is assumed to be 100%

Multiplicity: 0..1

Constraint: DesignationConstraint

Natural Sites must use designations from an appropriate designation scheme, and the language: designation code value must agree with the designation scheme.

OCL: inv: self.designationScheme = DesignationSchemeValue::natura2000 implies self.designation.ocllsKindOf(DesignationValueNatura2000) and self.designationScheme = DesignationSchemeValue::emeraldNetwork implies self.designation.ocllsKindOf(DesignationValueEmeraldNetwork) and self.designationScheme = DesignationSchemeValue::ramsar implies self.designation.ocllsKindOf(DesignationValueRamsar) and self.designationScheme = DesignationSchemeValue::UNESCOWorldHeritage implies self.designation.ocllsKindOf(DesignationValueUNESCOWorldHeritage) and self.designationScheme = DesignationSchemeValue::IUCN implies self.designation.ocllsKindOf(DesignationValueIUCN) and self.designationScheme = DesignationSchemeValue::UNESCOManAndBiosphereProgramme implies self.designation.ocllsKindOf(DesignationValueUNESCOManAndBiosphereProgramme) and self.designationScheme = DesignationSchemeValue::nationalMonumentsRecord implies self.designation.ocllsKindOf(DesignationValueNationalMonumentsRecord)

5.2.2.3 Enumerations and code lists

5.2.2.3.1 ProtectionClassificationValue

ProtectionClassificationValue

Definition: The protected site classification based on the purpose of protection.

Status: Proposed

Stereotypes: «enumeration»

Value: natureConservation

Definition: The Protected Site is protected for the maintenance of biological diversity.

Value: archaeological

Definition: The Protected Site is protected for the maintenance of archaeological heritage.

Value: cultural

Definition: The Protected Site is protected for the maintenance of cultural heritage.

Value: ecological

Definition: The Protected Site is protected for the maintenance of ecological stability.

Value: landscape

Definition: The Protected Site is protected for the maintenance of landscape characteristics.

Value: environment

Definition: The Protected Site is protected for the maintenance of environmental stability.

Value: geological

Definition: The Protected Site is protected for the maintenance of geological characteristics.

5.2.2.3.2 DesignationSchemeValue

DesignationSchemeValue

Definition: The scheme used to assign a designation to the Protected Sites.

Description: NOTE 1 Schemes may be internationally recognised (for example, Natura2000 or the Emerald Network schemes), or may be national schemes (for example, the designations used for nature conservation in a particular Member State).

NOTE 2 Typically, this code list will be extended with code schemes used within Member States.

Status: Proposed

DesignationSchemeValue

Stereotypes: «codeList»
 Governance: May be extended by data providers.

Value: natura2000

Definition: The Protected Site has a designation under either the Habitat Directive (92/43/EEC) or the Birds Directive (79/409/EEC).

Value: emeraldNetwork

Definition: The Protected Site has a designation under the Emerald Network.
 Description: The Emerald Network is an ecological network to conserve wild flora and fauna and their natural habitats in Europe.

Value: ramsar

Definition: The Protected Site has a designation under the Ramsar Convention.
 Description: The Ramsar Convention provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.

Value: UNESCOWorldHeritage

Definition: The Protected Site has a designation under UNESCO World Heritage Convention.

Value: IUCN

Definition: The Protected Site has a classification using the International Union for Conservation of Nature classification scheme.

Value: UNESCOManAndBiosphereProgramme

Definition: The Protected Site has a designation under UNESCO Man and Biosphere programme.

Value: nationalMonumentsRecord

Definition: The Protected Site has a classification using the National Monuments Record classification scheme.

5.2.2.3.3 DesignationValue

DesignationValue (abstract)

Definition: Abstract base type for code lists containing the classification and designation types under different schemes.

Description: NOTE 1 Some of these designation and classification lists are closed (for example, Natura2000), while some change regularly.

NOTE 2 Typically, additional code lists will be created as sub-types of this type to represent designation or classification values within Member States, e.g. natuurbeschermingsGebieden, rijksBeschermdArcheologischeGebieden, nationaleParken, nationaleLandschappen etc. in the Netherlands.

Status: Proposed

Stereotypes: «codeList»

5.2.2.3.4 DesignationValueEmeraldNetwork

DesignationValueEmeraldNetwork

Subtype of: DesignationValue

Definition: A code list for the Emerald Network classification scheme.

Status: Proposed

Stereotypes: «codeList»

Governance: Centrally managed in INSPIRE code list register. URN: urn:x-inspire:def:codeList:INSPIRE:DesignationValueEmeraldNetwork

Value: areasOfSpecialConservationInterest

Definition: The Protected Site is designated as an area of special conservation interest by the Emerald Network.

5.2.2.3.5 *DesignationValueIUCN*

| DesignationValueIUCN | |
|--|---|
| Subtype of: | DesignationValue |
| Definition: | A code list for the International Union for the Conservation of Nature classification scheme. |
| Status: | Proposed |
| Stereotypes: | «codeList» |
| Governance: | Centrally managed in INSPIRE code list register. URN: urn:x-inspire:def:codeList:INSPIRE:DesignationValueIUCN |
| Value: strictNatureReserve | |
| Definition: | The Protected Site is classified as a strict nature reserve under the IUCN classification scheme. |
| Value: wildernessArea | |
| Definition: | The Protected Site is classified as a wilderness area under the IUCN classification scheme. |
| Value: nationalPark | |
| Definition: | The Protected Site is classified as a national park under the IUCN classification scheme. |
| Value: habitatSpeciesManagementArea | |
| Definition: | The Protected Site is classified as a habitat species management area under the IUCN classification scheme. |
| Value: naturalMonument | |
| Definition: | The Protected Site is classified as a natural monument under the IUCN classification scheme. |
| Value: managedResourceProtectedArea | |
| Definition: | The Protected Site is classified as a managed resource protected area under the IUCN classification scheme. |
| Value: ProtectedLandscapeOrSeascape | |
| Definition: | The Protected Site is classified as a protected landscape or seascape under the IUCN classification scheme. |

5.2.2.3.6 *DesignationValueNationalMonumentsRecord*

| DesignationValueNationalMonumentsRecord | |
|--|--|
| Subtype of: | DesignationValue |
| Definition: | A code list for the National Monuments Record classification scheme. |
| Status: | Proposed |
| Stereotypes: | «codeList» |
| Governance: | Centrally managed in INSPIRE code list register. URN: urn:x-inspire:def:codeList:INSPIRE:DesignationValueNationalMonumentsRecord |
| Value: agricultureAndSubsistence | |
| Definition: | The Protected Site is classified as an agricultural or subsistence monument under the National Monuments Record classification scheme. |
| Value: civil | |
| Definition: | The Protected Site is classified as a civil monument under the National Monuments Record classification scheme. |
| Value: commemorative | |
| Definition: | The Protected Site is classified as a commemorative monument under the National Monuments Record classification scheme. |
| Value: commercial | |
| Definition: | The Protected Site is classified as a commercial monument under the National Monuments Record classification scheme. |
| Value: communications | |
| Definition: | The Protected Site is classified as a communications monument under the National Monuments Record classification scheme. |

DesignationValueNationalMonumentsRecord

Value: defence

Definition: The Protected Site is classified as a defence monument under the National Monuments Record classification scheme.

Value: domestic

Definition: The Protected Site is classified as a domestic monument under the National Monuments Record classification scheme.

Value: education

Definition: The Protected Site is classified as a education monument under the National Monuments Record classification scheme.

Value: gardensParksAndUrbanSpaces

Definition: The Protected Site is classified as a garden, park or urban space monument under the National Monuments Record classification scheme.

Value: healthAndWelfare

Definition: The Protected Site is classified as a health and welfare monument under the National Monuments Record classification scheme.

Value: industrial

Definition: The Protected Site is classified as a industrial monument under the National Monuments Record classification scheme.

Value: maritime

Definition: The Protected Site is classified as a maritime monument under the National Monuments Record classification scheme.

Value: monument

Definition: The Protected Site is classified as a monument with some unclassified form under the National Monuments Record classification scheme.

Value: recreational

Definition: The Protected Site is classified as a recreational monument under the National Monuments Record classification scheme.

Value: religiousRitualAndFunerary

Definition: The Protected Site is classified as a religious, ritual or funerary monument under the National Monuments Record classification scheme.

Value: settlement

Definition: The Protected Site is classified as a settlement under the National Monuments Record classification scheme.

Value: transport

Definition: The Protected Site is classified as a transport monument under the National Monuments Record classification scheme.

Value: waterSupplyAndDrainage

Definition: The Protected Site is classified as a water supply and drainage monument under the National Monuments Record classification scheme.

5.2.2.3.7 DesignationValueNatura2000

DesignationValueNatura2000

Subtype of: DesignationValue

Definition: A code list for the Natura2000 designation scheme.

Status: Proposed

Stereotypes: «codeList»

Governance: Centrally managed in INSPIRE code list register. URN: urn:x-inspire:def:codeList:INSPIRE:DesignationValueNatura2000

Value: specialAreaOfConservation

Definition: The Protected Site is designated as a Special Area of Conservation (SAC) under Natura2000.

Value: specialProtectionArea

| | | | |
|---------|--|------------|---------|
| INSPIRE | Reference: INSPIRE DataSpecification_PS_v3.0.pdf | | |
| TWG-PS | INSPIRE Data Specification on <i>Protected sites</i> | 2009-09-07 | Page 25 |

DesignationValueNatura2000

Definition: The Protected Site is designated as a Special Protection Area (SPA) under Natura2000.

Value: siteOfCommunityImportance

Definition: The Protected Site is designated as a Site of Community Interest (SCI) under Natura2000.

Value: proposedSiteOfCommunityImportance

Definition: The Protected Site is proposed as a Site of Community Interest (SCI) under Natura2000.

Value: proposedSpecialProtectionArea

Definition: The Protected Site is proposed as a Special Protection Area (SPA) under Natura2000.

5.2.2.3.8 DesignationValueRamsar

DesignationValueRamsar

Subtype of: DesignationValue

Definition: A code list for the Ramsar Convention designatoin scheme.

Status: Proposed

Stereotypes: «codeList»

Governance: Centrally managed in INSPIRE code list register. URN: urn:x-inspire:def:codeList:INSPIRE:DesignationValueRamsar

Value: ramsar

Definition: The Protected Site is designated under the Ramsar Convention.

5.2.2.3.9 DesignationValueUNESCOManAndBiosphereProgramme

DesignationValueUNESCOManAndBiosphereProgramme

Subtype of: DesignationValue

Definition: A code list for the World Heritage Man and Biosphere Programme classification scheme.

Status: Proposed

Stereotypes: «codeList»

Governance: Centrally managed in INSPIRE code list register. URN: urn:x-inspire:def:codeList:INSPIRE:DesignationValueUNESCOManAndBiosphereProgramme

Value: BiosphereReserve

Definition: The Protected Site is designated as a Biosphere Reserve under the World Heritage Man and Biosphere Programme.

5.2.2.3.10 DesignationValueUNESCOWorldHeritage

DesignationValueUNESCOWorldHeritage

Subtype of: DesignationValue

Definition: A code list for the World Heritage designation scheme.

Status: Proposed

Stereotypes: «codeList»

Governance: Centrally managed in INSPIRE code list register. URN: urn:x-inspire:def:codeList:INSPIRE:DesignationValueUNESCOWorldHeritage

Value: natural

Definition: The Protected Site is designated as a natural World Heritage site.

Value: cultural

Definition: The Protected Site is designated as a cultural World Heritage site.

Value: mixed

Definition: The Protected Site is designated as a mixed World Heritage site.

5.2.2.3.11 ApplicationSchemaValue

ApplicationSchemaValue

