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**Geographic information — Spatial  
referencing by geographic identifiers**

*Information géographique — Système de références spatiales par  
identificateurs géographiques*

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 211, *Geographic information/Geomatics*.

This second edition cancels and replaces the first edition (ISO 19112:2003), which has been technically revised.

The main changes compared to the first edition are as follows:

- revision of the conceptual schema to meet current standards and harmonise with other ISO/TC 211 standards;
- introduction of the class `LocationClass` to replace the class `SI_LocationType`;
- introduction of the class `Location` to replace the class `SI_LocationInstance`;
- introduction of the class `SpatialReferenceSystemUsingGeographicIdentifiers` to replace the class `SI_SpatialReferenceSystemUsingGeographicIdentifiers`;
- introduction of the class `Gazetteer` to replace the class `SI_Gazetteer`;
- introduction of the class `GeographicIdentifier`;
- recognition that a gazetteer is a sub-type of `Register` as defined in ISO 19135-1, and that `LocationClass` is an `ItemClass` and `Location` a `RegisterItem` in that context;
- changes to package identifiers.

The changes are elaborated in [Annex D](#).

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

## Introduction

Geographic information contains spatial references that relate information represented in data or text to positions in geographic space.

Spatial references fall into two categories:

- a) those using coordinates;
- b) those using geographic identifiers.

This document deals only with spatial referencing by geographic identifiers. This type of spatial reference is sometimes called “indirect”. Spatial referencing by coordinates is the subject of ISO 19111.

Spatial reference systems using geographic identifiers are based not explicitly on coordinates but on a relationship with a location defined by a geographic feature or features. The relationship of the position to the feature may be as follows:

- containment, where the position is within the geographic feature, for example in a country;
- local measurements, where the position is defined relative to a fixed point or points in the geographic feature or features, for example at a given distance along a street from a junction with another street. This aspect, known as linear referencing, is the subject of ISO 19148;
- loosely related, where the position has a fuzzy relationship with the geographic feature or features, for example adjacent to a building or between two buildings.

The purpose of this document is to specify ways to define and describe systems of spatial references using geographic identifiers. It only covers the definition and recording of the referencing feature, and does not consider the forms of the relationship of the position relative to that feature.

A spatial reference system using geographic identifiers is a collection of Location classes of different sub-types, while a gazetteer is a collection of Location instances (of one or more Location sub-types).

A common form of spatial referencing system using geographic identifiers is addressing. This is the subject of ISO 19160-1.

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# Geographic information — Spatial referencing by geographic identifiers

## 1 Scope

This document defines the conceptual schema for spatial references based on geographic identifiers. It establishes a general model for spatial referencing using geographic identifiers and defines the components of a spatial reference system. It also specifies a conceptual scheme for a gazetteer.

Spatial referencing by coordinates is addressed in ISO 19111. However, a mechanism for recording complementary coordinate references is included in this document.

This document enables producers of data to define spatial reference systems using geographic identifiers and assists users in understanding the spatial references used in datasets. It enables gazetteers to be constructed in a consistent manner and supports the development of other standards in the field of geographic information.

This document is applicable to digital geographic data, and its principles may be extended to other forms of geographic data such as maps, charts and textual documents.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 19107:2003, *Geographic information — Spatial schema*

ISO 19111:2007, *Geographic information — Spatial referencing by coordinates*

ISO 19115-1:2014, *Geographic information — Metadata — Part 1: Fundamentals*

ISO 19135-1:2015, *Geographic information — Procedures for item registration — Part 1: Fundamentals*

## 3 Terms, definitions and notation

### 3.1 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at <http://www.electropedia.org/>

— ISO Online browsing platform: available at <http://www.iso.org/obp>

#### 3.1.1

##### **gazetteer**

register of location instances of one or more location sub-types, containing some information regarding position

Note 1 to entry: The positional information need not be coordinates, but could be descriptive.

### 3.1.2

#### **geographic identifier**

spatial reference in the form of a label or code that identifies a location

EXAMPLE “Spain” is an example of a label (country name); “SW1P 3AD” is an example of a code (postcode).

### 3.1.3

#### **location**

particular place or position

Note 1 to entry: A location identifies a geographic place.

EXAMPLE “Madrid”, “California”.

### 3.1.4

#### **spatial reference**

description of position in the real world

Note 1 to entry: This may take the form of a label, code or coordinate tuple.

[SOURCE: ISO 19111:2007, 4.43]

## 3.2 Conceptual schema notation

Several model elements used in this document are defined in packages specified in other International Standards; these are listed in [Table 1](#).

**Table 1 — Packages defined in other International Standards**

| Prefix | Package                     | International standard |
|--------|-----------------------------|------------------------|
| EX     | Extent                      | ISO 19115-1            |
| CI     | Citation                    | ISO 19115-1            |
| CRS    | Coordinate Reference System | ISO 19111              |
| GM     | Geometry                    | ISO 19107              |
| MD     | Metadata                    | ISO 19115-1            |
| RE     | Register                    | ISO 19135-1            |

## 4 Conformance

### 4.1 General

Two classes of conformance are defined for this document:

- Spatial reference system using geographic identifiers — the minimum requirements for establishing a spatial reference system using geographic identifiers;
- Gazetteer — the minimum requirements for establishing a gazetteer.

### 4.2 Spatial reference system using geographic identifiers conformance class

[Table 2](#) defines the characteristics of the spatial reference system using geographic identifiers conformance class.

**Table 2 — Spatial reference system using geographic identifiers conformance class**

|                               |                                                       |
|-------------------------------|-------------------------------------------------------|
| Conformance class identifier  | <http://standards.iso211.org/19112/-1/2/conf/srs>     |
| Standardization target        | Spatial reference system using geographic identifiers |
| Dependency                    | None                                                  |
| Requirements                  | All requirements in <a href="#">Clause 6</a>          |
| Requirements class identifier | <http://standards.iso211.org/19112/-1/2/req/srs>      |
| Tests                         | All tests in <a href="#">A.1</a>                      |

### 4.3 Gazetteer conformance class

[Table 3](#) defines the characteristics of the gazetteer conformance class.

**Table 3 — Gazetteer conformance class**

|                               |                                                   |
|-------------------------------|---------------------------------------------------|
| Conformance class identifier  | <http://standards.iso211.org/19112/-1/2/conf/gaz> |
| Standardization target        | Gazetteer                                         |
| Dependency                    | None                                              |
| Requirements                  | All requirements in <a href="#">Clause 7</a>      |
| Requirements class identifier | <http://standards.iso211.org/19112/-1/2/req/gaz>  |
| Tests                         | All tests in <a href="#">A.2</a>                  |

## 5 Conceptual schema overview

[Clauses 6](#) and [7](#) specify a conceptual schema (expressed in UML) for

- a spatial referencing system using geographic identifiers, and
- a gazetteer.

An overview of the schema is provided in [Figure 1](#). The classes originating in this document (depicted by unshaded boxes in [Figures 1, 2](#) and [3](#)) are elaborated in [Figures 2](#) and [3](#) and are fully specified in [6.3](#), [6.4](#), [7.3](#), [7.4](#) and [7.5](#).

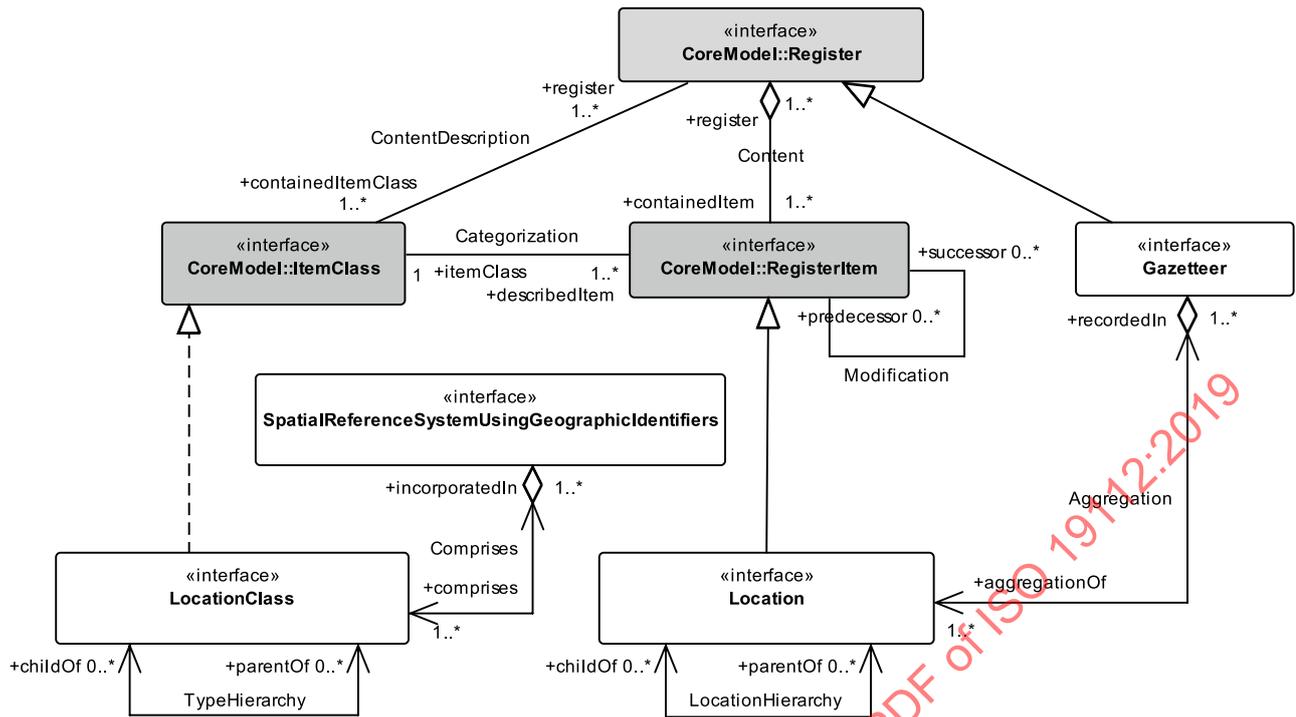


Figure 1 — Conceptual schema overview

## 6 Requirements for spatial reference systems using geographic identifiers

### 6.1 Spatial reference system using geographic identifiers

A spatial reference system using geographic identifiers comprises a related set of one or more location classes, together with their corresponding geographic identifiers. These location classes may be related to each other through aggregation or disaggregation, possibly forming a hierarchy.

Examples of spatial reference systems using geographic identifiers are shown in [Table 4](#).

Table 4 — Examples of spatial reference systems

| Spatial reference system using geographic identifiers | Location class                      | Geographic identifiers                                  |
|-------------------------------------------------------|-------------------------------------|---------------------------------------------------------|
| countries as defined in ISO 3166-1                    | country                             | country name<br>country code                            |
| set of population centres in a region                 | town                                | town name                                               |
| addresses in a town                                   | property                            | property address                                        |
| hydrological hierarchy                                | river basin<br>river<br>river reach | river basin name<br>river name<br>river reach reference |
| link - node                                           | link                                | link code                                               |

### 6.2 Conceptual schema for spatial referencing using geographic identifiers

The conceptual schema presented in this document includes two classes for describing a spatial referencing system that uses geographic identifiers, these being

- SpatialReferenceSystemUsingGeographicIdentifiers, and

— LocationClass.

The classes are illustrated in [Figure 2](#) and are fully specified in [6.3](#) and [6.4](#).

Requirement 1 A spatial referencing system using geographic identifiers shall conform to the schema (presented in UML) that is illustrated in [Figure 2](#) and specified in [6.3](#) and [6.4](#).

[Requirement identifier <http://standards.iso211.org/19112/-1/2/req/srs/srs>]

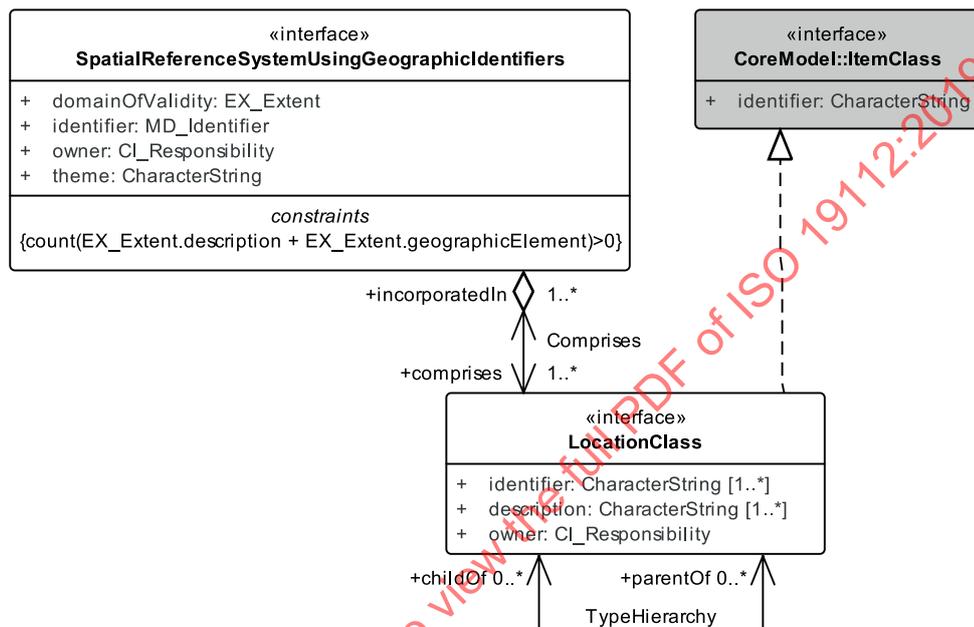


Figure 2 — Conceptual schema — Spatial referencing using geographic identifiers

### 6.3 Object Type: SpatialReferenceSystemUsingGeographicIdentifiers

The characteristics of object type SpatialReferenceSystemUsingGeographicIdentifiers are specified in [Table 5](#).

Table 5 — Object Type SpatialReferenceSystemUsingGeographicIdentifiers

|                                                  |                                                                                                                          |
|--------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| SpatialReferenceSystemUsingGeographicIdentifiers |                                                                                                                          |
| Definition:                                      | system for identifying position in the real world by reference to a location defined by a geographic feature or features |
| Type:                                            | Object Type                                                                                                              |
| Attribute:                                       |                                                                                                                          |
| Name:                                            | domainOfValidity                                                                                                         |
| Definition:                                      | geographic area in which the spatial reference system using geographic identifiers is applicable                         |
| Multiplicity:                                    | 1                                                                                                                        |
| Value type:                                      | EX_Extent (ISO 19115-1:2014, 6.6.1)                                                                                      |
| Constraint:                                      | domainOfValidity shall contain at least one of description and geographicElement                                         |

**Table 5** (continued)

|                   |                                                                                                     |
|-------------------|-----------------------------------------------------------------------------------------------------|
| Attribute:        |                                                                                                     |
| Name:             | identifier                                                                                          |
| Definition:       | identifier of the spatial reference system using geographic identifiers                             |
| Multiplicity:     | 1                                                                                                   |
| Value type:       | MD_Identifier (ISO 19115-1:2014, B.17.2)                                                            |
| Attribute:        |                                                                                                     |
| Name:             | owner                                                                                               |
| Definition:       | authority with overall responsibility for the spatial reference system using geographic identifiers |
| Multiplicity:     | 1                                                                                                   |
| Value type:       | CI_Responsibility (ISO 19115-1:2014, B.16.1)                                                        |
| Attribute:        |                                                                                                     |
| Name:             | theme                                                                                               |
| Definition:       | basis for the spatial reference system using geographic identifiers<br>Example “Addressing”         |
| Multiplicity:     | 1                                                                                                   |
| Value type:       | CharacterString                                                                                     |
| Association role: |                                                                                                     |
| Name:             | comprises                                                                                           |
| Definition:       | location classes making up the spatial reference system using geographic identifiers                |
| Multiplicity:     | 1..*                                                                                                |
| Value type:       | LocationClass (6.4)                                                                                 |

#### 6.4 Object Type: LocationClass

The characteristics of object type LocationClass are specified in [Table 6](#).

**Table 6** — Object Type LocationClass

|                                          |
|------------------------------------------|
| LocationClass                            |
| Definition:                              |
| categorisation of locations              |
| Type:                                    |
| Object Type                              |
| Realization of:                          |
| ItemClass (from ISO 19135-1:2015, 7.4.2) |
| Attribute:                               |
| Name:                                    |
| identifier                               |
| Definition:                              |
| name of the location class               |
| Example “town”                           |
| Multiplicity:                            |
| 1..*                                     |
| Value type:                              |
| CharacterString                          |

Table 6 (continued)

|                   |                                                                                                                            |
|-------------------|----------------------------------------------------------------------------------------------------------------------------|
| Attribute:        |                                                                                                                            |
| Name:             | description                                                                                                                |
| Definition:       | description of the location class<br>Example "centre of population containing a market"                                    |
| Multiplicity:     | 1..*                                                                                                                       |
| Value type:       | CharacterString                                                                                                            |
| Attribute:        |                                                                                                                            |
| Name:             | owner                                                                                                                      |
| Definition:       | name of the organization or class of organization able to create and destroy instances of locations of this location class |
| Multiplicity:     | 1                                                                                                                          |
| Value type:       | CI_Responsibility (ISO 19115-1:2014, B.16.1)                                                                               |
| Association role: |                                                                                                                            |
| Name:             | incorporatedIn                                                                                                             |
| Definition:       | spatial reference system using geographic identifiers                                                                      |
| Multiplicity:     | 1..*                                                                                                                       |
| Value type:       | SpatialReferenceSystemUsingGeographicIdentifiers (6.3)                                                                     |
| Association role: |                                                                                                                            |
| Name:             | childOf                                                                                                                    |
| Definition:       | Location class of which this Location class forms part                                                                     |
| Multiplicity:     | 0..*                                                                                                                       |
| Value type:       | LocationClass (6.4)                                                                                                        |
| Association role: |                                                                                                                            |
| Name:             | parentOf                                                                                                                   |
| Definition:       | Location class that forms part of this Location class                                                                      |
| Multiplicity:     | 0..*                                                                                                                       |
| Value type:       | LocationClass (6.4)                                                                                                        |

## 7 Requirements for a gazetteer

### 7.1 Overview

A gazetteer contains information regarding the position of each location instance. This positional information may be a coordinate reference, or it may also be purely descriptive. A coordinate reference will enable transformation from the spatial reference system using geographic identifiers to the coordinate reference system. A descriptive reference will be a spatial reference using a different spatial reference system using geographic identifiers, e.g. the postcode of a property. For any location class, there may be more than one gazetteer.

### 7.2 Conceptual schema for gazetteers

The conceptual schema in this document establishes a single class to describe a gazetteer. The class, "Gazetteer", is illustrated in [Figure 3](#) and is specified in [7.3](#). The class "Gazetteer" is also associated with classes "Location" (specified in [7.4](#)) and "GeographicIdentifier" (specified in [7.5](#)). Implementations may extend this model to include references from the gazetteer to other datasets.

A gazetteer is a register. Accordingly:

- the class "Gazetteer" is specified as being a subtype of the class "Register" [ISO 19135-1:2015, 7.2.2].

— the class "Location" is specified as being a subtype of the class "RegisterItem" [ISO 19135-1:2015, 7.5.2].

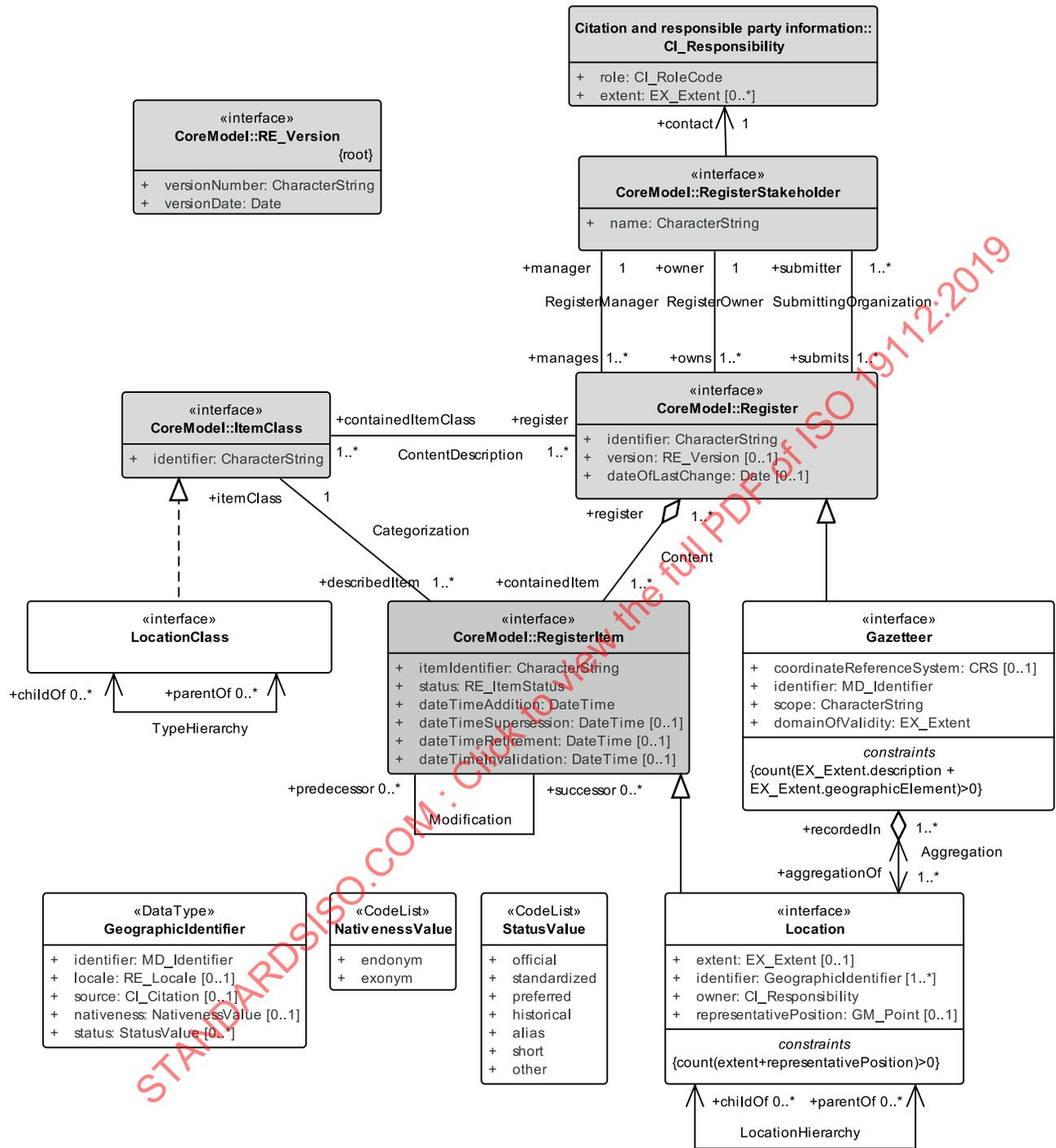


Figure 3 — Conceptual schema — Gazetteer

- Requirement 2 A gazetteer shall conform to the schema (presented in UML) that is illustrated in [Figure 3](#) and specified in [7.3](#), [7.4](#) and [7.5](#) of this document.  
 [Requirement identifier <<http://standards.iso211.org/19112/-1/2/req/gaz/sch>>]
- Requirement 3 A gazetteer shall be managed in accordance with Requirements 1 to 23 in ISO 19135-1:2015.  
 [Requirement identifier <<http://standards.iso211.org/19112/-1/2/req/gaz/mng>>]

### 7.3 Object Type: Gazetteer

The characteristics of object type Gazetteer are specified in [Table 7](#).

**Table 7 — Object Type Gazetteer**

|                                                                                                                                                                                                                         |                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Gazetteer                                                                                                                                                                                                               |                                                                                  |
| Definition:<br>register of instances of a class or classes of features containing some information regarding position<br>Note 1 to entry: The positional information need not be coordinates, but could be descriptive. |                                                                                  |
| Subtype of:<br>Register (from ISO 19135-1:2015, 7.2.2)                                                                                                                                                                  |                                                                                  |
| Type:<br>Object Type                                                                                                                                                                                                    |                                                                                  |
| Attribute:                                                                                                                                                                                                              |                                                                                  |
| Name:                                                                                                                                                                                                                   | coordinateReferenceSystem                                                        |
| Definition:                                                                                                                                                                                                             | name of the coordinate reference system used for describing position             |
| Multiplicity:                                                                                                                                                                                                           | 0..1                                                                             |
| Value type:                                                                                                                                                                                                             | CRS (ISO 19111:2007, 8.3)                                                        |
| Attribute:                                                                                                                                                                                                              |                                                                                  |
| Name:                                                                                                                                                                                                                   | identifier                                                                       |
| Definition:                                                                                                                                                                                                             | name of the gazetteer                                                            |
| Multiplicity:                                                                                                                                                                                                           | 1                                                                                |
| Value type:                                                                                                                                                                                                             | MD_Identifier (ISO 19115-1:2014, B.17.2)                                         |
| Attribute:                                                                                                                                                                                                              |                                                                                  |
| Name:                                                                                                                                                                                                                   | scope                                                                            |
| Definition:                                                                                                                                                                                                             | description of the Location classes contained in the gazetteer                   |
| Multiplicity:                                                                                                                                                                                                           | 1                                                                                |
| Value type:                                                                                                                                                                                                             | CharacterString                                                                  |
| Attribute:                                                                                                                                                                                                              |                                                                                  |
| Name:                                                                                                                                                                                                                   | domainOfValidity                                                                 |
| Definition:                                                                                                                                                                                                             | domain covered by the gazetteer                                                  |
| Multiplicity:                                                                                                                                                                                                           | 1                                                                                |
| Value type:                                                                                                                                                                                                             | EX_Extent (ISO 19115-1:2014, 6.6.1)                                              |
| Constraint:                                                                                                                                                                                                             | domainOfValidity shall contain at least one of description and geographicElement |
| Association role:                                                                                                                                                                                                       |                                                                                  |
| Name:                                                                                                                                                                                                                   | aggregationOf                                                                    |
| Definition:                                                                                                                                                                                                             | instances of Location which form the gazetteer                                   |
| Multiplicity:                                                                                                                                                                                                           | 1..*                                                                             |
| Value type:                                                                                                                                                                                                             | Location ( <a href="#">7.4</a> )                                                 |

## 7.4 Object Type: Location

The characteristics of object type Location are specified in [Table 8](#).

**Table 8 — Object Type Location**

|                                                            |                                                                                |
|------------------------------------------------------------|--------------------------------------------------------------------------------|
| Location                                                   |                                                                                |
| Definition:<br>identifiable geographic place               |                                                                                |
| Type:<br>Object Type                                       |                                                                                |
| Subtype of:<br>RegisterItem (from ISO 19135-1:2015, 7.5.2) |                                                                                |
| Attribute:                                                 |                                                                                |
| Name:                                                      | extent                                                                         |
| Definition:                                                | spatial and temporal extent of the location                                    |
| Multiplicity:                                              | 0..1                                                                           |
| Constraint:                                                | Either an extent or a representativePosition shall be present                  |
| Value type:                                                | EX_Extent (ISO 19115-1:2014, 6.6.1)                                            |
| Attribute:                                                 |                                                                                |
| Name:                                                      | identifier                                                                     |
| Definition:                                                | identifier of the location                                                     |
| Multiplicity:                                              | 1..*                                                                           |
| Value type:                                                | GeographicIdentifier ( <a href="#">7.5</a> )                                   |
| Attribute:                                                 |                                                                                |
| Name:                                                      | owner                                                                          |
| Definition:                                                | name of the organization with responsibility for the existence of the location |
| Multiplicity:                                              | 1                                                                              |
| Value type:                                                | CI_Responsibility (ISO 19115-1:2014, B.16.1)                                   |
| Attribute:                                                 |                                                                                |
| Name:                                                      | representativePosition                                                         |
| Definition:                                                | point within the extent of the Location                                        |
| Multiplicity:                                              | 0..1                                                                           |
| Constraint:                                                | Either an extent or a representativePosition shall be present                  |
| Value type:                                                | GM_Point (ISO 19107:2003, 6.3.11)                                              |
| Association role:                                          |                                                                                |
| Name:                                                      | recordedIn                                                                     |
| Definition:                                                | gazetteer containing this location                                             |
| Multiplicity:                                              | 1..*                                                                           |
| Value type:                                                | Gazetteer ( <a href="#">7.3</a> )                                              |
| Association role:                                          |                                                                                |
| Name:                                                      | childOf                                                                        |
| Definition:                                                | Location of which this Location forms part                                     |
| Multiplicity:                                              | 0..*                                                                           |
| Value type:                                                | Location ( <a href="#">7.4</a> )                                               |

Table 8 (continued)

|                   |                                            |
|-------------------|--------------------------------------------|
| Association role: |                                            |
| Name:             | parentOf                                   |
| Definition:       | Location which forms part of this Location |
| Multiplicity:     | 0..*                                       |
| Value type:       | Location ( <a href="#">Z.4</a> )           |

## 7.5 Object Type: GeographicIdentifier

The characteristics of object type GeographicIdentifier are specified in [Table 9](#).

Table 9 — Object Type GeographicIdentifier

|                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GeographicIdentifier                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Definition:<br>Spatial reference in the form of a label or code that identifies a location |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Type:<br>Object Type                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Attribute:                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Name:                                                                                      | identifier                                                                                                                                                                                                                                                                                                                                                                                                                                                               |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Definition:                                                                                | name or label for the geographic identifier                                                                                                                                                                                                                                                                                                                                                                                                                              |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Multiplicity:                                                                              | 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Value type:                                                                                | MD_Identifier (ISO 19115-1:2014, B.17.2)                                                                                                                                                                                                                                                                                                                                                                                                                                 |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Attribute:                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Name:                                                                                      | locale                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Definition:                                                                                | set of parameters that specify the cultural and linguistic environment<br>NOTE: The locale provides information about the language in which the identifier is recorded e.g. "Welsh".                                                                                                                                                                                                                                                                                     |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Multiplicity:                                                                              | 0..1                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Value type:                                                                                | RE_Locale (ISO 19135-1:2015, B.2.2.3)                                                                                                                                                                                                                                                                                                                                                                                                                                    |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Attribute:                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Name:                                                                                      | source                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Definition:                                                                                | origin of the identifier                                                                                                                                                                                                                                                                                                                                                                                                                                                 |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Multiplicity:                                                                              | 0..1                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Value type:                                                                                | CI_Citation (ISO 19115-1:2014, B.16)                                                                                                                                                                                                                                                                                                                                                                                                                                     |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Attribute:                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Name:                                                                                      | nativeness                                                                                                                                                                                                                                                                                                                                                                                                                                                               |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Definition:                                                                                | relationship of identifier to the local language                                                                                                                                                                                                                                                                                                                                                                                                                         |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Multiplicity:                                                                              | 0..1                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Value type:                                                                                | NativenessValue                                                                                                                                                                                                                                                                                                                                                                                                                                                          |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| Values:                                                                                    | <table border="1"> <tr> <td>endonym</td> <td>name is in an official or well-established language occurring in that area where the geographical feature is located</td> </tr> <tr> <td>exonym</td> <td>name is in a specific language situated outside the area where that language is widely spoken, and differing in its form from the name used in an official or well-established language of that area where the geographical feature is located</td> </tr> </table> | endonym | name is in an official or well-established language occurring in that area where the geographical feature is located | exonym | name is in a specific language situated outside the area where that language is widely spoken, and differing in its form from the name used in an official or well-established language of that area where the geographical feature is located |
| endonym                                                                                    | name is in an official or well-established language occurring in that area where the geographical feature is located                                                                                                                                                                                                                                                                                                                                                     |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |
| exonym                                                                                     | name is in a specific language situated outside the area where that language is widely spoken, and differing in its form from the name used in an official or well-established language of that area where the geographical feature is located                                                                                                                                                                                                                           |         |                                                                                                                      |        |                                                                                                                                                                                                                                                |

**Table 9** (continued)

|               |                                     |                                                                                                                                           |
|---------------|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Attribute:    |                                     |                                                                                                                                           |
| Name:         | status                              |                                                                                                                                           |
| Definition:   | degree of credibility of identifier |                                                                                                                                           |
| Multiplicity: | 0...*                               |                                                                                                                                           |
| Value type:   | StatusValue                         |                                                                                                                                           |
| Values:       | official                            | identifier is in current use and officially approved or established by legislation                                                        |
|               | standardized                        | identifier is in current use and accepted or recommended by a body assigned advisory function or power of decision in matters of toponymy |
|               | preferred                           | identifier is the recommended one where there is no official one                                                                          |
|               | historical                          | identifier is not in current use                                                                                                          |
|               | alias                               | identifier is not the official one, but an equivalent                                                                                     |
|               | short                               | identifier is an abbreviation of the official one                                                                                         |
|               | other                               | identifier is current, but none of the other types                                                                                        |

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## Annex A (normative)

### Abstract test suites

#### A.1 Spatial reference system using geographic identifiers

|                 |                                                                                                                                                                                 |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test identifier | < <a href="http://standards.iso.org/standards.iso.org/19112/-1/2/conf/srs/srs">http://standards.iso.org/standards.iso.org/19112/-1/2/conf/srs/srs</a> >                         |
| Test purpose    | Verify that the spatial reference system using identifiers includes the minimum content specified by the schema in <a href="#">6.2</a> to <a href="#">6.4</a> of this document. |
| Test method     | Inspect the spatial reference system using geographic identifiers to ensure it includes all mandatory elements of information required by this document.                        |
| Reference       | <a href="#">Clause 6</a> , Requirement 1                                                                                                                                        |
| Test type       | Basic                                                                                                                                                                           |

#### A.2 Gazetteer

##### A.2.1 Gazetteer schema

|                 |                                                                                                                                                         |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test identifier | < <a href="http://standards.iso.org/standards.iso.org/19112/-1/2/conf/gaz/sch">http://standards.iso.org/standards.iso.org/19112/-1/2/conf/gaz/sch</a> > |
| Test purpose    | Verify that the gazetteer includes the minimum content specified by the schema in <a href="#">7.2</a> to <a href="#">7.5</a> of this document.          |
| Test method     | Inspect each of a sample of entries in the gazetteer to ensure that they include all mandatory elements of information required by this document.       |
| Reference       | <a href="#">Clause 7</a> , Requirement 2                                                                                                                |
| Test type       | Basic                                                                                                                                                   |

##### A.2.2 Gazetteer management

|                 |                                                                                                                                                         |
|-----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| Test identifier | < <a href="http://standards.iso.org/standards.iso.org/19112/-1/2/conf/gaz/mng">http://standards.iso.org/standards.iso.org/19112/-1/2/conf/gaz/mng</a> > |
| Test purpose    | Verify that the gazetteer has a management system that conforms with Requirements 1 to 23 of ISO 19135-1:2015.                                          |
| Test method     | Request information about the gazetteer from the gazetteer manager.                                                                                     |
| Reference       | <a href="#">Clause 7</a> , Requirement 3                                                                                                                |
| Test type       | Basic                                                                                                                                                   |

## Annex B (informative)

### Example spatial reference systems using geographic identifiers

#### B.1 UK street addressing

The UK street addressing spatial reference system is described in [Table B.1](#).

**Table B.1 — UK street addressing spatial reference system**

| Attribute          | Value                                                         |
|--------------------|---------------------------------------------------------------|
| domain of validity | UK                                                            |
| identifier         | UK Street addressing                                          |
| owner              | National Address Gazetteer                                    |
| theme              | UK street addressing                                          |
| location classes   | Administrative area<br>Town<br>Locality<br>Street<br>Property |

#### B.2 Denmark road network

The Denmark Road Network Referencing system is described in [Table B.2](#).

**Table B.2 — Denmark Road Network Referencing System**

| Attribute          | Value                                                                                                                  |
|--------------------|------------------------------------------------------------------------------------------------------------------------|
| domain of validity | DK                                                                                                                     |
| identifier         | Road Network Referencing Model                                                                                         |
| owner              | SDFE/VD/KL<br>(SDFE: Agency for Data Supply and Efficiency, VD: Danish Road Directorate, KL: Local Government Denmark) |
| theme              | DK road network referencing                                                                                            |
| location classes   | Road Link Sequence<br>Road Link<br>Road Node<br>Road Name<br>Administrative Road Reference                             |

The Denmark Road Network Referencing Model consists of two parts:

- a) The Reference Network: the basic network consisting of nodes and edges.
- b) Reference Lines: "strings" drawn across the reference network. The geometry of the reference lines is derived from the mapping, which is established from the reference net.

A reference line is an identifier of a road segment. When a road segment is assigned to a reference line, it will never change. The reference lines are persistent over time, and will be unaffected by changes to the geometry which will not affect the reference identifiers.

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## Annex C (informative)

### Examples of gazetteer data

This annex gives an example of a gazetteer, and an entry therein. [Table C.1](#) shows the properties of a gazetteer.

**Table C.1 — Example gazetteer properties**

| Attribute                   | Value                                |
|-----------------------------|--------------------------------------|
| coordinate reference system | National Grid of Great Britain       |
| identifier                  | National Land and Property Gazetteer |
| scope                       | Land and Property Units              |
| domain of validity          | Great Britain                        |
| aggregationOf               | Property                             |

[Table C.2](#) gives an example of a property record in a gazetteer for a sub-type of Location, Property.

**Table C.2 — Example property record**

| Attribute               | Value                                                    |
|-------------------------|----------------------------------------------------------|
| extent                  | 54626 25973<br>54629 25970<br>54631 25974<br>54627 25976 |
| identifier              | 1 Church Street, Cambridge                               |
| owner                   | Cambridge City Council                                   |
| representative position | 54628 25973                                              |
| parent                  | Church House                                             |
| child                   | Flat 1                                                   |