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**NATIONAL STANDARD OF THE
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**Specification for fundamental geographic information ontology
exemplar data**

基础地理信息本体范例数据规范

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1 Scope

The document lays down the data content, the data generation and the file organization of fundamental geographic information ontology exemplars.

The document applies to the generation of fundamental geographic information ontology exemplar data.

2 Normative references

The content of the documents listed forms indispensable provisions of this document through normative reference in the text. For dated references only the edition corresponding to that date applies; for undated references the latest edition, including all amendments, applies.

GB/T 13923 Classification and codes of fundamental geographic information features; GB/T 20257 (all parts) Cartographic symbols for national fundamental scale maps; GB/T 37118-2018 Specification for geographic entity spatial data; GB/T 40765-2021 Fundamental geographic information ontology model.

3 Terms and definitions

3.1 fundamental geographic information: geographic information that serves as a unified spatial positioning framework and a basis for spatial analysis. Note: the geographic features described by fundamental geographic information include hydrography, residential areas and facilities, transport, pipelines, boundaries and administrative divisions, landforms, vegetation and soil, place names and the spatial positioning basis. Adapted from GB/T 13923-2006, 2.1.

3.2 ontology: formal expression of the phenomena of a domain of discourse by means of a basic vocabulary containing definitions and axioms. Note: definitions and axioms make implicit meanings more explicit and make the phenomena and their mutual relations describable. Adapted from GB/T 33188.1-2016, 4.1.26.

3.3 ontological property: property that reflects all the possible instances of a concept and that remains constant, not changing with the extension or the state of an instance. Taken from GB/T 40765-2021, 3.6.

3.4 exemplar: instance of a geographic concept in a fundamental geographic information ontology that is fairly typical.

3.5 exemplar property: data describing, in a fundamental geographic information ontology exemplar, the ontological properties, the relations between concepts and the quality and quantity characteristics of the geographic entity to which the exemplar corresponds. Note: it comprises property items and property values.

3.6 exemplar property table: data table describing the ontological properties, the relations between concepts and the quality and quantity characteristics of the geographic entity to which the exemplar corresponds.

3.7 topographic map symbol: graphic symbol used in national fundamental scale

topographic maps to represent geographic features.

3.8 topographic diagram: part cut out of a national fundamental scale topographic map that describes where a geographic object having topographic characteristics is situated.

3.9 virtual photo (English term as printed in the document; the Chinese term it heads means a photograph of a real scene): near-ground digital image photograph obtained by actual photography with photographic equipment, consistent with what the human eye perceives and reflecting the true spatial relations of the geographic scene, the time and the information of the human and social environment.

3.10 virtual regular photo: real-scene photograph obtained by photographing the target at the usual angle and in the usual way.

3.11 multiple perspectives virtual photo: set of real-scene photographs taken from not fewer than two different angles.

3.12 surround virtual photo: set of real-scene photographs taken all round the object photographed, at a fixed angular interval and at a fixed distance as radius.

3.13 panoramic virtual photo: photograph obtained by stitching and fusing, according to their imaging fields of view, the several photographs taken from the same position in the different directions of a geographic scene, the maximum field of view reaching 360 degrees horizontally and 180 degrees vertically for a complete scene.

3.14 multi-phase virtual photo: set of real-scene photographs obtained by photographing the same object at different times or in different seasons.

3.15 stereopair: pair of photographs with overlapping imagery obtained from different camera stations. Taken from GB/T 14950-2009, 5.89.

3.16 remote sensing image: image obtained by photography or scanning of the earth surface by a remote sensor mounted on a remote sensing platform.

3.17 single-phase remote sensing image: remote sensing image of an area obtained at a single time.

3.18 multi-phase remote sensing image: remote sensing images of the same area obtained at different times and used to extract information on the dynamic change of the target.

3.19 3D model: model able to visualize the position, the shape, the surface texture and other information of the related geographic features in three-dimensional space.

3.20 diagram: simple graphic that describes or represents in a general way the shape and the relative size of geographic objects and the relations between one object and another.

3.21 metadata: data about data. Note: that is, information on the identification, the coverage, the quality, the spatial and temporal pattern, the spatial reference system and the distribution of the data. Adapted from GB/T 19710-2005, 4.5.

3.22 metadata table: descriptive data table concerning the identification and the name of the exemplar data and each item of its content.

4.1 Classification

Geographic concepts are classified according to GB/T 13923. It is advisable to establish a corresponding ontology exemplar for each type of geographic concept.

4.2 Composition

Fundamental geographic information ontology exemplar data contains the following ten items of content: the exemplar property table; the topographic map symbol; the topographic diagram; the real-scene photograph, printed in the document as virtual photo; the stereopair; the remote sensing image; the 3D model; the video; the diagram; and the metadata table.

4.3 Requirements for the completeness of the content

The completeness of each item of the exemplar data content is to meet the following requirements.

Required content: the exemplar property table and the metadata table are content that exemplar data has to contain.

Conditionally optional content, that is content optional where the data can be obtained.

Real-scene content means the several kinds of real-scene photograph, that is the regular photograph, the multiple perspectives photograph, the surround photograph, the panoramic photograph and the multi-phase photograph; the exemplar of each geographic concept is to contain at least one of the kinds of real-scene content. Three-dimensional content includes the stereopair and the 3D model; the exemplar of each geographic concept is to contain at least one of the kinds of three-dimensional content. Graphic content includes the topographic map symbol, the topographic diagram and the diagram; the exemplar of each geographic concept is to contain at least one of the kinds of graphic content.

Optional content: the single-phase remote sensing image, the multi-phase remote sensing image and the video.

The content framework of the exemplar data is shown in Figure 1, and the requirements for the completeness of the content together with the type codes are given in Table 1, the exemplar property table and the metadata table excepted. Table 1 has three columns, type, exemplar data type code and requirement for the completeness of the content, and thirteen rows. The thirteen type codes given are DXFH, DXSY, SJCG, SJDJ, SJHR, SJQJ, SJDS, LTxD, YGCG, YGDS, SYTX, SWMX and SPCG; of these the single-phase remote sensing image, the multi-phase remote sensing image and the video are marked optional, and the