

Data Model for the 1:25,000 Scale Digital Cartography of the IGM – Chile

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Abstract:

Geographic data, that is, any data that refers to a geographic location or area that represents an accident or geographic object on a map, must be organized within a geographic data model and must conform to TC211 geographic information standards. To determine the data model to be used in the cartography, a geographic data dictionary had to be studied that would represent the data set, adapted to cartography at a 1:25,000 IGM scale and at different scales, which would allow data interoperability, based on the base that had to contain names of the geographical objects, their definitions and attributes, and that were also structured in a geospatial database.

A data model is an abstraction of the real world that uses a set of data (data dictionary) and objects, feature extraction rules and elements that appear in a map that conforms to a scale of representation. Figure 1.

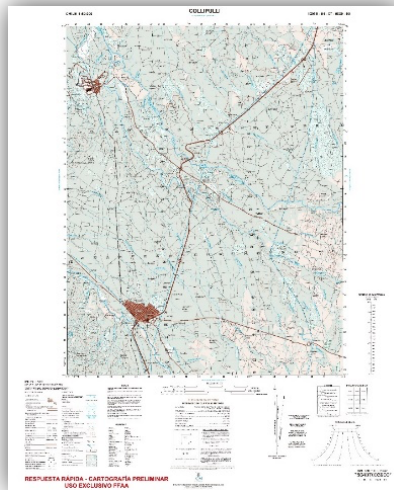


Figure 1. Cartography scale 1:50 000

Topographic Data Store (TDS)

For the methodology, various data models were studied, of which it was determined that the Topographic Data Store (TDS) model, version 6.0, could be applied in the cartography of the IGM. This is divided into four overall groups, depending on the scale of representation that is required:

- **Global Topographic Data Store (GTDS) Extraction Guide**, applied to the density of cartographic data at **> 400K scale**.
- **Regional Topographic Data Store (RTDS) Extraction Guide**, applied to the density of cartographic data between **>200K and ≤ 400K scales**.
- **Local Topographic Data Store (LTDS) Extraction Guide**, applied to the density of cartographic data between **>24K and ≤ 200K scales**.

- **Specialized-Urban Topographic Data Store (S-UTDS) Extraction Guide**, applied to the density of cartographic data at $\leq 24K$ scale. For the 1:25,000 scale cartography, it was decided to use the LTDS.

LTDS data model standardized under these ISO standards of the 19100 series, ISO Technical Committee 211

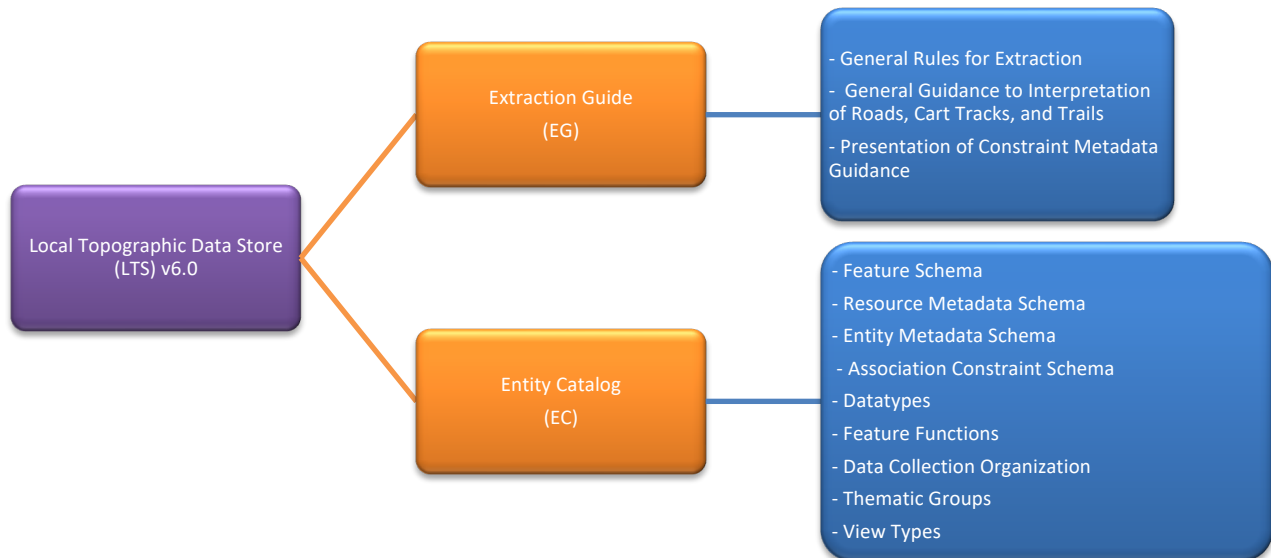


Figure 2. TDS composition

Entity Catalog (EC)

This EC is a logical specification. Data collected in accordance with this specification may be held in a variety of physical formats. Unless otherwise stated, all references to concepts, items, features, attributes, listed domain values, or other data constructs apply solely to this logical model and its associated management processes (e.g., data integrity constraints).

This EC is a single integrated logical specification that supports the collection and management of topographic feature data in the National System for Geospatial-Intelligence (NSG). It replaces an earlier family of four logical specifications (Global, Regional, Local, and Specialized-Urban) that were designed to be internally consistent, as follows:

Extraction Guide (EG)

The primary purpose for developing this Local Topographic Data Store (LTDS) Extraction Guide (EG) document is to provide a logical approach to extraction that will support collection of digital data and population of a product-neutral digital database.

Implementation of this guidance document is intended to ---

- Standardize the feature extraction process.
- Promote a consistent approach to data collection for IGM and IGM digital data producers.
- Reduce "clutter" as a result of over-collection.

Extraction guidance in this document is offered for the most commonly occurring features likely to be seen in an area of interest. Although it includes guidance on attribution, it does not include exhaustive details on how to populate every attribute. Analysts should use geospatial and cartographic knowledge and experience when necessary to ensure that all attributes are appropriately populated with respect to the intended purpose and resulting deliverable. It is of utmost importance that all igm Contractual Documents are reviewed and considered before any collection project is started in order to clarify inclusion and detail of features and attributes.

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References

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