

GENERAL SPECIFICATION

Geoinformation

GS EP GIN 303

Design and drawing of a cartographical document for geoscience

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1. Scope

This document defines the requirements for designing and drawing a cartographic document.

Its purpose is to ensure that all cartographic documents intended to be published are designed, drawn and controlled in a standardized manner.

It is intended for all geoscience teams using Geographic Information Systems (GIS) and other IT solutions used to create maps.

It applies to all the maps and figures created, whatever the tool used to do so.

2. Reference documents

The reference documents listed below form an integral part of this General Specification.

External Documents

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and addendums, is the latest revision published at the effective date of this document.

Reference	Title
ISO 216 A series	Writing paper and certain classes of printed matter - Trimmed sizes - A and B series, and indication of machine direction

Total General Specifications

Unless otherwise stipulated, the applicable version of these documents, including relevant appendices and addendums, is the latest revision published.

Reference	Title
GS EP GIN 304	Geosciences GIS Data Standard Requirement for GIS studies

3. Definitions

The following definitions serve for the purposes of this document only.

Cartographic document: any paper or digital document of which the essential component is a map (sheet, figure, etc.) For greater simplicity, the word "**map**" will replace it in this document.

Cartographic generalization: a map is a simplified and downscaled representation of the real world. Whatever the size of the final document, this reduction in scale imposes a process of simplification and optimization called "cartographic generalization". The purpose of this process of condensing and selecting among overabundant information is to communicate all the messages that the map is intended to convey.

Computer-Aided Design (CAD): refers to all the geometric modeling software and techniques used to virtually design and test by computer any mechanical, IT or architectural object or product before it is produced. These software programs are also used to create drawings or maps.

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Computer-Aided Drafting: discipline using vector-based software to produce all types of drawings.

CRS (Coordinate Reference System): a reference system used as a basis for defining the position of a point or entity in a unique way. A CRS combines a geodetic system with a projection system to assign a unique location.

Dynamic text and elements: map surround elements or graphic text that change dynamically depending on the map or data frame properties.

Geodesy: the science that studies the shape and dimensions of the earth. Its original assignment is to determine the geometrical shape of the terrestrial globe by defining the position of permanently materialized remarkable points (geodetic points). This is accomplished by establishing coordinate systems and topographic maps.

Geomatics service: any department or team specialized in implementing all the GIS components.

GIS (Geographic Information System): a set of components (hardware, software, data, users and methods) capable of managing, processing, analyzing and communicating geographically referenced information. All of this information is generally stored in databases and can also be used to produce representations as maps or drawings.

Graphical semiology: the study of signs and their meaning. Its purpose is to ensure that the information communicated is correct and that the final map obtained can be easily understood by the reader.

Graticule and rectangular grid: a frame of graduated equidistant lines associated with coordinates. They serve to read the position of objects drawn on the map.

A graticule shows the parallels (latitude) and meridians (longitude), and its coordinates are expressed in angular units (degrees, grades).

A grid identifies the X and Y lines, and its coordinates are given in rectangular units (meters, feet).

The coordinate values are defined by the settings of the geodetic system used for the map.

Map: 2D graphic representation of all or part of the real world and of the events occurring in it. Maps produced by geoscience generally summarize the results of studies.

"A map is a conventional geometric representation, usually plane and in relative positions, of concrete or abstract phenomena, localized in space, but also the document that holds all or part of this representation whether handwritten, printed or produced by any other means" (French Cartography Committee).

Map surrounds: essential information and graphics added to the map to improve comprehension and layout.

Style files: catalog of conventional representations and signs that standardizes the symbols used on maps created. Style files for the GIS ArcMap software have a ".style" extension.

Title block: block of text that contains all the information needed to describe and archive the document. Two examples of a title block are given in **Appendix 1**.

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4. Roles and responsibilities

4.1 The study manager

The study manager is the **map designer** the map. S/he:

- Selects the Coordinate Reference System (CRS) with the approval of the topographical service at headquarters.
- Determines the information and events to be represented on the map.
- Selects the final publishing formats and media for the map.
- Provides the map drafter with all the information needed to create the document:
 - The CRS selected for the study.
 - The confidentiality level of the map content.
 - The information and events to be represented on the map.
- Defines the map distribution list.
- Controls quality of the map, if no one has been designated as map controller.

4.2 The map drafter

The map drafter draws the map according to the instructions communicated by the study manager.

S/he respects the map design rules, good practices, and basic requirements for GIS geoscience studies (as per **GS EP GIN 304**) in application within the Company.

S/he enters the non-dynamic elements and text.

4.3 The map controller

The map controller:

1. Checks that the CSR selected for the study is used.
2. Ensures respect of the confidentiality level selected-for the map content.
3. Approves the readability and clarity of the map.
4. Checks the presence of all the mandatory map surrounds defined by EXPLO management.
5. Triggers the corrective actions required if the map is non compliant or not clear.
6. Tracks the quality control.

Note: Without a designated map controller, this role is filled by the study manager. The study manager may delegate the tasks in points 1, 3, 4 and 6 of this paragraph, but remains responsible for them.

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4.4 The map user

The map user:

- Does not communicate the map to anyone not included in the distribution list defined by the study manager.
- Preserves the integrity of mandatory map surround elements.

5. The map – key concepts

5.1 Channel of communication

Maps are essential for channeling information and for making decisions; as such, they need to be understood by all of their recipients.

This objective is met by using and applying graphical semiology conventions and basic rules of map design. If these best practices are not respected, it becomes difficult or even impossible to understand the messages conveyed by the map.

These concepts are applicable to all IT solutions used to create maps and geographically referenced documents (GIS, computer-aided design and drafting software, workstations or modeling stations for example).

5.2 Designing a map

To design and draw a map that will convey all the messages the study manager has decided to communicate, the following three basic questions have to be answered and well thought through:

- What will the map show?
- In what format and on what media will the map be published?
- Who is the map for?

The information presented has to be simplified, codified and ranked by importance to make it easy to read and understand the map.

6. Rules and best practices

The basic map design techniques, i.e. graphical semiology and cartographic generalization, are to be followed when scaling reality to a graphic representation.

The map drafter is responsible for ensuring that the document is self-explanatory by following the applicable rules, standards and best practices, as specified in § 4.2.

To be correctly read and understood, the map should include the mandatory map surrounds and respect the rules of the art of cartographic design (see § 6.3).

{Rule 1:

The map designer shall use the CRS selected and approved by the Company at the beginning of the study (as per GS EP GIN 304).}

6.1 Conventional reference signs

{Rule 2:

Geoscience maps shall use the conventional mapping symbols approved.}

The conventional map symbols used by Exploration & Production GIS softwares are accessible in a style file (.style) format. The style file is not exhaustive and is therefore intended to evolve.

The style file (.style) and catalog of conventional reference symbols may be obtained upon request from the entity in charge of data and knowledge. Some illustrations of the contents of the catalog are presented in **Appendix 3**.

{Rule 3:

Any requests to add and/or update conventional map symbols, on behalf of geoscience teams in headquarters or in affiliates, shall be approved by the entity of GTS/IGR in charge of data and knowledge.}

Once the requests are approved by the entity, the new symbols are added to the style file (.style) and a new version of the file is generated.

6.2 Cartographic generalization

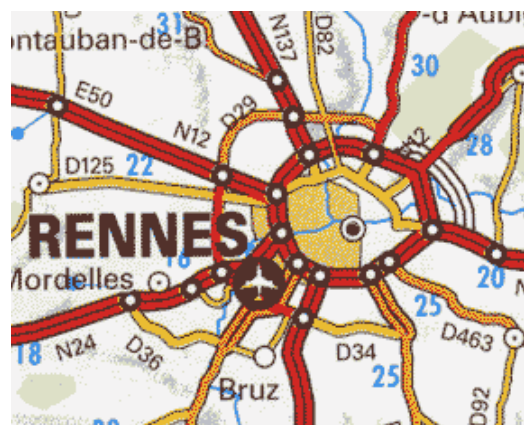
All maps are the result of a cartographic generalization. Changing the scale ratio of a map from a large scale to a small scale (e.g. from 1/250 000 to 1/1 000 000) automatically changes the density of geographic data (see example Fig. 1).

Cartographic generalization techniques are to be applied as early as possible in the map design process to deal with this phenomenon. They mostly involve simplifying representations and symbols to adjust them to the new scale and ensure effective communication.

Fig. 1: example of cartographic generalization



Rennes: scale of the reference document: 1/250 000; IGN, 1999 edition.



Rennes: scale of the reference document: 1/1 000 000; IGN, 1998 edition.