

Federal Geographic Data Committee



Geologic Data Subcommittee

PROJECT TITLE: FGDC Standard for Geologic Map Data Model

DATE OF PROPOSAL: revised and approved October 10, 2001

TYPE OF STANDARD PROPOSED: Logical Data Model

SUBMITTING ORGANIZATION: FGDC Geologic Data Subcommittee

POINT OF CONTACT: [David R. Soller](#), USGS

OBJECTIVES: The objective of this standard is to create a logical data model that will describe the various critical entities of a geologic map and the relations among them. The intent is to develop and propose a standard that is widely accepted by map producers using a wide variety of computer and software systems.

SCOPE: This standard will describe how geologic map information will be configured in digital format, but will not proscribe methods by which geologic maps will be made. Geologic maps are very diverse in the type of information contained. The developers of the geologic map data model recognize this diversity, but will focus on the elements of geologic maps that are common to all or at least most geologic maps. In recognition of the diversity of information in geologic maps, the data model is being designed to allow for development of extensions to the standard.

JUSTIFICATION/BENEFITS: Geologic maps are produced by various State and Federal agencies, according to various locally-developed guidelines for content and form. A standardized geologic map data model is needed by the geoscience community to provide consistency to the map data that are archived and served to the public and to promote the exchange of digital map data. The model will aid in the development of systematic mapping coverage for the Nation, as mandated by the Geologic Mapping Act of 1992 and its subsequent Reauthorizations that call for implementation of a [National Geologic Map Database](#). The data model will facilitate production of a variety of derivative map products from this national archive.

DEVELOPMENT APPROACH: A Geologic Data Model Working Group was formed through an agreement between the Association of American State Geologists' (AASG) Digital Geologic Mapping Committee and the USGS National Geologic Map Database project. The Working Group was staffed by

technical experts from the USGS, the State geological surveys, and the Geological Survey of Canada (see the [National Geologic Map Database project](#) for more information). In late 1998, the Working Group concluded its assignment and was superseded by formation of the [North American Data Model Steering Committee](#) (NADMSC). The NADMSC is composed of Federal, State, and Provincial geological surveys of the United States and Canada; it is designed to provide overall guidance, coordination, publicity, and communication for the development of a standard geologic map data model to support, at a minimum, the needs of the United States and Canadian geoscience community.

The following development steps have been executed or are planned:

- Define the general framework of the model (*done - the working group has defined an entity-relationship model*)
- Develop a draft model through presentation and discussion at public forums (*done - ca. 1996-1998*)
- Provide to the public a document describing the model and a prototype, "proof of concept" implementation (a set of software tools designed to demonstrate the model's concepts) for informal evaluation among the USGS, AASG, Geological Survey of Canada, the FGDC Geologic Data Subcommittee, and other interested parties (*done - mid-1998*)
- Revise the document according to comments received (*done - late 1998*)
- Under aegis of the NADMSC, encourage all participating agencies to conduct test-implementations of the data model. Evaluate implementations, revise data model as needed, and develop software tools to support the implementations. Develop standardized terminology and nomenclature for the attribution of geologic materials and geologic structures that are represented on geologic maps and in databases (*NADMSC formed in 1999; technical work conducted 2000-2002*)
- Prepare a formal document containing the proposed standard data model and implementation(s) for consideration by the FGDC Geologic Data Subcommittee (*2002*)
- After final Subcommittee comment and any necessary revisions, submit to the FGDC Standards Working Group and FGDC Coordinating Committee for consideration as a Federal standard (*2003*)

RELATED STANDARDS: Geological Survey of Canada logical data model used for FieldLog software; British Geological Survey Logical Data Model (Technical Report WO/93/20R).

DEVELOPMENT AND COMPLETION SCHEDULE: see Development Approach

RESOURCES REQUIRED: The USGS, AASG, and Geological Survey of Canada are providing the resources to develop the model. The FGDC Geologic Data Subcommittee will require resources to develop a draft for public review.

POTENTIAL PARTICIPANTS: The USGS, the AASG, the Geological Survey of Canada, and professional societies.

OTHER TARGETED AUTHORIZATION BODIES:

- The USGS and AASG, under authority stipulated in the Geologic Mapping Act's requirement for standards development to support the National Geologic Map Database. [*See the [Geologic Mapping Act](#), Section 31f(b)*].
- The Canadian Geoscience Knowledge Network's Data Integration Working Group.
- The Geologic Data Subcommittee will consider whether to propose the standard to other standards

organizations such as the American Society for Testing and Materials (ASTM).

Return to the FGDC [Home Page](#)

Return to the Standards Working Group [Home Page](#)

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Maintained by Dave Soller (drsoller@usgs.gov)

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