

Memorandum from SLTT Chair to SLTT committee members (4/03/2000)

Participants on the Science Language Technical Team For a Proposed North American Geologic-Map Data Model

Science Language Technical Team colleagues: 04/03/2000

By now, each of you hopefully is aware that you have been selected as a participant on a technical team (Science Language Technical Team, SLTT) tasked with coming to groups with how (or whether) a common set of geoscience terms can be developed for digital geologic-map data bases produced in North America. The SLTT is one of several parallel teams commissioned on behalf of a proposed North American Geologic-Map Data Model.

Background

A standardized data-base model for the input, storage, manipulation, retrieval, and analysis of digital geologic-map information is being developed by a consortium of interests, including the Association of American State Geologists (AASG), the U.S. Geological Survey (USGS), the Geological Survey of Canada (GSC), and the Canadian Provincial Surveys. The data model currently being evaluated was developed as a cooperative venture by the USGS, the GSC, and the AASG.

This model attained visibility through a series of workshops and through presentations at national GSA meetings. It developed as a likely candidate for a North American data-model standard, and over a period of time was revised and refined under the aegis of the AASG, the USGS, and the GSC. The data model can be found on the World Wide Web at <http://geology.usgs.gov/dm/model/Model43a.pdf> (version 4.3, Johnson and others, 1999). Continued development of a data-model standard is proceeding under the auspices of a multi-constituency North American Data Model Steering Committee (NADMSC, <http://geology.usgs.gov/dm/steering/>), which has commissioned the technical teams that are developing various aspects of the data model.

How did you come to be a participant in this process?

Scientists from the American state geological surveys were identified by the Association of American State Geologists. Participants from the USGS were nominated through a process that was coordinated through the three Regional Geologists and through the Geologic Division Program Coordinators. The two Canadian participants represent the Provincial surveys and the Geological Survey of Canada; hopefully, additional Canadian participants will be identified in the near future. I am in the process of recruiting a few representatives from the geologic-map using community within the U.S. Departments of Interior and Agriculture, one of whom has been identified. All of you are viewed as ideal for responding to the task before us.

Where is the SLTT process now, and what is next?

It has taken a while to establish the SLTT membership because it has not been easy to coordinate among multiple constituencies. But, we are about there, so I thought I would bring you up to speed, and address some mechanical issues.

- (1) I want to start business on April the 17th.
- (2) We have a year from that date to execute our responsibilities.
- (3) I imagine a month of your time will be required throughout the 12-month cycle, but time invested will depend on interest level and commitment to the SLTT process.
- (4) As a Team, we will work together to develop interim milestones.
- (5) We will regularly keep the Data Model Steering Committee apprised of our progress.
- (6) Our initial dialogue will be electronic, in the form of email and a web-conference site devoted to science-language issues (<http://geology.usgs.gov/dm/terms/>).
- (7) Please access the web-conference site and register. The site was constructed and is maintained by Peter Schweitzer of the USGS, who assures me that it will work as advertised (all who register at the site are supposed to be notified by email when a new contribution is made, but if anything can go wrong, it must go wrong!).
- (8) My role is that of a facilitator. My job is to stimulate *your* creativity and *your* analytical approach to our task. If I am not doing that, I am failing and you must so inform me.
- (9) Attached to this mail are several .pdf files, one being an archival copy of this email. My hunch is that .pdf exchange will be a common tool for the SLTT's business, so if you do not have a .pdf reader or if somehow my files are not readable by you, we need to find a fix. Please advise.
- (10) The attached files include the SLTT charter, a roster of SLTT participants, and a guidelines document that the Data Model Steering Committee has reviewed, revised, and endorsed. The guidelines set the philosophy and tone of how the SLTT should go about its business. We will not be scrutinized by the DMSC, but we do have a specific mission that body expects us to achieve.
- (11) I encourage you to reach out to colleagues in your organization to discuss science-language issues. We represent our colleagues and speak for them—not in place of them.
- (12) Travel and travel costs: Yes, there will be a face-to-face meeting among us. As a Team, and in conjunction with the DMSC, we will have to work out the mechanics of a face-to-face, and how (or if) funds can be identified to defray (not subsidize) travel costs. I think a face-to-face is essential, for it will unite us in our task and because inter-personal exchange of ideas is always better than the impersonal electronic forum. However, travel has its costs (time and money), and such costs cannot be treated in cavalier fashion. We will discuss this as we go along.
- (13) Finally, if you have searched your gut and truly do not want to participate in the SLTT process, or have second thoughts owing to the press of other obligations, please inform me as soon as possible. I will wish you well and find a

replacement for you. It is essential that we all feel good about this process, and truly want to be a part of it.

I will be on the road for most of this week, and not able to check my email for much of that time. Please use this period before 17 April to get yourself into the swing of things regarding geologic-map standards. I will be back in contact next week with more mechanical issues.

In the meantime, here is our first task:

In order to set the tone for our task and see how each of us views the information content of a geologic map, please come up with 20 data-base queries that you personally would want to launch at a digital geologic-map data base. We can exchange these query-lists by email, and post them at the web-conference site. Use the following syntax:

- (1) show me all metasedimentary rocks;
- (2) show me Paleozoic and Late Proterozoic metasedimentary rocks intruded by Cretaceous 2-mica monzogranite;
- (3) show me all low-angle faults, irrespective of their extensional or contractional origin;
- (4) show me all rock units affected by two generations of folding;
- (5) show me all slope-failure deposits;
- (6) show me all slope-failure deposits of slump-block and earth-flow origin;
- (7) show me all surficial deposits with well-developed Bt soil horizons.

I will come through with my 20, but this quick sample represents just a smattering of topics and issues that I would need to retrieve from a typical geologic-map data base in southern California. Good luck, and have fun.

Personally, I am looking forward to working with all of you. Collectively, we represent a considerable body of common sense, scientific breadth, and geologic-map experience (either on the data-production side or the data-use side). With such a mix, I am confident that we will do justice to the notion of common standards for geologic-map terminology—or, if such standards can not be developed and adopted, then at least a good set of minds will have reached that conclusion.

Adios from Tucson, Jonathan

Attachment to Memorandum from SLTT Chair to SLTT committee members (4/03/2000)

SCIENCE-LANGUAGE TECHNICAL TEAM
Guidance from the North American data-model Steering Committee

04/03/2000

MANDATE

The Science Language Technical Team (SLTT) is mandated to develop standardized nomenclature for digital geologic-map data bases, including (but not limited to) the following areas:

- (1) nomenclature for the description and characterization of geologic-map units (lithology, stratigraphy, geomorphology, pedology, petrology, genesis, etc.)
- (2) nomenclature for the description and characterization of linear geologic features (contacts, faults, fold axial traces, mapped marker units, geomorphic features, etc.),
- (3) nomenclature for the description and characterization of point geologic features (structural points, etc.);
- (4) nomenclature for descriptive and interpretive information about spatial and geologic relations among geologic map units, linear features, and point features (e.g., sequencing relations, stratigraphic relations, and geometric relations, etc.).

GUIDING PRINCIPLES

- (1) The SLTT's focus is digital geologic-map data bases—NOT geologic maps. Geologic maps as cartographic products should be viewed by the SLTT as derivative output FROM the data bases, not as mainline products supported BY the data bases;
- (2) The SLTT's focus is the geoscience content of geologic-map data bases—not data-base design. SLTT recommendations and decisions regarding geoscience concepts and their attendant vocabulary and inter-relations will be passed upward to the Steering Committee and laterally to the Data-model Design Technical Team for evaluation and incorporation into data-model modification and tool development;
- (3) Geoscience classification and nomenclature scheme(s) should be scale-independent;
- (4) Classification and nomenclature scheme(s) should allow the data-base author to describe and interpret geologic elements as richly or poorly as the data allow—even within a single data base. To support this functionality, nomenclatural items should be related hierarchically in a way that allows geologic materials and geologic structures to be described and interpreted in progressively more detail and richness while still allowing them to be grouped into progressively broader categories;
- (5) Classification and nomenclatural scheme(s) should be robust enough to provide stability and consistency of usage, but flexible enough to accommodate differences owing to regional or institutional mapping traditions or mission requirements;
- (6) Classification and nomenclatural scheme(s) should allow the data bases to be queried for standardized geoscience concepts and geoscience attributes—ranging from the mundane to the sophisticated. Data-base queries can be only as successful as the architecture and language of the geologic data base that is queried;
- (7) Classification and nomenclatural scheme(s) should accommodate all audiences and data-base users—from the educated lay audience through the end-user in local

through Federal agencies, culminating in the technical geoscience user in academic and institutional audiences;

- (8) Classification and nomenclatural scheme(s) should integrate seamlessly with a broad range of interdisciplinary data bases—including (but not limited to) engineering, geophysical, geochemical, hydrologic, environmental, and geographic data bases and interactive applications.
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