Item 9 of the Provisional Agenda

MEETING OF THE WORKING GROUP ON TOPONYMIC DATA FILES AND GAZETTERS

The Canadian Geographical Names Service (CGNS)

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THE CANADIAN GEOGRAPHICAL NAMES SERVICE (CGNS)

Introduction

Toponymy is an integral part of our national heritage and an aspect of our culture that must be preserved. Provincial, territorial, and federal governments share the responsibility and authority for approving geographical names in Canada. Established in 1897, the Geographical Names Board of Canada (GNBC) is the national body that coordinates toponymy in Canada, establishes general national principles and standards for geographical naming and provides authoritative toponymic information and advice to institutions and individuals, both inside and outside Canada.

In support of this mandate, a Canadian Geographical Names Data Base (CGNDB) has been maintained for over 25 years using available technologies. It supplies data to various mapping and charting initiatives, using file based exchange mechanisms and database links, and makes information about geographical names available to the public via a web application interface. In its current form, the CGNDB is built on relational database technology.

The Canadian Geographical Names Service (CGNS) is the next generation of web services technology for the distribution of Canadian geographical names. In today's GIS-enabled world, we need accurate toponyms linked to GIS data systems and digital feature extents (delineations) in order to realize the full benefit of the toponymic data already available. In order to achieve this goal, the Geographical Names Section, in partnership with the GNBC members, developed a national standard for toponymic databases in Canada that would allow for the integration of this data into the fundamental layers of the Canadian Geospatial Data Infrastructure (CGDI).

Canadians create and use spatial data to manage natural resources, physical infrastructure, emergency planning, tourism, economic development, and our sovereignty. The CGDI is being developed to enable the access and interchange of Canadian geospatial data. This national framework makes it possible to provide the geographical data sets of Canada based upon a common reference system and will enable the development of related applications and value-added services. (See <http://www.geoconnections.org>.)

The Canadian Geographical Names Service (CGNS)

Geographical names have been characterized as an intuitive spatial reference system and as such, they are considered a fundamental layer of framework data. The purpose of the CGNS is to provide a national view of Canada's geographical names using the standards and technology framework of the CGDI. Approximately 350,000 provincial and territorial official geographical name records flow through the CGNS into the CGDI.

The toponymic data delivered into the CGNS is spatially enabled. That is, the data have a geographic location, which is presently single point data (latitude and longitude). The location is later to be a full geometry, with lines and area for each feature. This blend of spatial and non-spatial attributes will support a variety of query techniques for finding and filtering the names data. Users can query on characteristics, such as geographical name or status. They can also query for geographical names within a spatial area by defining a bounding box search, using latitude and longitude. The on-demand service aspect of the CGNS, and its ability to generate an immediate response (data or web map) using current data, means that geographical names are always available and up to date.

The Canadian Geographical Names Service is a free, web service, operated by the Geographical Names Section, Geomatics for Sustainable Development of Natural Resources (GSDNR), Natural Resources Canada, and can be accessed at <http://cgns.nrcan.gc.ca>.

CGNS Services

The CGNS is compliant with the Open GIS Consortium's (OGC) Web Map Server (WMS) and Web Feature Server (WFS) specifications. This was undertaken to ensure that what is developed nationally will be compliant with other national and international standards. The OGC's mission is to give the world's information systems a new connection to physical reality by making geo-referenced data behave like just another standard data type in systems of all kinds. (See <http://www.opengis.org>).

A CGNS warehouse has been created as a central data store that each province or territory can use until its own names service is installed. A web transaction process will be defined through which each province or territory will be able to load their names data into the warehouse. Using a combination of data flows from the various provincial databases, the CGNS will provide a national view of geographical names data and will support the transition timetable of each province and territory as we work towards the full implementation of the CGNS. The CGNS delivers geographical names data in XML/GML format to applications and end users. It also produces a geo-referenced image of geographical names as labels that can be integrated with other thematic layers in the construction of web maps. Styled Layer Descriptors (SLDs) are used. They represent a language that defines the rules for the portrayal or symbolization of features and allows the requestor to specify filters, colours, and map symbology. For example, paint the inside of all polygons red and paint all roads black. The OGC currently has a specification on SLDs.

Direct access to the WMS and WFS is targeted largely at the development community which needs to connect their systems to the CGNS. User-friendly interfaces have also been developed and made available to the public. The GNSS (Geographical Names Search Service) allows an end user to query-by-example and specify the format of the returned dataset. An application program interface (API) also allows applications to call the GNSS using standard http protocols.

Delivery Strategies

The implementation of the CGNS has been staged to accommodate a number of competing concerns and is an evolutionary approach that supports the CGNS with minimum impact on existing geographical names systems.

In its final state, the CGNS will be supplied through a distributed network of provincial and territorial geographical names services. The CGNDB, an interim data warehouse, created under existing federal/provincial or federal/territorial geographical names agreements, makes the full set of geographical names available to end users immediately, and guarantees continuous and consistent service throughout all stages of implementation. The provider distribution network can evolve without any impact or loss of service to the public.

CGNS value added services have also been growing. First we delivered the core data services. Next we delivered end-user applications and other API interfaces that facilitate access to the CGNS. Now we are working on developing and promoting value-added services for the CGDI community, such as a digital gazetteer application and the availability of geometric extents.

Transparency of this effort is critical to engaging and supporting the communities of data providers and data users. Throughout this process, a public web site has been used to publish plans, designs, technical documents, and progress reports. Recently this site has been reorganized to support the CGDI development community and the public in using the CGNS.

The Future

With basic geographical names services in place, the CGNS project can move forward to complete its support for a broad range of applications in the CGDI. These may include location-based services and the support for Aboriginal character sets, i.e., syllabics and modified, extended Roman alphabet ("hard-to-construct") characters and further efforts will be made to support the needs of a growing community of geographical names users. Looking outward, the CGNS will be integrated as a provider into a Global Geographical Names Service, meeting our commitment to the international community.

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