

Canadian
Geospatial
Data
Infrastructure



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Integrated Approaches to Community Awareness

Defining Regional Atlas

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GeoConnections is a national partnership program led by Natural Resources Canada to evolve and expand the Canadian Geospatial Data Infrastructure (CGDI).

The CGDI provides Canadians with on-demand access to geospatial information (e.g., maps, satellite images) and related services and applications in support of sound decision making.

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1.0 Regional Atlas Overview

GeoConnections defines a regional atlas as a body of integrated information, built by multiple stakeholders, directed by the needs of a fully engaged user community, covering a user-defined, continuous piece of geography that feeds public awareness processes and that communicates issues and solutions with rich, contextual information that is relevant to many users of diverse background.

What is an atlas?

A collection of geospatial and non-geospatial information (maps, charts, tables, pictures, audio, etc.) organized around a coherent theme. For example, a water resources atlas, a child health atlas, a flood risk atlas, or an adult literacy atlas.

Through a series of annual Announcements of Opportunity (see

<http://www.geoconnections.org/en/opportunities> for any current opportunities), GeoConnections is sponsoring the development of regional atlases that increase the online availability, access and use of distributed geospatial data

content. These atlases will enhance understanding of the complexities, challenges, and effort required in utilizing spatial data infrastructures and distributed data, in an atlas format, to increase awareness for a user community on an issue of significance to that community.

What is a region?

A region is an area defined by the extent of pertinent subject matter and the needs of those who will use the information found in the atlas to increase awareness.

Cultivating community awareness in order to enable good decision-making at a local or regional scale requires multilateral sharing of geospatial and non-geospatial data. In partnership with Canadian organizations, GeoConnections intends to use the Canadian

Geospatial Data Infrastructure (CGDI) to enable regional atlases as online, interactive collections of geospatial information representing one or more thematic areas (public health, public safety, Aboriginal communities and environment and sustainable development) of importance to Canadians.

What is geospatial information?

Information about entities and phenomena that includes their location with respect to the Earth's surface. Frequently used as a synonym for "geodata", but technically geodata are "dry" digitally represented facts or recorded observations, which on their own have no meaning. Geodata becomes information when interpreted and put in context by humans.

A regional atlas normally contains a series of thematic maps, which is a class of map showing the spatial distribution of a particular phenomenon in qualitative or quantitative graphic form. It is the opposite of base or reference maps, which shows fundamental information about the Earth's surface and are used as a vocational reference base for thematic data. Almost any subject that can be expressed as a geographical distribution can be mapped. Examples of thematic map subjects include

spread of infectious diseases, emergency response plans or historical flood areas.

2.0 Purpose

This document states what GeoConnections defines as the characteristics of a regional atlas, as well as indicating the role regional atlases will play within the Canadian Geospatial Infrastructure (CGDI).

3.0 GeoConnections, CGDI and Key Users

A brief introduction of GeoConnections, the Canadian Geospatial Data Infrastructure, and the key communities of practice using the CGDI, is important to frame the discussion around regional atlases, and the GeoConnections Regional Atlas activity.

3.1 GeoConnections

GeoConnections is a national partnership program to evolve and expand the Canadian Geospatial Data Infrastructure (CGDI). The CGDI is the underlying foundation needed to share geographic information (e.g. maps, satellite images) over the Internet. Through the CGDI, users can access a variety of geographic information from anywhere in Canada or throughout the world, and combine these datasets to gain new insights into social, environmental and economic relationships.

3.2 Canadian Geospatial Data Infrastructure (CGDI)

The Canadian Geospatial Data Infrastructure strives to provide Canadians with on-demand access to geospatial information through an interoperable, standards-based network built by a host of data, service, and technology suppliers. The infrastructure is designed to break down information silos by encouraging sharing, in pursuit of particular policy and business requirements. Through the infrastructure, users can discover, visualize, access and apply geospatial data and services. Ideally, replication of data is reduced and decision making is streamlined when people can access authoritative data with ease.

The CGDI comprises the following four key components: 1) national framework data—the base layers required to develop applications; 2) common data policies to make data easier to access; 3) technical standards that allow users to share data; and 4) technologies that enable people to develop on-line mapping applications. With these four key components, the CGDI serves as a common foundation for key government information systems, as well as for third-party service delivery.

The CGDI is a distributed, not a centralized, solution. It enables providers to maintain control over their data, and know that there are privacy and security safeguards in place when they share their information over the Internet with users. The CGDI enables the online use of current and accurate data directly from its source, minimizing the need to duplicate or copy it.

3.3 Evolving the CGDI to meet users' needs

GeoConnections is working to better understand and answer the needs of users in four key areas:

1. Public health,
2. Public safety,
3. Aboriginal communities, and
4. Environment and sustainable development

Our goal is collaborating with these communities of practice to further develop the CGDI into an operational asset for end users working in these key areas, when planning and making decisions.

4.0 Defining Regional Atlas

A term such as “regional atlas” leaves broad latitude for interpretation. However, GeoConnections’ specific approach to the concept of regional atlas allows for a clear definition to be offered:

A regional atlas is a body of integrated information pertaining to a user-defined area of interest, containing data originating from two or more different sources, assembled by multiple stakeholders, directed by the needs of a fully engaged user community, wishing to pool and add value to data resources to achieve a common goal or answer a common issue. Information is power: by pooling and integrating information in order to reach a common goal, stakeholders gain an advantage over the issue they are concerned with. The information contained within the regional atlas can be geographic and non-geographic. The end result: rich, contextual, integrated information that is relevant to many users of diverse backgrounds and training.

4.1 Regional atlases and the CGDI

A regional atlas, as a body of integrated data, increases community awareness with rich, contextual information. Traditionally, this information would be presented as a book or other media, or even an online product. Today, the CGDI can enable a regional atlas to achieve depth and pervasiveness previously unknown.

The CGDI is built upon Open Geospatial Consortium (www.opengeospatial.org) standards and specifications for data discovery, visualization, access and analysis in an open, distributed, electronic environment. As an enabling infrastructure, the CGDI can unleash the potential of regional scale data to provide much needed geospatial content to the ever-expanding body of information accessible over the Internet, in ways that allow use and reuse of the data to answer many different purposes. In addition, the data, services and applications now available through the CGDI can amplify the impact of a previously isolated or “siloed” collection of information.

A CGDI-enabled Regional Atlas is:

- Multiple (two or more), interjurisdictional partners, across boundaries or hierarchy of government, pooling data
- Integration of geospatial and non-geospatial data (horizontal alignment, value-added, etc.) for seamless, comprehensive regional coverage
- Web mapping technologies combined with other vehicles for information dissemination that make geospatial information and technologies part of an overall solution geared to raising awareness at a community level
- Compliant with OGC standards and specifications (whether publicly available or secure data holdings)
- User-driven in response to one of four priority issues
- Distributed data accessed closest to its authoritative source

Marrying the concept of an online atlas with the principles of the CGDI, while focusing on a thematic area or issue of prime importance, is what GeoConnections is achieving through its Regional Atlas activity. The CGDI offers both the capability to liberate and share geospatial information online, and the ability to discover and leverage a virtual warehouse of distributed data and services. And GeoConnections, by coordinating and endorsing the development of data models and standards, enables comprehensive integration of disparate, interjurisdictional distributed datasets. This environment, coupled with the added value of supplementary information such as narrative text, data portrayed in tables and charts, photographs, pictures, etc., will increase the relevance of and usability of regional atlases for seasoned geomatics professionals and non-geomatics users alike. Increased relevance and usability to a growing audience will result in increased utilization of the CGDI in support of community awareness, planning, decision making and business.

4.2 Regional atlases and CGDI-Enabled National Information Systems

In some cases, national decision-makers require the ability to scale down from the national to regional level on issues of concern. However, current gaps in data content accessible via the CGDI limit the availability of integrated regional data content. This in turn limits ability to fully leverage Internet-based information systems and applications for decision-making.

Regional atlases, by making regional scale information available via CGDI-endorsed standards and specifications to national scale information systems, will enable national systems wanting to drill down to a regional scale.

5.0 GeoConnections Regional Atlas

Regional Atlas occupies an interesting space within the mandate of GeoConnections, and is making unique and valuable contributions to the CGDI. Regional Atlas will answer several purposes over the course of its 2005-2010 mandate. These include:

- Promoting and enabling data sharing and integration between multiple partners through the provision and endorsement of data standards;
- Furnishing integrated, regional scale, interjurisdictional data content to the CGDI via adherence to CGDI standards and specifications for data integration, discovery, visualization, access and analysis, in partnership with Canadian organizations;
- Ensuring that the data content made available to the CGDI is meaningful and usable by communities dealing within the four key thematic areas (see 3.3) by promoting user needs assessment and user-centric design;
- Integrating regional content into national scale systems and applications in support of improved decision-making and increased granularity of information.

The Regional Atlas activity within GeoConnections is taking on the challenge of constructing this new facet of the CGDI. For more information on GeoConnections Regional Atlas and current Regional Atlas projects, please visit www.geoconnections.org.