

GeoConnections

Mapping the future together online



Annual Report 2005-2006
Laying the Groundwork

Canadian
Geospatial
Data
Infrastructure



Infrastructure
canadienne
de données
géospatiales

Canada

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GeoConnections Annual Report 2005–2006: Laying the Groundwork

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Message from the Chair of the GeoConnections Management Board

I am pleased to present the first Annual Report of the renewed GeoConnections program, a Canadian initiative to link location-based information using the power of the Internet.

First launched in 1999, GeoConnections relies strongly on a broad network of partners, which includes private companies, government agencies, non-government organizations, and academia, to deliver an online resource called the Canadian Geospatial Data Infrastructure (CGDI). The CGDI brings order to the many types of location-based, or “geospatial”, information collected and stored across the country. This infrastructure helps Canadians find, access, and share data that is current and accurate—essential ingredients for sound decision making.

Now in its second phase, GeoConnections is devoted to ensuring that Canadians benefit fully from their investment in the CGDI. Consequently, the program’s focus has shifted from building the CGDI to helping decision-makers in four priority areas use this resource as an operational asset. These priority areas are public health, public safety and security, the environment and sustainable development, and matters of importance to Aboriginal communities. By working with geomatics experts to provide access to a host of information-rich, web-based applications, GeoConnections intends to assist decision-makers to tackle some of Canada’s most pressing challenges.

GeoConnections spent much of its efforts in 2005–2006 preparing to implement its new mandate. To this end, the program held national focus groups with new end-users; consulted nationally with geomatics experts; held workshops with potential and existing stakeholders involved with public health, integrated land management, and national information systems; introduced projects to test the renewed program’s approach; and launched an anticipatory Announcement of Opportunity.

In the coming year—and for the duration of GeoConnections’ second phase—we look forward to harnessing the CGDI’s vast potential and in so doing, improving the quality of life for Canadians across the country.



Irwin Itzkovitch, Ph.D.
Chair, GeoConnections Management Board



The Growth and Importance of Location-based Information

Location-based, or “geospatial,” information plays an important role in the everyday lives of Canadians. Each time someone watches a weather forecast on television, consults a roadmap or dials 911, they use geospatial information.

Geospatial information is any information that can be referenced to the Earth. In other words, the information can be mapped, and different attributes can be displayed in the way that roadmaps use coloured lines to distinguish major highways from gravel roads. In another example, recreational maps may use symbols to show lakes where fishing is permitted.

Geospatial information becomes a particularly powerful tool when different sets of data are correlated. When data sets are referenced to the Earth’s surface in a standardized way, the relationships between them can be explored. For instance, trends in crime rates can be analysed on

a neighbourhood-by-neighbourhood basis, or pharmaceutical sales can be tracked by location to detect health problems in a particular population.

Simply put, geospatial information offers the potential of providing almost infinite details about a geographic location, whether on land or on water, and at the street, local, regional, provincial, national, or global level.

Countries throughout the world are working to coordinate the delivery of geospatial information over the Internet. Governments achieve this by partnering with the private sector to develop national geospatial data ‘infrastructures’. Commonly, these infrastructures comprise:

- a search engine to discover location-based data;
- common framework layers (e.g., geographical place names, administrative boundaries, and road networks) to align data sets;
- standards-based technologies that allow data to be shared and integrated easily over the Internet;
- technical and data content standards that allow information from various sources to be integrated seamlessly; and
- information management policies that encourage information sharing.



Geomatics is the science and technology of gathering, analyzing, interpreting, distributing, and using location-based information. By bringing together the disciplines of surveying, mapping, remote sensing, geographic information systems (GIS,) and the global positioning system (GPS), we use geomatics to create a detailed picture of the physical world and our place in it.

GeoConnections Overview

Today, technologies employing “geospatial,” or location-based, information have moved into the mainstream. Consumer products such as vehicle-navigation systems, GPS-enabled cell phones, and Google Earth™ all incorporate technologies that were once the domain of technical specialists. Indeed, these geospatial technologies have penetrated markets that span generations and are found everywhere.

Geospatial information is collected by governments, private industry and universities, and is, therefore, often scattered and fragmented due to the variety of means and methods by which it is collected. For example, health information is held separately from environmental information, and natural resource data is stored separately from public safety data. Although this separation was historically necessary to meet business requirements, the Internet now provides the means to break down these silos and facilitate the exchange of information between and among organizations. That is what GeoConnections is all about.

The GeoConnections program is a Canadian initiative to link location-based information using the power of the

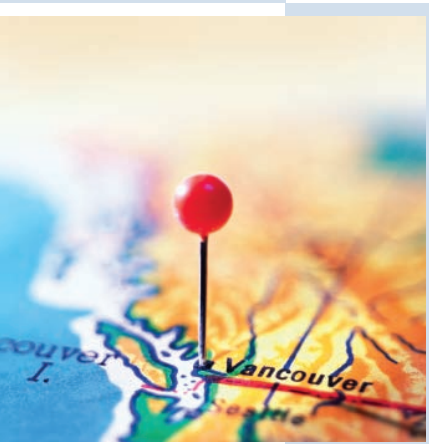
GeoConnections seeks to reduce duplication and to improve access to authoritative data directly from the source.

Internet. If your work requires a specific map, you would likely benefit from GeoConnections. For instance, GeoConnections works with emergency-management officials from across the country so they can develop and carry out a coordinated response effort; it works with land-use planners to facilitate source water protection; and it works with epidemiologists to support disease surveillance. The Atlas of Canada and a number of provincial and territorial mapping systems also use and contribute to the technologies being developed by GeoConnections and its partners.

First launched in 1999, GeoConnections was formed as a national collaboration to develop an online resource for Canadians called the “Canadian Geospatial Data Infrastructure” (cgdi.ca). The CGDI brings order to the multitude of layers of geospatial information being collected across the country. It is designed to help Canadians find and access data sets directly from their source, rather than from a centralized warehouse. The GeoConnections program was established to reduce duplication; to identify authoritative sources for geospatial data; and to improve the access, visualization, and use of data.



The program supported the development of the GeoConnections Discovery Portal (geodiscover.cgdi.ca), a national index and search engine for geospatial information. It also supported the national framework layers needed to kick-start most mapping efforts (e.g., elevation data, road networks, administrative boundaries, geographical place names, and satellite imagery—available at geobase.ca). As well, it supported a national repository of data sets for those wishing to distribute them freely (geogratias.gc.ca). These technical components serve as the foundation for the CGDI and are based on standards that were developed with domestic and international partners, and sanctioned by recognized standards organizations.

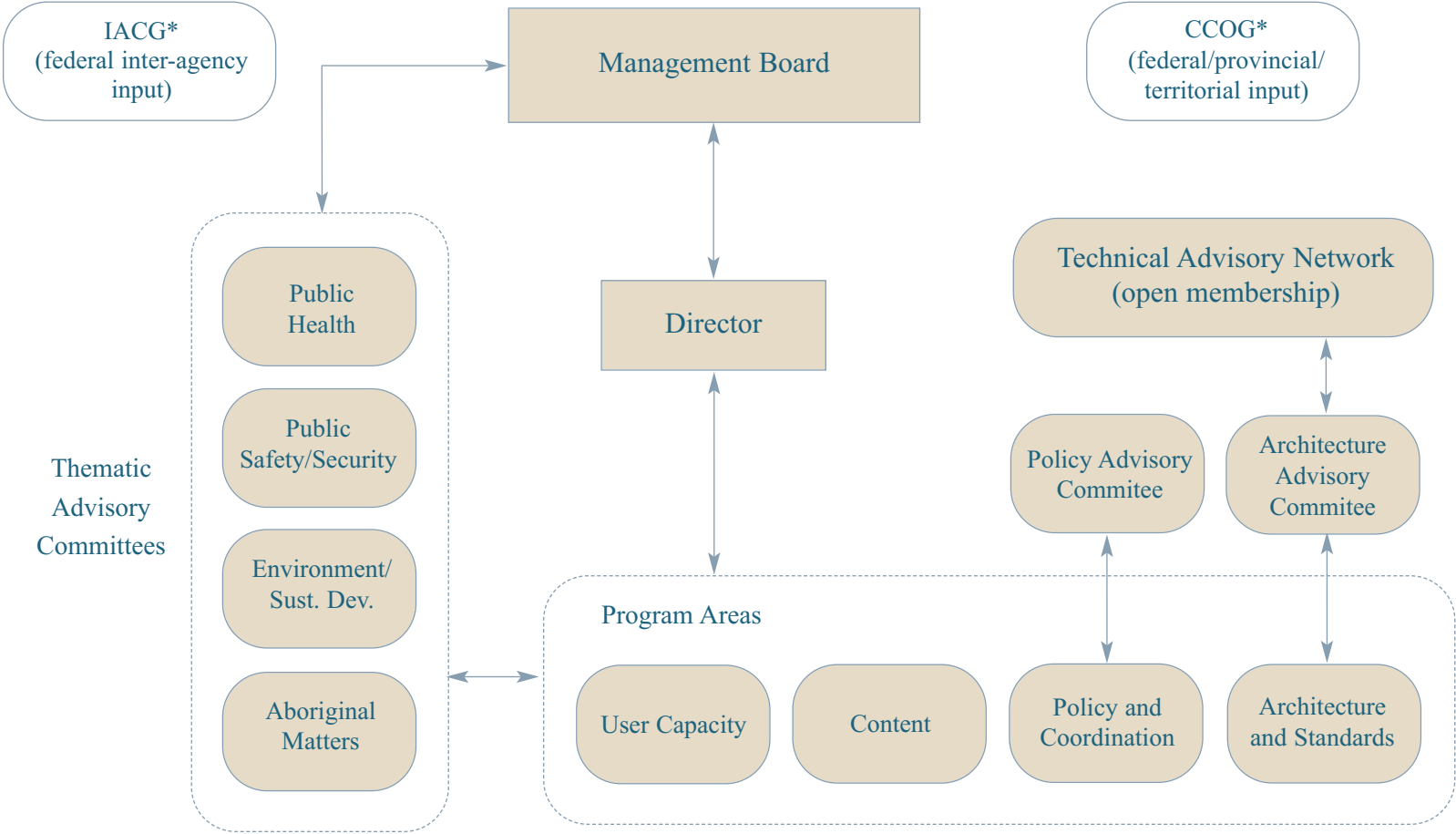


Many nations now view the CGDI as the model to emulate and seek out the expertise of GeoConnections' private-sector collaborators.

Other national infrastructures are in development around the globe, with at least 54 countries having formalized versions. As a result of GeoConnections' work with its partners, the CGDI is viewed as world-leading, and many nations now emulate Canada's approach and seek Canadian private-sector expertise developed through the GeoConnections program.

In Canada's 2005 federal budget, GeoConnections was renewed to maintain, operate, and expand the CGDI and, in particular, to support its use in decision making on public safety and security, public health, environment and sustainable development, and matters of importance to Aboriginal peoples.

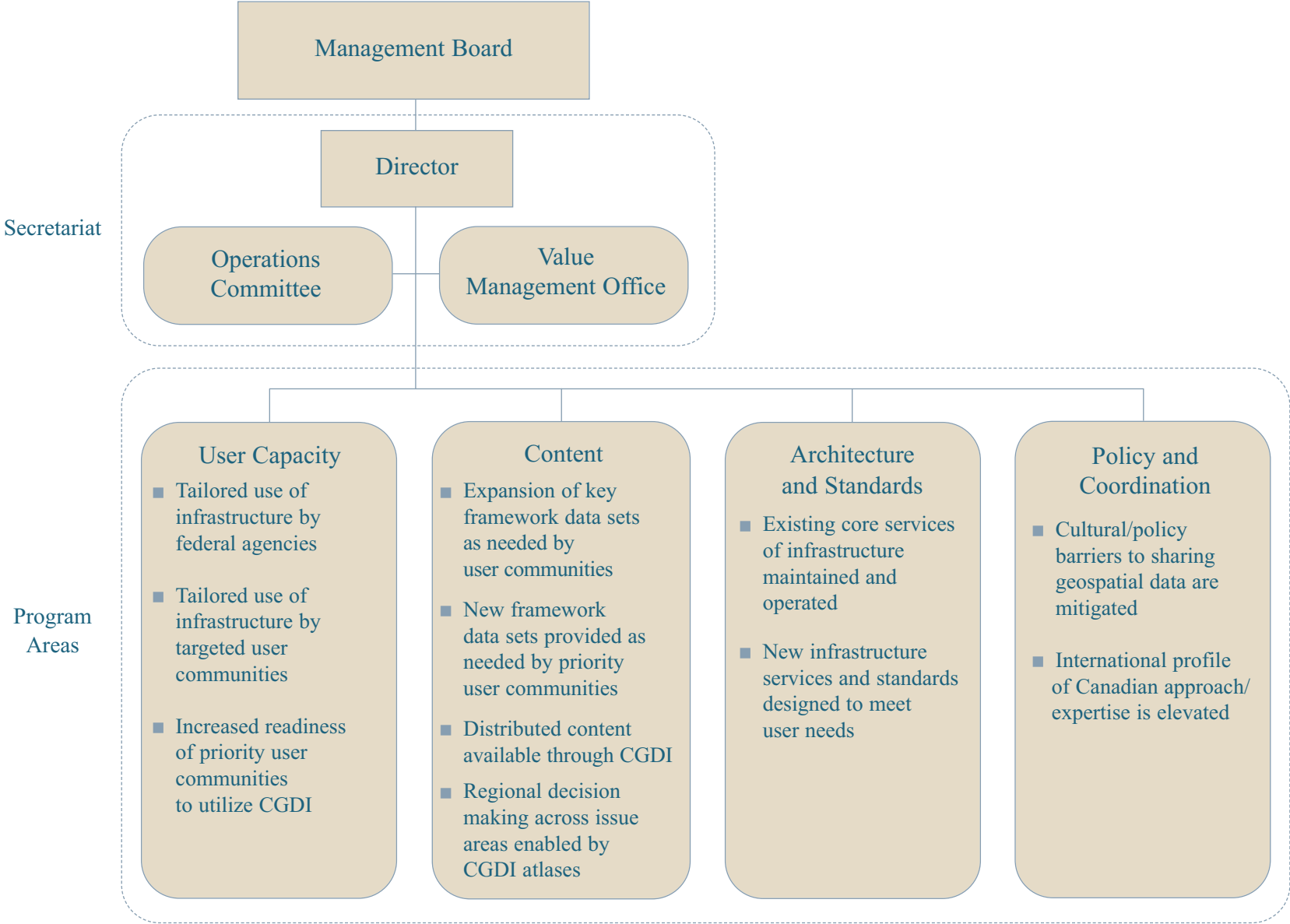
GeoConnections Governance Components



*IACG - Inter-Agency Committee on Geomatics

*CCOG - Canadian Council on Geomatics

GeoConnections Operational Model



Our Core Business: The Canadian Geospatial Data Infrastructure (CGDI)

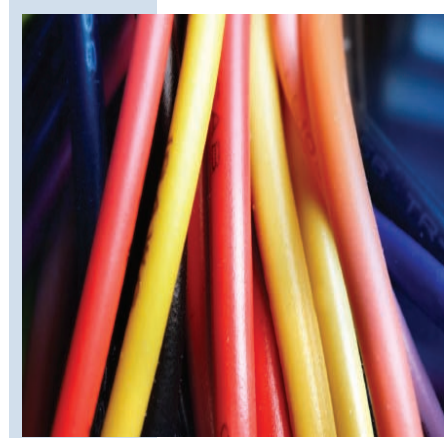
“Geospatial,” or location-based, information is of value only if it is accurate, current, accessible, and easily integrated. The Canadian Geospatial Data Infrastructure (CGDI) is a national resource that enables users to access and easily integrate the most current and accurate geospatial information in databases distributed right across Canada. It does not house this content, but rather provides an infrastructure that allows a diverse community to access and share geospatial data and other information directly from the authoritative source through the use of common standards.

CANADA’S CGDI INCLUDES:

- the GeoConnections Discovery Portal, a national search engine that allows providers to catalogue their data sets and users to determine which data sets exist where;
- GeoGratis, a national repository where suppliers may place data for free distribution;
- GeoBase, a national suite of framework layers coordinated by the Canadian Council on Geomatics that includes place names, a national digital elevation model, a national layer of satellite imagery, a national road network, national geodetic (survey reference) points, and a national layer of administrative boundaries;

- web-mapping standards developed through the international Open Geospatial Consortium;
- geomatics and metadata content standards developed through the Canadian General Standards Board and the International Standards Organization;
- standards-based technologies, developed through collaborations with the private sector, that access data directly from their source;
- a Geomatics Accord involving federal, provincial and territorial ministers that lays out common principles for data sharing and collaboration; and
- specific policies, guidelines, and best practices that promote the sharing of geospatial information.

The CGDI is also the common backbone that supports a wide variety of other national information systems. To date, it supports the National Land and Water Information Service (www.agr.gc.ca/nlwis) led by Agriculture and Agri-Food Canada, the National Forest Information System (www.nfis.org) mandated by the Canadian Council of Forest Ministers, and the national Conservation Areas Reporting and Tracking System (currently accessible through www.nfis.org).



2005–2006 Highlights (Year 1)

GeoConnections' funding in Year 1 was contingent upon Parliamentary approvals originally scheduled for late 2005, but delayed due to the federal election. In the interim, the program operated with special dispensation granted by the Governor General.

The period 2005–2006 was, therefore, managed as a “ramp-up” year. The program expended only about a quarter of its original allocation for the year and re-profiled the remaining amount to future years. While GeoConnections had limited ability to enter into partnerships, staff focused on broad-based consultations to ensure the Canadian Geospatial Data Infrastructure (CGDI) would be properly aligned with the needs of geomatics experts across Canada and with the needs of decision-makers in GeoConnections' four priority areas:

- public safety and security,
- public health,
- environment and sustainable development, and
- matters of importance to Aboriginal peoples.

Highlights of GeoConnections' program activities in 2005–2006 include:

- national focus groups with new end-users were held in seven cities across the country (*see User-needs Assessment, page 11*);
- national consultations with geomatics experts were co-hosted with the Geomatics Industry Association of Canada (GIAC) (*see National Consultations, page 12*);
- workshops were held with new and existing stakeholders involved with public health, integrated land management, and national information systems (*see Priority Area Overviews, page 13*);
- focused projects were launched to test the approach of the renewed program (*see Project Names and Partners, page 22*); and
- an anticipatory Announcement of Opportunity (AO) was launched and attracted 235 letters of intent, from which 40 applicants were invited to make formal submissions (*see Priority Area Overviews, page 13*).



In 2005–2006, staff focused on broad-based consultations to ensure the CGDI aligns with the needs of decision-makers and geomatics experts.

NATIONAL USER-NEEDS ASSESSMENT

The renewed GeoConnections program is focused on ensuring that the CGDI meets the needs of end-users, as recommended during cross-Canada stakeholder consultations. Therefore, the standards that the program supports, the technologies it contracts, the applications it partners on, and the content it connects to must all be driven by end-user demand.

As part of its effort to expand the CGDI, GeoConnections is assessing the needs of current and potential users of the CGDI, with emphasis on the four priority areas (public health, public safety and security, environment and sustainable development, and matters of importance to Aboriginal peoples). The CGDI user-needs assessment is combining qualitative and quantitative methods of research through surveys and interviews. A User-needs Steering Committee is guiding the effort to ensure that all aspects of the CGDI are properly considered.

This exploratory qualitative research was completed in autumn 2005 through 13 focus groups held in seven cities across Canada.

Key findings to date

Many participants saw the CGDI as a means to overcome key barriers to accessing and sharing information, and cited the most common barriers to access as:

- political issues/organizational culture;
- discoverability (i.e., being able to find data);
- a lack of confidence or trust in the quality of information available;
- the costs of obtaining data;
- a lack of common platforms;
- a lack of common standards;
- issues of privacy, confidentiality, and liability; and
- a reluctance to share data, especially with external parties.



Survey results will shape the new GeoConnections program

Questions for the quantitative study, which is surveying over 250 respondents, were drawn from the qualitative study. A range of participants are representing each of the four priority areas, and were selected from all levels of government, non-government organizations, communities, academia, and the private sector. The survey is underway, and results are expected in summer 2006.

The survey results will be used to translate GeoConnections' outcomes into the specific functions, services, data sets, and technologies now required for users. Results will also inform program activities, such as Announcements of Opportunity (AOs) and Requests for Proposals (RFPs), and will help to determine the most effective use of resources. In other words, the findings of this study will help drive the new GeoConnections program.



NATIONAL CONSULTATIONS

GeoConnections partnered with the Geomatics Industry Association of Canada (GIAC) on a cross-Canada series of one-day workshops in 2005, during which the geomatics expert community provided input on the next five years of CGDI implementation. The workshops began in Regina, Saskatchewan, on April 12 and ended on October 5 in Fredericton, New Brunswick. In all, consultations were organized in seven cities.

The cross-Canada workshops were designed to stimulate discussion and generate maximum input from the participants, who numbered between 80 and 100 in each of the seven cities. The lead-in presentations, in which speakers described the main business issues facing their industries or organizations, provided important background and regional perspectives. This information helped focus the subsequent breakout discussions on business issues and partnerships. In those sessions, participants were asked to identify and comment on strengths, weaknesses, inhibitors, and partnerships. They indicated that they viewed partnerships as being essential for improving the business case for geospatial information and for greater information sharing among organizations. A final report from the consultations is available on the GIAC website at www.giac.ca.

Priority Area Overviews and Success Stories

ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

Background and mandate

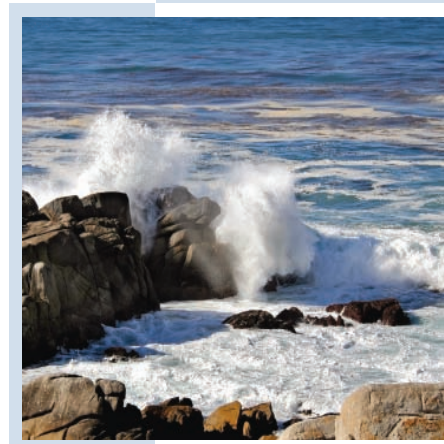
Protecting the environment, while using resources sustainably, is a challenge to both the public and private sectors. Jurisdiction over Canada's land and water is split among a multitude of federal, provincial, territorial, and local agencies, so no single organization has all the pieces of the "big picture." The fragmentation of our environmental knowledge base reflects the multitude of players involved in managing our land and seascapes.

For example, the water supplies for many urban cities are located in adjacent regional municipalities or even in provincial and national parks. Managing watersheds that produce this water requires integrating data from a range of agricultural, environmental, and natural-resource departments. Effective management relies on encouraging standardized ways of sharing and integrating this information, much of which is geospatial in nature. GeoConnections and its partners have a role to play in helping to integrate and link this data from its many sources.

GeoConnections aims to advance and facilitate integrated land and water management. Integrated land/oceans management involves combining information across jurisdictional and subject-matter boundaries to inform "big-picture" decision making about our land and water use. Ideally, land-use decisions should consider a variety of important perspectives—environmental, social, economic, and cultural. In many cases, geography is a unifying element to ground these perspectives.

Consultations

GeoConnections began its activity in the environment and sustainable-development sector by consulting the regulatory authorities, land-use planners, and non-government organizations (NGOs) engaged in integrated land and water management across Canada. GeoConnections held and participated in workshops to further its understanding of the needs of land and water managers from all levels of government. The program also held focus groups and surveyed integrated land and water managers as part of its user-needs assessment.





In particular, GeoConnections convened over 50 land and water managers from across Canada in collaboration with the federal Policy Research Institute—a unit of the Prime Minister’s Privy Council Office. A January 2006 workshop in Ottawa provided specific feedback on priorities for geomatics investments in this area. A background paper and final report are available from the workshop and will be used to develop future Announcements of Opportunity.

Most developed nations have a sustainable development strategy to meet international obligations committed to at the 1992 United Nations Conference on Environment and Sustainability in Rio de Janeiro, Brazil. In fact, Canada has 25 national strategies developed by various federal departments, including Natural Resources Canada. GeoConnections engaged many of these federal departments, including the Office of the Commissioner on Sustainable Development, to determine how the program could support a horizontal approach to better link and report on these strategies. GeoConnections prepared a background paper on linking these strategies through geomatics and participated in the fourth departmental strategy for Natural Resources Canada as a test case.

Projects

GeoConnections contributed to one environmental project effort in 2005–2006. The program provided funding to a World Wildlife Fund–Canadian Parks and Wilderness Society conference aimed at improving information sharing to better locate/manage Pacific marine protected areas.

Announcements of Opportunity

In November 2005, GeoConnections issued an Announcement of Opportunity (AO) to apply the CGDI in support of land- and water-use managers’ needs. This AO attracted about 100 letters of intent relating to environment and sustainable development. Fourteen respondents were selected to submit proposals, and seven of these proposals were chosen for funding in 2006–2007.

Success story

How are decision-makers in the field of environment and sustainable development currently using the CGDI and geomatics? How are they benefiting from partnering with GeoConnections? The following story is a snapshot of just

one application from potentially dozens in this priority area of the program. It serves to illustrate how Canadians are using the CGDI to make more-informed decisions. At the World Commission on Protected Areas in February 2004, Canada committed to report internationally on the status of its protected areas, which include national, provincial, and territorial parks, migratory bird sanctuaries, and ecological reserves. Government and non-government organizations both establish these protected areas, and until 2005, there was no consistent way of describing the nation's protected areas or of assessing their protection levels. This shortcoming hindered Canada's ability to meet international reporting targets.

Capitalizing on GeoConnections funding and partnerships, the Canadian Council on Ecological Areas (CCEA) developed a made-in-Canada guide to applying an international classification standard so that protected areas could be described consistently. As a key partner, the National Forest Information System (NFIS) project office guided implementation of protected areas' databases on its network of CGDI-compliant servers hosted by provincial and territorial jurisdictions across

the country. GeoConnections supported the efforts of these two partners and funded the CCEA's development of a national protected-areas portal so that users would need to visit just one site for information on the state of Canada's designated protected areas.

This portal, the Conservation Areas Reporting and Tracking System (CARTS), excels as a tool for international reporting. Environment Canada's Canadian Wildlife Service uses CARTS to respond to the United Nations Convention on Biological Diversity, and the Canadian Parks Agency uses the system to report to the World Commission on Protected Areas. CARTS enables these Canadian authorities to produce national reports more accurately and more quickly than ever before. In addition, the data available through this source will contribute to other science and management assessments.



PUBLIC HEALTH

Background and mandate

In recent years, geographic information systems (GIS) and geospatial analysis have proven extremely useful in public health and epidemiology. Public-health officials are using geospatial information to help them meet the challenges of a broad spectrum of issues that range from tracking the spread of infectious diseases in water, to identifying and addressing linkages between wildlife and human diseases, and limiting the spread of communicable diseases in particular populations. Taking the latter case for example, public-health professionals are better equipped to address communicable diseases if they can instantly access the following types of geospatial resources:

- maps highlighting a disease outbreak and tracking its spread within a community;
- statistics and other information based on the type of disease outbreak, the rate of infection, and the population density of an area;
- applications that enable the sharing of information in real time with other jurisdictions, as well as the coordination of responses; and
- systems that allow health professionals to store and share information knowing that privacy safeguards are in place.

GeoConnections is working with the public-health community across Canada to ensure that these resources are in place to improve service to Canadians.

Consultations

In September 2005, GeoConnections hosted an information session during the Canadian Public Health Association (CPHA) annual conference. Public-health partners and organizations were invited to discuss how they could use the CGDI and geomatics to enhance decision making. Participants also discussed public-health user needs and GeoConnections funding opportunities.

GeoConnections has expanded its partnership with the Public Health Agency of Canada (PHAC) and is now establishing an agreement concerning how the two organizations will work together over the next four years. GeoConnections will also continue to broaden its presence in other health-related initiatives, such as the Canada Health Infoway, and will work closely with major health information and statistics providers, such as the Canadian Institute for Health Information (CIHI) and Statistics Canada.



In 2006, GeoConnections will host a number of workshops across Canada. For instance, GeoConnections is working with the PHAC to conduct a public-health geomatics conference next winter, the first of its kind in the country. As well, a workshop will be held in conjunction with the Geomatics Atlantic Spring 2006 Conference to engage both the public-safety and public-health communities.

Projects

GeoConnections funded one public-health project—assisting the New Brunswick Lung Association in hosting a workshop on public-health and web-based mapping in November 2005. More than 60 people from public-health organizations and various ministries in New Brunswick attended the workshop and made recommendations in the areas of infrastructure, training, and research.

Announcements of Opportunity

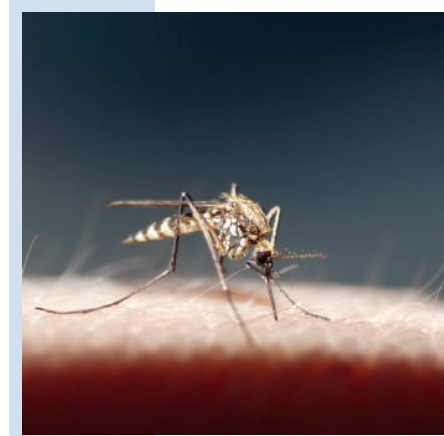
GeoConnections issued an Announcement of Opportunity (AO) in autumn 2005 and received 34 letters of intent pertaining to the public-health sector. Nine organizations were invited to submit proposals, and seven were selected for funding. GeoConnections intends to issue subsequent AOs in 2006–2007 that will focus on both applications and business requirements.

Success story

How are decision-makers in the field of public health currently using the CGDI and geomatics? How are they benefiting from partnering with GeoConnections? The following story is a snapshot of just one application from potentially dozens in this priority area of the program. It serves to illustrate how Canadians are using the CGDI to make more-informed decisions.

Combating the West Nile Virus and protecting Canadians requires knowing where and when the virus is spreading. The virus is transmitted by infected birds, such as crows and jays, through mosquitoes. To gauge the risk to human health, the Public Health Agency of Canada (PHAC) recently developed a web-mapping application to better track and analyze the locations of dead birds across Canada infected with the West Nile Virus.

GeoConnections partnered with the PHAC to develop HealthNet, a web-mapping application that takes advantage of the CGDI and its common data and service standards. Through the Internet, HealthNet users can tap into a multitude of interoperable data sources, such as human populations, wetlands (i.e., mosquito breeding grounds), and bird locations, with reference information such as roads and waterways. Together, these information sources allow users to better understand where dead birds are showing up and what threat they present.



PUBLIC SAFETY AND SECURITY

Background and mandate

GeoConnections collaborates with the public-safety and security community to use geospatial information to support decision making and security-related objectives. Key areas of interest include identifying critical infrastructure, enhancing situational awareness, and assisting with the management of consequences. GeoConnections is enabling the horizontal and vertical sharing of location-based information between municipal governments, provincial emergency-management organizations, and federal agencies. GeoConnections is also working to promote the use of location-based information in this community.

Consultations

GeoConnections engaged officials involved in emergency management and critical infrastructure protection through its national needs assessment exercise (*described previously*). In addition, officials were engaged through consultations held by the Geomatics Industry Association of Canada and through numerous third-party conferences and events.

In March 2006, GeoConnections established a Public Safety and Security Advisory Committee of senior

emergency-management representatives from all levels of government to do the following:

- provide advice to GeoConnections to ensure that the program meets the needs of the public-safety and security community; and
- provide advice to ensure that the CGDI serves as an effective planning and decision-making asset for public-safety and security end-users.

Announcements of Opportunity

In October 2005, GeoConnections released an Announcement of Opportunity (AO) to solicit proposals for building and deploying mapping applications based on the CGDI, focusing on emergency-management and response planning, and critical-infrastructure protection. These applications draw on distributed sources of information to support decision making in the public-safety and security community.

About 50 municipal governments, federal agencies, and provincial emergency-management organizations submitted proposals in response to the AO. Ten of these were invited to submit full proposals, and seven were selected for funding in 2006–2007.

Key program objectives achieved through these collaborations are to:



- enable the public to recognize and accept responsibility for decisions affecting their safety and security by providing access to near-real-time flood information relevant to their locations and situations;
- enable the emergency-management community to display relevant information before, during, and after an incident, which in turn can reduce the impact of emergencies on people, property, and communities;
- establish an operational capability to enable the sharing and accessing of geospatial data and information between federal public-safety departments; and
- improve emergency-management dispatch times, and get responders on scene more rapidly by increasing the contextual information available.

Further AOs for the public-safety and security community are planned for 2006–2007.

Success story

How are decision-makers in the field of public safety and security currently using the CGDI and geomatics? How are they benefiting from partnering with GeoConnections? The following story is a snapshot of just one application from potentially dozens in this priority area of the program. It serves to illustrate how Canadians are using the CGDI to make more-informed decisions.

Each year across Canada there are fuel spills and oil leaks that concern communities and multiple levels of government. Governments, communities and the private sector need to work collaboratively in these situations to reduce harm to human health and impacts on the environment.

The Environmental Emergencies Branch of Environment Canada has collaborated with GeoConnections to develop the Environmental Emergency Management System (E2MS), which capitalizes on the vast reservoir of interoperable location-based information accessible through the CGDI. By combining geospatial information-management tools and technologies with geospatial data, E2MS uses the CGDI to enable many different agencies—emergency organizations, federal government departments, and provincial emergency-measures agencies—to collaborate and respond more effectively to oil and chemical spills.

E2MS is an information-management decision-support tool. It equips oil- and fuel-spill responders to make better decisions by improving their access to shared data, information, and knowledge. Better decisions ultimately result in improved response times and cleanup, protecting local residents and our nation’s valuable natural assets.



MATTERS OF IMPORTANCE TO ABORIGINAL PEOPLES

Background and mandate

Aboriginal peoples have particular needs that cut across all three other GeoConnections priority areas: public safety, public health, and environment and sustainable development.

Consultations

GeoConnections “ramped up” the program this year primarily by researching matters of importance to Aboriginal peoples with respect to the use and sharing of geospatial data. Captured in a draft report, preliminary research revealed that the geomatics-related areas of most interest to Aboriginal communities and organizations are the ownership, control, access, and possession of traditional ecological and cultural knowledge, along with community, land, and resource planning.

During the past year, GeoConnections developed contact lists and began enlisting members for the Aboriginal Advisory Committee to guide the Aboriginal component of the GeoConnections program. The Committee comprises First Nations, Métis, and Inuit representatives and others with a knowledge of geomatics and the CGDI. The Advisory Committee’s first meeting is scheduled for June 2006.

Projects

GeoConnections contributed to one Aboriginal project in 2005–2006. The program supported the Wabanong Nakaygum Okimawin (WNO) office that coordinates land-use planning on the east side of Lake Winnipeg in holding a January 2006 workshop. The workshop focussed on, among other items, the challenges in coordinating information resources among 16 Aboriginal groups in the area.

Announcements of opportunity

After issuing an Announcement of Opportunity (AO) in autumn 2005, GeoConnections received about 50 letters of intent from individuals and organizations interested in developing CGDI-based projects in Aboriginal communities and organizations. Ten of these were invited to submit a full proposal, and four of the proposals driven by user needs and community concerns were selected to receive GeoConnections funding. A fifth potential project was added from another of the priority areas. The next AO will be issued in summer 2006.

In the coming year, GeoConnections will further define the geomatics requirements of Aboriginal communities and organizations. Based on this understanding, a strategy



will be created to help Aboriginal communities and organizations benefit from the CGDI.

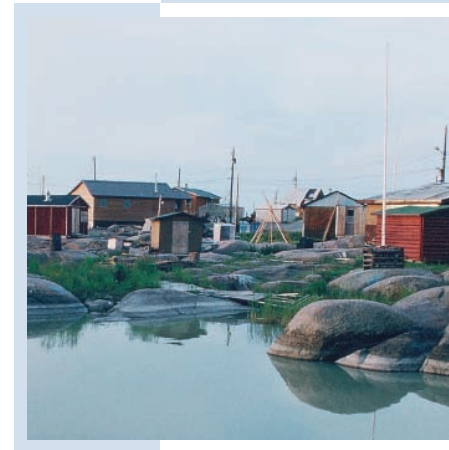
Success story

How are Aboriginal communities using the CGDI and geomatics? How do they benefit from partnering with GeoConnections? The following story is a snapshot of just one application from potentially dozens in this priority area of the program. It serves to illustrate how Canadians are using the CGDI to make more-informed decisions.

GeoConnections funding has helped give Kujjuaq and 13 other Inuit communities in Nunavut the ability to use web-based maps to better manage their lands and resources. For instance, when Kujjuaq wanted to expand its waste-disposal site, land-use planners produced a multi-layered online map to assess how the expansion options might affect local streams and rivers. This perspective enabled the community to plan the expansion to minimize impact on the area's watershed.

Prior to implementing the new web-mapping application, the Kativik Regional Government had two options for developing community land-use plans: mail paper maps

and documents to the communities; or fly a land-use planner to the sites. Sending material by mail was slow, and flying was time consuming and expensive. The online mapping application has given the government the electronic tools it needed to simplify community planning.



Project Names and Partners

As 2005–2006 was a “ramp-up” year, GeoConnections focused on small projects that met international obligations, informed the program through national consultations, and explored approaches for implementing the renewed program’s direction. Projects in 2006–2007 will build upon this base.

PROJECTS

Community Land-use Planning Workshop
Open Geospatial Consortium (OGC) Technical Standards Meeting
OGC Interoperability Web Services Initiative – Phase 3 (OWS-3)
Geographic Markup Language Conference (GML Days 2005)
Policy Workshops Series
Consultations with Communities of Practice
ISO TC211 Plenary and Working Group Meetings
National Policy Research Workshops
Marine Experts Workshop

PROJECT PARTNERS

Black River First Nation
Canadian Boreal Initiative
Compusult Ltd.
CubeWerx Inc.
Galdos Systems Inc.
Geomatics Industry Association of Canada
New Brunswick Lung Association
Open Geospatial Consortium Inc.
Policy Research Institute
Standards Council of Canada
World Wildlife Fund Canada, Pacific Region



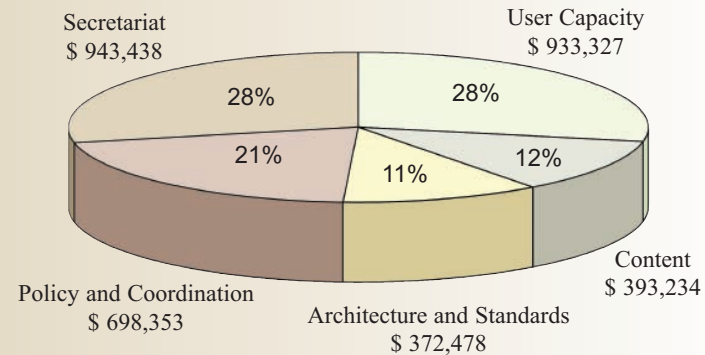
Financial and Operating Highlights (2005-2006)

EXPENDITURES

Administration (Secretariat)	\$ 943,438
User Capacity	\$ 933,327
Administration and Operations	\$ 100,193
Projects	\$ 833,134
Content	\$ 393,234
Administration and Operations	\$ 103,078
Projects	\$ 290,156
Architecture and Standards	\$ 372,478
Administration and Operations	\$ 99,933
Projects	\$ 272,545
Policy and Coordination	\$ 698,353
Administration and Operations	\$ 597,769
Projects	\$ 100,584
<u>Total Expenditures</u>	\$ 3,340,830

Year-end adjustments carried forward **\$ 103,000**
 (Actual Budget minus Total Expenditures)

EXPENDITURES BY PROGRAM AREA



FUNDING

Projected Budget	\$ 11, 000,000
Administration and Operations	\$ 2,540,900
Project Funds	\$ 8,459,100
Actual Budget	\$ 3,443,830
Administration and Operations	\$ 1,947,411
Project Funds	\$ 1,496,419
<u>Moved to Future Years</u>	\$ 7,556,170

GeoConnections Funding Opportunities

Contributions and contracts

GeoConnections uses two funding mechanisms to support the maintenance, operation, evolution, and use of the Canadian Geospatial Data Infrastructure (CGDI). The first mechanism, **contributions**, is a non-contractual arrangement whereby GeoConnections agrees to share the cost of a project being undertaken by a second party for that party's benefit. Projects are typically selected through a competitive process under terms laid out in an Announcement of Opportunity (AO). This mechanism is usually employed to fund those who require aid in using the CGDI to support decision making or in linking their content to the CGDI.

The second mechanism, **contracts**, is a binding agreement between GeoConnections/Natural Resources Canada and a second party, usually in the private sector. GeoConnections agrees to pay for a product or service supplied by the second party. The requirements for this product or service are laid out in a Request for Proposals (RFP). Occasionally, GeoConnections will use a Request

for Information (RFI) to scope private-sector capacity before issuing an RFP. The contract mechanism is typically used to develop specific components of the CGDI, to procure innovations required by end-user communities, or to integrate large-scale framework data sets (such as satellite imagery).

Both types of funding opportunities are listed on the GeoConnections website, and subscribers to our information service can be notified by e-mail when new opportunities arise. RFPs are handled through the federal government's standard procurement process administered by Public Works and Government Services Canada.

Program funding areas

GeoConnections provides funding through three broad program areas:

1. **User capacity** – has the objective of helping users take advantage of the CGDI to improve decision making. This area primarily uses the contribution mechanism.
2. **Content** – has the objective of increasing the information/data content accessed through the CGDI. This area uses a mix of contribution and contract mechanisms.
3. **Architecture and standards** – has the objective of evolving the technical standards and components of the CGDI. This area primarily uses the contract mechanism; however, contributions are sometimes used.



Funding opportunities are listed on the GeoConnections website, and subscribers to our information service can be notified by e-mail.

Funding envelopes

Each funding area has several different funding envelopes tied to achieving program outcomes. AOs, RFPs and RFIs are linked to each of these envelopes. These are summarized as follows:

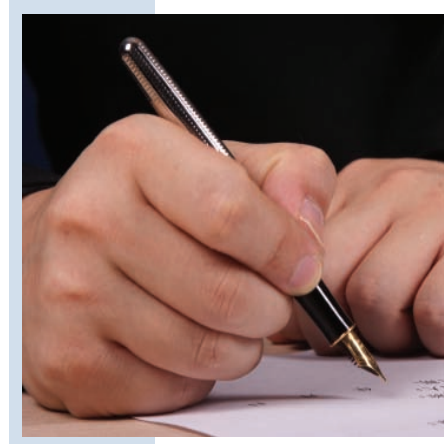
USER CAPACITY (4 ENVELOPES)

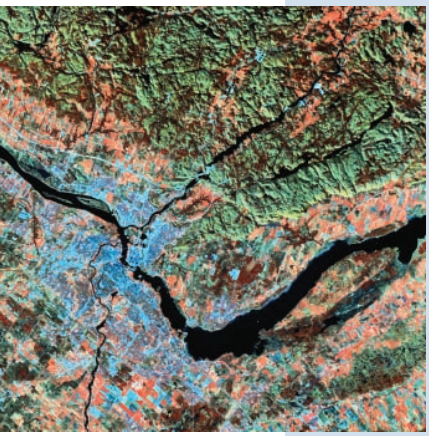
1. **Geomatics capacity** – As many users need basic geomatics capacity before they can take advantage of the CGDI, this envelope provides geomatics hardware, software, and training to potential CGDI users. GIS and GPS units are both eligible costs for funding; however, their use must lead to use of the CGDI. This envelope uses lessons learned from the Sustainable Communities Initiative, which ran from 2000 to 2005 with similar objectives.
2. **Business planning** – To ensure sustainability of projects that GeoConnections funds, proponents should have a clear idea of end-user needs and a sound business plan that guides geomatics implementation. GeoConnections cost-shares these activities to ensure the sustainability of project results and the strength of future proposals.

3. **Decision-support applications** – GeoConnections cost-shares the development of decision-support applications that serve end-users. The applications must make use of the CGDI to access/share location-based information. Applications may reside on the Internet for public use or may reside behind firewalls for private/secure use.
4. **National/transboundary information systems** – GeoConnections contributes to the development of large, inter-provincial/territorial systems that meet distinct end-user requirements. The systems must make use of the CGDI to address problems that are inter-jurisdictional or national in scope.

CONTENT (4 ENVELOPES)

1. **Renewing framework data (GeoBase)** – GeoConnections contributes to a federal/provincial/territorial endeavour to provide national framework data sets online at no cost to users. Under this envelope, GeoConnections contributes to ensuring long-term access to current national data sets on administrative boundaries, geodetic survey points, place names, administrative boundaries, satellite imagery, and roads.





2. **Expanding framework data** – GeoConnections contributes to federal/provincial/territorial endeavours to provide new national framework data sets online at no cost to users. Under this envelope, GeoConnections contributes to the integration of national data sets that our end-users indicated to be necessities in a national needs assessment conducted in 2005–2006. Priorities for these data sets will be identified in 2006.
3. **Distributed thematic content** – GeoConnections contributes to efforts that develop data and standards and that subsequently link to the CGDI, allowing users to search for/obtain location-based data closest to its most authoritative source. Data sets that can be used in decision-support systems or national/transboundary information systems (*see above*), or data sets identified in a national needs assessment conducted in 2005–2006 are prioritized.
4. **Regional atlases** – GeoConnections realizes that certain areas of the country are data rich and that integration of this data in a regional compilation could serve a variety of uses (e.g., watershed management, emergency response). Therefore, GeoConnections contributes to the compilation of these online regional atlases and to efforts to link them to the Atlas of Canada, decision-support systems, and national/transboundary information systems.

ARCHITECTURE AND STANDARDS (3 ENVELOPES)

1. **Directed innovation** – The CGDI has evolved through private-industry partnerships since 1999. The innovation of the private geomatics industry is largely responsible for GeoConnections' success. GeoConnections will continue to expand the capacity of the CGDI by procuring from the private sector innovative solutions that have been informed by end-user consultations.
2. **Core infrastructure technologies** – The core of the CGDI comprises several components, including the Discovery Portal (our national search engine), the GeoBase Portal (for downloading national framework data sets), GeoGratis (for sharing data sets in the public domain), and the GeoConnections website. All of these core components will be maintained, operated, and evolved until 2010 through procurement of private-sector standards-based solutions.
3. **Standards** – The CGDI is based on open standards from the International Organization for Standardization (ISO Technical Committee 211 – Geographic Information and Geomatics) and from the Open Geospatial Consortium Inc. CGDI standards and related profiles will be maintained and developed to address operational and users' requirements through contributions and contracts.

Looking Forward

The vision to build, apply, and promote the Canadian Geospatial Data Infrastructure (CGDI) is forecast as a multi-year endeavour comprised of several phases. The first phase, from 1999 to 2005, built the infrastructure and established partnerships with content and technology suppliers. The second phase, from 2005 to 2010, is maintaining and operating the CGDI and evolving it to meet end-user needs. A third phase, post-2010, would continue to operate and maintain the CGDI and broaden its use domestically. It would also expand international linkages/collaborations, thereby enhancing the export opportunities for Canadian private-sector companies.

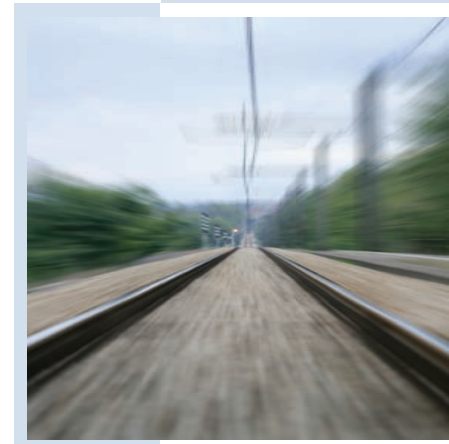
GeoConnections is currently in its second phase and has been allocated \$60 million through 2010 to maintain, operate, and evolve the CGDI in support of end-user needs. The program required a “ramp-up” year given the political environment. Approximately \$3 million was allocated in 2005–2006, leaving the program with 4 years and \$57 million.

In 2006–2007, announcements of partnering opportunity and requests for proposals will be issued in

In 2006-2007, GeoConnections will continue its work with end-users, governments and industry and will expand its efforts at the international level.

every area of the program to meet GeoConnections’ objectives. The program will focus on partnering with end-users to apply the CGDI in the areas of emergency management, critical-infrastructure protection, integrated land management, disease surveillance, population health, and Aboriginal community planning.

Based on feedback, GeoConnections will work with the private sector and federal/provincial/territorial partners to establish the infrastructure required to access and update GeoBase framework data from the point closest to its source. GeoConnections also intends to advance the security and privacy aspects of the CGDI through private–public sector partnerships. Finally, the program will launch the next iteration of its website, the Discovery Portal search engine, and the GeoGratis data supply portal in partnership with Natural Resources Canada.



At the other end of the spectrum, international partnership projects with the governments of the European Union, the United States, Thailand, and Brazil all will be pursued in 2006 and 2007.

Although the second phase of GeoConnections is just beginning, the groundwork for the post-2010 period will be established during 2006–2007. A full slate of those results will be reported in the 2006–2007 Annual Report.

