GeoConnections Annual Report 2006-2007

Message from the Director

It is my pleasure to present this 2006-2007 annual report for GeoConnections.

During 2006-2007, GeoConnections completed a comprehensive user needs assessment (UNA) that provided crucial guidance on program direction, published guides on user-centred design and how to conduct a user-needs assessment, and funded eight user readiness projects.

The Content team developed an action plan for enhanced content, based on the data needs identified by the UNA and other stakeholder consultations, signed agreements for the maintenance of three framework data layers, funded eight projects to publish data of specific interest to the four priority thematic communities, and initiated a national study on mapping critical infrastructure.

The Infrastructure team continued their work with the Open Geospatial Consoritum (OGC) to develop standards that enable interoperability, such as for multi-lingual support, Digital Rights Managment (DRM) and a draft North American Profile for metadata. A pilot Canadian Geospatial Data Infrastructure (CGDI) interoperability project that aims to increase the speed and frequency with which data updates can be incorporated, was initiated.

The Policy team established a robust governance structure for the program, including recruiting a new Management Board, advising on the establishment of external advisory committees for all four thematic areas, and to advise the Infrastructure team. The Policy Working Group was reconstituted, work on a new best practices guide for licensing government geospatial data inaugurated, and research conducted to bring further refinements to GeoConnections performance evaluation framework.

Looking to 2007-2008, the mid-year of the program, I am confident that GeoConnections is well positioned to meet its performance targets, the needs of its growing community of users, and the challenges of commercial mass-market geomatics products and services.

Sylvain Latour
Director

Table of Contents

GeoConnections 2006-2007 Annual Report

Introduction

Program Description

GeoConnections is a national program housed within the Earth Sciences Sector (ESS), Natural Resources Canada (NRCan). The program helps decision-makers use online location-based (or "geospatial") information, such as maps and satellite images, to tackle some of Canada's most pressing challenges. The program focuses on working with partners in four priority thematic areas – public health, public safety and security, the environment and sustainable development, aboriginal matters, and with the private sector to further geomatics technology development[1]

GeoConnections helps decision-makers use online location-based (or "geospatial") information, such as maps and satellite images, to tackle some of Canada's most pressing challenges.

Funding for the program is distributed through five functional program areas:

- User Capacity, which is primarily responsible for the priority thematic communities;
- Content, which maintains and expands framework[2] and thematic datasets available through the CGDI;
- Standards and Infrastructure, which collaborates with national and international bodies to develop relevant standards, and with Canadian private sector geomatics firms to ensure the technological stability and robustness of the CGDI infrastructure;
- Policy, Coordination and Communications, which is responsible for identifying and developing strategies to address issues related to geospatial data sharing and management, and liaising with the centralized departmental Communications Branch to support the program's outreach initiatives; and
- the Value Management Office, which oversees administrative and financial matters, including those relating to the administration of contractual relations with stakeholders and partners.

1. Source: http://www.geoconnections.org/en/aboutGeo.html

2. Framework data layers are national in scale, and are the set of geospatial data that provides the reference framework for all other CGDI-compliant geodata. The three layers for which maintenance agreements were signed during 2006-2007 were: satellite imagery; DEM (digital elevation mapping); and NRNV1, which is the highways and the roads network without street names and addresses.

GeoConnections 2006-2007 Annual Report

Program History

GeoConnections was launched in 1999 as a 5-year $60 million national program to build and operate the Canadian Geospatial Data Infrastructure (CGDI) – a mechanism for sharing location-based information over the Internet. The system of model partnerships pioneered by this first phase of GeoConnections leveraged the initial investment into a total investment of $170 million from all levels of government, the private sector, academia and non-governmental organizations. The result was the creation of the CGDI and strong partnerships that have endured to the present day.

GeoConnections was launched in 1999 to build and operate the *Canadian Geospatial Data Infrastructure* (CGDI) - a mechanism for sharing location-based information over the internet.

Based on the successes of the first five years, in Budget 2005, the Government of Canada agreed to invest another $60 million over another five years to maintain and expand the use of the CGDI by decision makers.

The focus shifted from building the CGDI to ensuring its usefulness to, and use by, decision-makers in four priority thematic areas – public health, public safety and security, environment and sustainable development, and matters of importance to Aboriginal communities. This shift in focus has important implications for GeoConnections' relations with existing partners and introduces new stakeholder groups, which the program must understand and engage.

Refinement of the Evaluation Framework

A growing body of international academic research seeks to establish credible methodologies for evaluating spatial data infrastructures (SDIs), the generic term for the increasing number of Internet-based systems that, like the CGDI, have been established by national or regional governments to enable the sharing of geospatial data.

GeoConnections is engaged with the international academic community to explore methods of evaluating SDIs. The program's Results-based Management Accountability Framework (RMAF) and its original evaluation framework were reviewed in light of current literature and findings from international workshops on SDI evaluation. Several shortcomings were identified:

- key performance indicators (KPIs) in the RMAF (tables 4, 4a and 5) depend on baseline measurements that are not available;
- most RMAF indicators are purely quantitative in nature and are, therefore, inadequate to capture intangible and unpredictable program benefits and costs; and
- KPIs in the RMAF do not adequately capture data reflective of progress against outcomes specified by the program logic model.

In light of these shortcomings and building on the SDI evaluation pioneers in the international academic community, GeoConnections set out to establish a comprehensive evaluation framework that would more accurately capture the program's performance with respect to planned impacts. Much of this evaluation research and development work was undertaken during 2006-2007.

GeoConnections 2006-2007 Annual Report

In July 2006, GeoConnections and GEOIDE, the network of centres of excellence for geomatics, co-hosted a workshop of Canadian experts from academia and industry that confirmed the findings from international work are relevant to the Canadian context. Later that summer, GeoConnections contracted with one of the world's foremost experts on performance indicators for spatial data infrastructures to develop a full suite of indicators for the 24 outcomes on GeoConnections Logic Model. Eventually, one indicator was selected for each outcome. Selection was based on both the appropriateness of the indicator to that outcome, and ease of measurement. The indicators thus identified were then grouped according to methodology, and three key methodologies emerged, as follow:

- User / Stakeholder Consultations, which may take the form of:
  - broad-based, national scale surveys, which can provide data suitable for quantitative analysis; or
  - qualitative discussions in a formal focus group; or
  - informal discussions with specific stakeholder groups, including GeoConnections' Thematic Advisory Committees.
  - Three broad-based, national surveys are planned for GeoConnections II. The first survey, conducted in Summer 2006, assessed users needs and provided baseline data for several performance metrics. Follow-on survey's are planned for mid- and end-program.

- Case Studies, based on one or a few funded GeoConnections' projects, will provide qualitative indication of progress towards Logic Model goals by exploring, in detail, the experiences of project proponents. Criteria for Selecting Case Studies include:
  - willingness of project proponents to cooperate, tell their story;
  - relevance of project to the outcome being measured;
  - project success / quality (a range of "good, bad, ugly"); and
  - temporal (i.e., compare results over time).

- Program / Project Analysis seeks quantifiable data from within GeoConnections' own operations. Examples include:
  - web use statistics,
  - numbers of new subscribers,
  - data from project tracking software (*SmartSimple*), and
  - participation in GeoConnections' events.

- Project analysis, as distinct from case studies, seeks quantifiable data from the aggregate of all projects funded by GeoConnections (to a certain point in time). Examples include:
  - the number and distribution of funded projects geographically,
  - or by thematic area, and
  - characteristics of funded projects, such as the number of projects using closest to source data sets.

Project Tracking Software

After reviewing the desired functions with GeoConnections Value Management Office (VMO), with the departmental centre of expertise for contribution agreements (CAs) and with staff most involved in managing CAs, GeoConnections elected to purchase commercial off-the-shelf (COTS) software, ***SmartSimple***. All staff have the opportunity to receive in-house training on the software and the software company provides ongoing support.

The COTS software was subsequently modified with the addition of fields and reporting functions to capture all necessary data, to enable project tracking, including approvals for public communications about these projects, and to produce reports for various requirements, including performance reporting. Modification of the COTS is ongoing, facilitated by regular meetings of a committee comprising representatives from each of the five funded program areas – VMO, User Capacity (UC), Content, Standards & Infrastructure, and Policy, Coordination and Communications (PCC). Volunteers from the VMO liaise with the departmental centre of expertise and advise on financial reporting requirements. The UC team volunteers have become in-house experts on the software's functionality and reporting mechanisms. They developed a procedures manual and liaise the software vendor. The PCC team volunteer advised on the fields needed to capture metrics for the evaluation framework, while the Content team volunteer advised on other field requirements.

Data Collection and Parsing

The majority of data collected for this report derive from GeoConnections project management software, which has been programmed to produce discrete reports relating to performance metrics. Case study information may also derive from success stories based on interviews with project proponents and which were produced during the year to augment GeoConnections' outreach activities.

In most cases, the project start date is used to identify which projects are reported in which fiscal year. Exceptions are noted below and include metrics that depend on project results. In these cases, projects are reported in the fiscal year in which they end. Calculations of financial ratios in the performance metrics are based on the full budget of projects recorded, regardless of actual expenditures to date. The financial statements in Annex 4 record actual expenditures during the reporting period.

Alignment with NRCan Program Activity Architecture (PAA)

Under the NRCan PAA that was in effect for fiscal 2006-2007[3], GeoConnections is described as sub-sub-sub activity 1ff-2. GeoConnections: " This activity delivers standards and consolidated geospatial information to Canadians to foster knowledge about Canada, to enable better policy and business decisions, and to advance Canada as a world-class leader in developing and using innovative on-line content and services. With this initiative, geographic data and information, visualization tools and data-discovery services are interoperable and easily accessible on the Internet." Activity 1 is that "Canadians derive sustainable social and economic benefits from the assessment, development and

3. NRCan developed a new Program Activity Architecture for 2007-2008. GeoConnections' place under the new PAA will be described in the program's 2007-2008 annual report.

use of energy, forest and mineral resources, and have the knowledge to mitigate environmental impacts and respond effectively to natural and man-made hazards." Sub-activity "f" is initiatives managed by NRCan on behalf of the Government of Canada[4].

Management Changes, Reporting and Accountability Structures

During 2006-2007, external advisory committees were established for all areas of GeoConnections. There were several changes of personnel on the GeoConnections Management Board (GMB), notably amongst Members nominated through the Inter-Agency Council on Geomatics (IACG) or the Canadian Council on Geomatics (CCOG). The Board chair, Irwin Itzkovitch, retired in November 2006 and was succeeded by Mark Corey.

Within the Earth Sciences Sector, the Data Management and Dissemination Branch (DMDB) was expanded to incorporate GeoConnections, which had previously operated as a stand-alone program. This change in organizational structure allows for more coherent management oversight of both GeoConnections and the data dissemination groups which supply the CGDI.

Jeff Labonté became Director General of the newly-created DMDB during the reporting period, with a consequence that the position of Director, GeoConnections remained vacant until April 2007.

Plans and Priorities for 2007-08

Key plans for the next fiscal year include: implementing an integrated announcement of funding opportunity, designed to accelerate uptake of the CGDI by new users, and to make relevant data content available; inaugurating a new national information systems for environment and public safety; undertaking studies on data integration, data requirements for content and standards for new thematic data sets; undertaking a user needs assessment to identify data needs for Aboriginal land and resource planning; developing four new framework data layers and associated metadata; launching the new GeoConnections Discovery Portal; developing and implementing the North American Profile for metadata, cataloguing, security and DRM; completing the new expanded version of a best practices guide to licensing geospatial data; reviewing policies around the protection of privacy for personal data; and refining understanding of policy needs for all four priority thematic user communities.

4. This information derives from the version of NRCan's PAA that is linked to the Intranet for Corporate Management Sector. The PAA information contained in the DPR for the year ending March 31, 2007, does not explicitly report on GeoConnections because, by that time, GeoConnections had been rolled into the Data Management and Dissemination Branch (DMDB) and reported through DMDB.

GeoConnections 2006-2007 Annual Report

Annex 1: List of Projects funded in 2006-2007

The following 62 projects were started during 2006-2007. Some will not be completed until after the end of the current reporting period. Details of all projects can be found at: http://www.geoconnections.org/en/aboutGeo/projects. The program area is only indicated for Common projects; projects assigned to a specific thematic area fall within the User Capacity or Content program areas.

Project Name	Theme / Program Area
CGDI Interoperability Pilot Project	Common / Infrastructure
CGDI/OGC Interoperability day	Common / Infrastructure
Development of a Georeferenced Document Management System	Common / User Capacity
Development of a Web Coverage Server and Image Correction	Common / Infrastructure
Données nationales d'élévation du Canada	Common / Content
Imagerie nationale	Common / Content
Maintenance of the GeoBase National Road Network NRNv1	Common / Content
National Hydro Network Data Layer	Common / Content
National Parcel Data System Study	Common / Content
Nouvelles données d'élévation du Canada	Common / Content
OGC Open Web Services Project Initiative Phase 4 (OWS-4)	Common / Infrastructure
Service distribué de découverte, d'accès et de mise à jour de données géospatiales	Common / Infrastructure
Standarziation Activities in the Area of Geomatics	Common / Infrastructure
Tools to evaluate UNAs & UCD	Common / User Capacity
Atlas Plus for Planning and Monitoring Sustainable Development through CGDI	Env/Sust/Dev
Canadian Council of Forest Ministers' National Forest Information System (NFIS) User Centred Design	Env/Sust/Dev
Defining the Strategic and Business Plans for the Use of the CGDI in the DFO Science Sector Fisheries	Env/Sust/Dev
Delivering Data for Yukon's Corporate Spatial Warehouse (CSW)	Env/Sust/Dev – Content
Developing geospatial applications for decision-making on conservation and sustainable management of	Env/Sust/Dev
Developing Integrated Geospatial Tools Needed by Coastal and Ocean Managers in the Transboundary Gul	Env/Sust/Dev
Development of a Water Resource Mapping Portal	Env/Sust/Dev
Ecoregion Decision Support Tool	Env/Sust/Dev
Élaboration du plan stratégique (2007-2012) et du plan opérationnel (2007-2008)	Env/Sust/Dev

Project Name	Theme / Program Area
pour la gestion des	
Enabling Forest Licensee Access	Env/Sust/Dev
Integrated Watershed Planning and Management Applications For Water Planning Authorities In Manitoba	Env/Sust/Dev
Integration of Land and Water Information for Decision-Makers: Pilot Project in the Okanagan River B	Env/Sust/Dev
Integration of Land and Water Information for Decision-Makers: Pilot Project in the Okanagan Valley	Env/Sust/Dev
Internet Data Delivery of NatureServe Canada Network Data Sets	Env/Sust/Dev – Content
Mackenzie Gas Project (MGP) Monitoring Portal	Env/Sust/Dev
Marine Expert Workshop to Review Current and Planned Marine Biodiversity Spatial Analysis and Assess	Env/Sust/Dev
Moraine Restoration & Stewardship System	Env/Sust/Dev
Northern Appalachian Ecoregion Conservation Planning Atlas	Env/Sust/Dev – Content
PlanNet: An Internet-Based & Spatially-Referenced Land Use Planning, Searching Communication and Rep	Env/Sust/Dev
Publishing New Brunswick Agriculture and Aquaculture Geographic Information for Decision Making	Env/Sust/Dev – Content
Publishing SAFORAH Thematic Data for Decision-Making in Sustainable Development of Canada's Forest	Env/Sust/Dev – Content
Regional Atlas for Conservation Planning in the Pine Beetle Impacted Regions of British Columbia	Env/Sust/Dev – Content
Saint John River Atlas	Env/Sust/Dev – Content
Stewardship Planning Atlas	Env/Sust/Dev
WCVI Information System Defining Strategic and Business Plans Use of CGDI	Env/Sust/Dev
Community Land Use Planning Workshop	Matters of Importance to Aboriginals
Connecting Communities: A web-based mapping application to enhance consultation practices between First Nations	Matters of Importance to Aboriginals
Development of a Strategic Geomatics Plan for Land and Resource Planning for the Okanagan Nation	Matters of Importance to Aboriginals
Fort McKay First Nation’s Requirements for a Land	Matters of Importance to Aboriginals
Geospatial Portal to Facilitate Tourism Planning and Land Use Management by the COTA and CTA commu	Matters of Importance to Aboriginals

GeoConnections 2006-2007 Annual Report

Project Name	Theme / Program Area
Implantation d'un outil d'aide à la planification et à la gestion des ressources du territoire	Matters of Importance to Aboriginals
Mainlland Mi'kmaq Communities Geographic and Metadata Information Gateway	Matters of Importance to Aboriginals
Providing Online Data Access To Help Meet the Land and Resource Management Needs of the NTA Nlaka'pa	Matters of Importance to Aboriginals
Thematic Mapping: Creating Conservation, Traditional Use, Commercial Renewable Resources and Industr	Matters of Importance to Aboriginals
Tsilhqot'in Stewardship Planning Portal	Matters of Importance to Aboriginals
Yukon Land Use Planning Atlas	Matters of Importance to Aboriginals
Calgary Regional GIS Business Plan for Use of the CGDI	Public Health
CGDI-Enabled Portal to Support Decision-Making for Community Health and Land Planning	Public Health
Development of a Web-Based Secure Interface for Sequential Mapping and Spatial Exploration of Survei	Public Health
Enhancing CGDI-Compliant Integrated Web GIS Capacity across the Canadian Network for Public Health I	Public Health
Mapping Infectious Disease Across the Maine - New Brunswick Border	Public Health – Content
Spatially Enabled Population Health Framework for Disease Surveillance	Public Health
Using Real-Time Spatial Information to Manage Communicable Diseases	Public Health
Emergency Management Information Application	Public Safety
Emergency Visualization Application	Public Safety
Newfoundland Public Safety & Security Workshop	Public Safety
Saskatchewan Situation Awareness Project	Public Safety
Water Resources Atlas Web Map Service	Public Safety

GeoConnections 2006-2007 Annual Report

Annex 2: RMAF Indicators

The following portions of the 2006-2007 Annual Report framework derive from GeoConnections' RMAF:

Table 2: Geoconnections Performance Framework for Indicator 1 (Outputs)

Output	Indicator	Annual Target / Program Target	2006-2007 Results
Federal and Interprovincial infrastructure projects (national extents)[5]	Number / Proportion of projects completed	1 / 5	Substantial progress was made towards the establishment of National Information Systems (NISs) for two priority thematic areas. GeoConnections Public Safety and Security Advisory Committee (PSSAC) recommended situational awareness as the focus of a public safety NIS, which will build on the GeoInfoExchange at Public Safety Canada, and on provincial Emergency Management Organizations. GeoConnections Environment and Sustainable Development Advisory Committee (ESDAC) has recommended environmental assessment (EA), specifically regional EA, as the focus for a NIS. Negotiations have commenced with the Canadian Environmental Assessment Agency for a possible expansion of their EA portal as a potential NIS; and a contract has been let for the development of an EA NIS business plan, including stakeholder consultations, research and recommendations.
Single agency infrastructure applications	Number of projects completed	12 / 60	A total of 18 user capacity projects were funded during 2005-2006, with the following breakdown by thematic area: 5 projects each in environment / sustainable development, public safety / security and Aboriginal communities; and 3 projects in public health.
Pre-CGDI user-readiness geomatics projects	Number projects completed	15 / 75	In addition to the extensive user needs assessment and stakeholder consultations undertaken by the program itself, GeoConnections also developed and published a guide on understanding users' needs and user-centred design, and funded 17 capacity-building and user-needs assessment projects undertaken by stakeholder groups – 6 projects in Aboriginal communities; 4 public health projects; 2 public safety / security projects; and 5 projects relating to environment and sustainable development.

5. This indicator refers to the creation of National Information Systems (NIS). GeoConnections defines NIS as: "Large enterprise-wide/multi-agency systems that harvest, analyze, and present geospatial information, from a number of distributed sources, to support decision making within a specific line of national business. NIS include hardware, software applications, and data resources. As components of the Canadian Geospatial Data Infrastructure, NIS are based on standards and support the integration of multiple resources."

Table 2: Geoconnections Performance Framework for Indicator 1 (Outputs)			
Output	**Indicator**	**Annual Target / Program Target**	**2006-2007 Results**
Maintained agreements for existing national framework datasets	National completion of framework datasets	1 / 6	During the reporting period, GeoConnections negotiated the following maintenance agreements with NRCan, via financial contributions to the GeoBase Program: • GeoBase National road network NRNv1 provincial and territorial maintenance pact • Maintenance of the Geobase National road network NRNv1 • Digital Elevation Mapping (DEM) of Canada (South) • National Imagery Through partnership with NRCan's Geomatics for Northern Development Program, GeoConnections prepared for a new DEM layer of Canada's North, which will take effect in 2007-2008.
New framework datasets[6]	Additional datasets integrated	NA / 4	Analysis of user needs was undertaken to identify which new framework data layers were of top priority for users. Some discussions and proposal development took place with respect to the development of a National Hydrographic Network (NHN), one of the top framework priorities identified by stakeholders; and also for NRNV2, an enhanced road network layer that would include street names and address ranges, another identified priority. Additionally, a UNA and business case study aimed at establishing the desirability and feasibility of a national parcel data system.
Distributed thematic datasets closest to source	Datasets available through CGDI	4 / 20	GeoConnections funded four distributed thematic datasets – two each relating to environment / sustainable development and matters of importance to Aboriginal communities.
Highly available core services[7]	Reduced frequency of failed access to Discovery and Geobase portals	Decrease of 20% / Decrease of 95%	Availability of the GeoBase Portal was approximately 90% during 2006-2007. Discovery Portal (GDP) core services were available 90% of the time, an increase over 80% availability during 2005-2006. Improvements to GDP availability are due to an enhanced focus on answering client discovery concerns and system improvements, such as the migration of servers to a high availability environment, that includes built-in redundancy and load-balancing.

6. This target was revised downwards from a total of five new framework layers in the interests of long-term sustainability. In this instance, data are derived from projects whose end date falls between April 1, 2006, and March 31, 2007.

7. GeoConnections Infrastructure team is currently exploring the possibility of adding, or possibly substituting, another indicator that would measure the impact of new standards developed during the life of the program.

Table 2: Geoconnections Performance Framework for Indicator 1 (Outputs)			
Output	**Indicator**	**Annual Target / Program Target**	**2006-2007 Results**
Directed Innovation Technologies and Tools	Number/ Proportion of projects completed	3 / 15	During 2006-2007, preparations were undertaken and a technology advisor for directed innovation was recruited. Note that for 2007-08, six projects have been contracted and are underway. Therefore the program has caught up and is on schedule.
% project leverage including by partners	Ratio of funds leverage to funds invested	1 : 1	Overall ratio – 1 : 3.17 User Capacity – 1 : 1.85 Content – 1 : 4.09 Infrastructure – 1 : 34.48 Policy – 1 : 1.78
Best practice policy guides	Number of guides produced	NA / 3	Work was commenced on the update and expansion of a new best practices guide on licensing government geospatial data.

Table 3a: Geoconnections Performance Framework for Indicator 2 (Regional Funding Distribution Targets)					
Distribution Target (project $, excl. program operations)	**Atlantic**	**Ontario**	**Québec**	**Prairies**	**BC & North**
Target funding across country	10%-15%	20%-40%	10%-20%	10%-20%	20%-30%
Actual funding across country	10.53%	34.64%	24.36%	8.70%	21.77%

Table 3b: Geoconnections Performance Framework for Indicator 2 (Sectoral Funding Distribution Targets)							
Distribution Target (project dollars, excluding program operations)*	**Private**	**Government**				NGO & Academia	International
		Federal	**P/T**	**Local**	**Flow thru' to industry**		
Target funding across country	50%-60%	10%-20%	10%-20%	5%-10%	20%-40%	10%-20%	1%-5%
Actual funding across country	3.49%	36.96%	20.68%	8.96%	N/A[8]	29.91%	0%

* This data details funding by sector and captures redistribution or flow through by partners (e.g. funds provided to a provincial agency but subsequently used to contract private sector services). Reporting on this redistribution is now required as a condition of GeoConnections contributions.

8. Data are now compiled through project tracking software and will be available from 2007-08 onwards.

GeoConnections 2006-2007 Annual Report

Annex 3: Outcome Indicators

Implementing the Performance Evaluation Framework for this Annual Report
As a result of the review of GeoConnections' RMAF performance indicators, this annual report incorporates the following components:

- quantitative measures, as described in tables 2, 3a and 3b of the RMAF, which primarily address the outputs in GeoConnections' Logic Model; and
- reports, as follow, on indicators for the immediate outcomes (#1 - #14) in GeoConnections' Logic Model:
  - outcomes 3, 9, and 14 – reporting baseline data from the User Needs Assessment (UNA);
  - outcomes 5, 13 and 11 – reporting case studies, which provide anecdotal evidence of progress; and
  - outcomes 1, 2, 4, 7, 8 and 10 – track progress through various metrics derived from analysis of the whole GeoConnections program and projects funded.

Outcomes 1 and 12 are not tracked because the program's design assures success in these two areas.

Outcome #1 is: *User requirements are well known before technology and data investments are made*. During 2005-2007, much of the program's energy and budget was devoted to conducting focus groups and an extensive quantitative user needs assessment survey, aimed at learning user requirements. Also, the program governance structure entails ongoing consultation with stakeholder advisory committees, enabling a nimble responsiveness to changing user needs. Furthermore, applicants seeking funding for user capacity and regional atlas projects are required to demonstrate that they have undertaken some form of user needs assessment.

Outcome #12 is: *Stakeholders recognize the value of and apply national and international technical standards for access and use of geospatial data through technical infrastructure.* Adherence to CGDI-accepted standards (which are based on national and international norms) is a condition of funding. Therefore, all stakeholders applying for GeoConnections funding recognize the value of these standards and adhere to them.

These indicators and other elements of the annual report are outlined below.

Evaluation via User / Stakeholder Consultations				
Outcome				Baseline Data from 2006 User Needs Assessment (UNA)
User Capacity	Content	Standards & Infrastructure	Policy & Coordination	
3. Users are aware of and prepared to leverage the CGDI				Across all thematic areas, 19% of survey respondents were very familiar with GeoConnections / CGDI and 30% were somewhat familiar. Respondents from environment and SD realm had the highest degree of familiarity – 66% were very or somewhat familiar. (Responses to Q. 38 of 2006 UNA, report page 72.)
9. Users are aware of the value of integrating regional information in provincial / territorial and national information systems				Two-thirds of respondents usually require regional scale data (Q. 19), but less than half (48%) get data from regional or municipal sources (Q. 21).
14. Stakeholders are aware of key decision / business areas where CGDI can benefit them, key policy / cultural barriers to its uptake and potential approaches to overcoming those barriers				Eighty-two per cent of respondents shared geo-data either internally or externally (Q. 25). Barriers cited for **not** sharing geo-data (Q. 33) included privacy / confidentiality concerns (42%), licensing / ownership issues (38%), liability issues (20%) and political / trust issues (20%).

Evaluation via Case Studies

Logic Model Outcome #11: Stakeholders are able to achieve operational efficiencies resulting from use of existing and evolving technical infrastructure services.

Toporama[9]:

In 2003-2004, Earth Sciences Sector (ESS) of Natural Resources Canada (NRCan) undertook a requirements study, aimed at consolidating the various services that disseminated geospatial data to Canadians. This study identified as a possible area of consolidation the existence of two parallel services – the Atlas of Canada, which provides access to thematic maps of Canada, and Toporama, which at the time was a stand-alone application that allowed users to visualize topographic data. The study recommended combining these two services under the auspices of the Atlas of Canada, which had better brand recognition than Toporama.

Subsequently, ESS identified several business requirements in conjunction with this consolidation, undertook user-centred design work and effected implementation. Amongst the business requirements, it was identified that the data needed to continue to reside and be maintained at the Centre for Topographic Information in Sherbrooke, Québec, while the Atlas application was located in Ottawa. As a result of this requirement, use of Web Map Server (WMS) was the obvious choice as

9. See: http://atlas.nrcan.gc.ca/site/english/maps/topo/map

the means for the application to access the data. Another requirement aimed to satisfy the general public audience who use the Atlas of Canada, and this called for relatively fast page-loading with a maximum load time of 5 seconds per page. Unfortunately, the WMS service in place at this time did not deliver the necessary performance. As a result, the technical team evaluated several software options and were able to select one which delivered the appropriate service level.

The resulting consolidation responded to ESS business requirements by combining two business lines into one. Housing Toporama on the better known Atlas of Canada website resulted in an eight-fold increase in use of the data. And, a survey of Atlas of Canada users undertaken in February 2007 found user satisfaction levels of 83% for Toporama, compared to 63% user satisfaction reported in a survey undertaken in Fall 2004.

Logic Model Outcome #13: Stakeholders are aware of time, effort and cost savings relative to business transformation using the CGDI approach.

Saskatchewan Situational Awareness project

In 2005 and 2006, flooding in Saskatchewan impacted ninety communities, causing damage estimated at tens of millions of dollars. Paper maps, cellular telephones, conference call interlinks and daily incident reports were the main means of communication, coordination and information sharing across several provincial departments and between local, provincial and federal authorities. As officials and emergency workers at all levels of government attempted to stay on top of the rapidly shifting flood situation, the limitations of their existing communications tools soon became apparent. There was also a recognition that the ability to share real-time geospatial information across levels of government could be helpful outside an emergency context to share policies, communications and financial decisions.

Although Saskatchewan had established the protocols and organizational structures necessary to handle emergencies, the public safety community had only limited access to geospatial data and interactive emergency mapping systems. Saskatchewan Corrections and Public Safety (SCPC), the lead provincial department responsible for emergency management, determined to resolve this problem by providing a geospatial-based emergency management system.

SCPC approached GeoConnections during 2006-2007 and received funding to help develop a geospatial system that would improve decision-making during emergencies, both vertically through different levels of government and horizontally across each of those layers of government. The SCPC system uses CGDI-endorsed standards and a similar distributed architecture. This data would be integrated with a standard emergency management tracking system that recorded decisions made during events.

Outside an emergency context, interactive digital maps allow public safety officials at all levels of government to more easily identify areas of concern and model disaster scenarios, which are invaluable in planning disaster response.

As a result of this project, emergency workers and public safety officials at all levels of government in Saskatchewan are increasingly aware of the time, effort and cost-savings that have resulted from a CGDI-style approach to disaster management. Interactive, dynamic digital maps will replace static paper maps. Information on these maps comes directly from the Ministries that create the data, giving the most current assessment and situation data available. No longer is the data days, weeks or months old. For example, if Saskatchewan Watershed Authority releases a new flood projection map on their system, it is easily transferrable to other systems. These electronic maps are now seen as the integrating factor for collaboration in disaster management and, increasingly, for intergovernmental cooperation outside the context of emergencies.

The use of digital maps in disaster management may also have accelerated development of the province's geo-portal. By linking its emergency management system out to local officials and emergency workers, SCPC has been able to create a unique integrated view of facts on the ground in emergency situations – something that other provincial emergency services are now looking to as a model.

Evaluation via Program / Project Analysis				
Outcome				**2006-2007 Results**
User Capacity	**Content**	**Standards & Infrastructure**	**Policy & Coordination**	
2. New CGDI systems, portals and applications build awareness in decision-makers and other end-users of the benefits of the CGDI				Forty-four (44) new portals or systems resulted from the 62 projects that commenced during 2006-2007. Six new portals or systems came into being from the nine projects completed during 2006-2007.
4. Increased awareness by data producing agencies of standard user centric design methodologies and user data requirements				• GeoConnections hosted a web-ex information session for stakeholders with 98 connections and multiple users per connection. • Also, project proponents were encouraged, and financially incented to incorporate principles of user centred design in all funded projects. • Thirty-six (36) of the projects started during the reporting period explicitly incorporated standard user-centred design features.
7. Users are able to use processes to produce data that is derived from other scales or sources				Six (6) new guides or technical documents were produced by project proponents of projects whose funding commenced during the reporting period. One of the nine projects completed during the reporting period involved the production of a guide for an emergency management application.

Evaluation via Program / Project Analysis				
Outcome				2006-2007 Results
User Capacity	Content	Standards & Infrastructure	Policy & Coordination	
8. Users aware of / are able to use reusable, current and relevant data				The projects commenced during 2006-2007 resulted in 132 new data sets being integrated into CGDI-linked systems. The nine projects completed during the reporting period resulted in the integration of 24 new data sets.
10. Users recognize the value of regionally integrated information in addressing numerous inter-jurisdictional issues using the CGDI[10]				Six regional atlas projects were funded during the reporting period.

10. This measure relates to the creation of new "regional atlases". 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.

GeoConnections 2006-2007 Annual Report

Annex 4: 2006-2007 Financial Reports

Five-Year Rolling Budget

Amounts in Thousands of Dollars	Year 1 2005-2006	Year 2 2006-2007	Year 3 2007-2008	Year 4 2008-2009	Year 5 2009-2010	Total
Approved by Treasury Board Sec.	$11,000.0	$12,000.0	$12,000.0	$12,000.0	$13,000.0	$60,000.0
Re-profile from Year 1	$7,900.0	$1,500.0	$2,500.0	$3,500.0	$0.0	
Adjustment[11]		$0.0	$42.0			
Budget after re-profiling Year 1	$3,100.0	$13,500.0	$14,542.0	$15,500.0	$13,000.0	$59,642.0
Reprofile 1 from Year 2	-	($6,400.0)	$1,300.0	$2,500.0	$2,600.0	
Budget after re-profiling Year 2	$3,100.0	$7,100.0	$15,842.0	$18,000.0	$15,600.0	$59,642.0
Employee Benefits and Pension (20%)	($165.7)	($169.4)	($172.8)	($182.1)	($182.4)	
Actual Budget	$2,934.3	$6,930.6	$15,669.2	$17,817.9	$15,417.6	$58,769.6
Actual Spending (Year to date)	$2,878.7	$6,421.5	$5,015.5	-	-	
Expenditures (Forecast)[12]	-	$0.0	$12,367.0			
Carry Forward[13]		$0.0	$0.0			
	$387.0	$123.8	$698.4			
Total	**$3,265.7**	**$6,545.3**	**$17,382.5**			

11. Adjustment can include carry-forward from previous years, loans, or money transfers for GeoConnections to administer.

12. Forecast until year-end as of October 15, 2007.

13. Anticipated amount subject to carry-forward.

GeoConnections Reporting Summary

Budget 2006/07

	User Capacity	Content	Architecture & Standards	Policy	Secretariat	Total
O&M (Operations)	443,150	880,904	313,621	235,187	2,086,948	3,959,810
Lapses, Taxes and Losses	-	-	-	74,094	49,696	123,790
SWAP with other Programs	-	-	-	-	-	110,700
G&C	1,139,125	405,000	330,000	125,875	0	2,000,000
SWAP with other Programs						-110,700
Salary	-	-	-	-	-	847,000
Sub-total	1,582,275	1,285,904	643,621	435,156	2,136,644	
Total						6,930,600

Total Expenditures

	User Capacity	Content	Architecture & Standards	Policy	Secretariat	Total
O&M (Operations)	327,324	846,115	372,717	66,507	148,200	1,760,863
Salary Conversion						2,059,690
Lapses, Taxes and Losses	-	-	-	74,094	49,696	123,790
G&C	1,099,221	393,548	135,070	126,132	0	1,753,971
Salary						847,000
Sub-total	1,426,545	1,239,663	507,787	266,733	197,896	
Total						6,545,314

O&M Surplus: $249,957 (5.96% of O&M budget)
G&C Surplus to date: **$135,329 (6.77% of G&C budget)**
TOTAL Surplus to date: **$385,286 (5.56% of overall budget)**

The discrepancy between budgeted and actual Secretariat expenses is due to the salary conversion, which appears in the Total column of the Total Expenditures, but not in the Secretariat column.