



**CANADIAN GEOSPATIAL DATA INFRASTRUCTURE
INFORMATION PRODUCT 28e**

**Canadian Geospatial Data Infrastructure
Vision, Mission and Roadmap - The Way Forward**

GeoConnections

2012



Natural Resources
Canada

Ressources naturelles
Canada

Canada

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EXECUTIVE SUMMARY

Since 1999, the Canadian Geospatial Infrastructure (CGDI) has helped Canadians gain new perspectives into social, economic and environmental issues by providing an online network of resources that improve the sharing, use and integration of information tied to geographic locations in Canada.

This document offers a new vision, mission statement and roadmap for the CGDI. Setting the CGDI's direction for the next five to ten years, the Vision, Mission and Roadmap (VMR) is intended to inspire the Canadian geomatics community to take action toward the common vision of a comprehensive, usable and relevant spatial data infrastructure for Canada.

Vision

Canadians have open, secure and continually available access to comprehensive location-based information about Canada through the community-sustained Canadian Geospatial Data Infrastructure in support of prosperity and well-being for all.

Mission

- ❖ Communicate the benefits of maintaining a national geospatial data infrastructure.
- ❖ Encourage and inspire all Canadians to manage, access, share and contribute comprehensive Canadian location-based data.
- ❖ Support the continued evolution and enhancement of data availability within the CGDI through the development of innovative and robust policies, standards and technologies.

Roadmap

- ❖ **VALUE**—A need exists for renewed focus on what the CGDI ultimately provides: its value to Canadians. This goal emphasizes the requirement to communicate this value.
- ❖ **PERFORMANCE**—There is a need to refine how the CGDI behaves, thus improving its performance. To produce these results, the CGDI must be adaptable, flexible and accessible.
- ❖ **GROWTH**— While much progress has been made, there is a need to continue evolving and enhancing the CGDI to increase the quantity and type of data and services available.

ACKNOWLEDGEMENTS

Stakeholder views have helped develop a modernized vision and mission and updated roadmap for how the Canadian Geospatial Data Infrastructure can reach its desired future.

Updates to the Canadian Geospatial Data Infrastructure’s Vision, Mission and Roadmap were completed thanks to the contribution, professionalism and energy of the individuals and stakeholders who participated in the update process. GeoConnections would like to thank the many people who provided direction, comments and critiques. This invaluable feedback has helped shape how Canada can reach its desired future for the CGDI.

We would like to particularly acknowledge the critical contributions made by the Vision, Mission and Roadmap Project Advisory Committee (representing industry, academia, provincial governments and federal departments) as well as GeoConnections’ staff for their time, encouragement, support and advice.

The contractor team at DPRA Canada Inc. and Delaney & Associates supported activities by engaging participants and contributing to updating the CGDI Vision, Mission and Roadmap.

INTRODUCTION

The GeoConnections program is a national initiative led by Natural Resources Canada that supports the integration and use of the CGDI.

More information on the program is available at GeoConnections.NRCan.gc.ca

Geospatial Data is data with implicit or explicit reference to a location relative to the Earth's surface. Related terms: Geodata, Geographic Data, Location-based Data, Spatial Data, Geospatial Information, Geographic Information.

This document presents the updated Vision, Mission and Roadmap (VMR) for the Canadian Geospatial Data Infrastructure (CGDI). A vision, mission and roadmap are three important components of a strategic plan (see **Figure 3**), which guides a group or organization towards a common initiative. The original VMR was created in 2001¹ and then updated in 2005^{2,3}. Since that time, both the CGDI and the geomatics community have progressed significantly. The VMR reflects the needs and expectations of stakeholders, identified through stakeholder engagements.

The CGDI is supported by the GeoConnections program. Now in its third phase (see **Annex A** for further details on GeoConnections' phases), this program focuses on integrating the CGDI's components, ensuring the infrastructure's long-term sustainability. GeoConnections will continue to provide leadership and coordination and, with key stakeholders, will guide strategic geomatics policy development relevant to the CGDI.

The VMR aims to set the CGDI's direction for the next five to ten years and inspire the Canadian geomatics community to help create a thriving, sustainable and beneficial CGDI. It is anticipated and hoped that stakeholders interested in seeing the CGDI flourish will contribute to realizing the VMR.

Intended Audience

GeoConnections prepared this document to provide a vision of the CGDI for two audiences: 1) the Canadian public and 2) those organizations and individuals who have an interest and the capacity to act to realize the vision. This document refers to this latter audience as the Canadian geomatics community.

¹ From *Canadian Geospatial Data Infrastructure Target Vision*. Prepared by the CGDI Architecture Working Group, Version: 1, March 27, 2001. Retrieved from: <http://www.GeoConnections.NRCan.gc.ca>

² From *Vision. The Canadian Geospatial Data Infrastructure. Better knowledge, Better decisions*. Geoconnections 2005. Retrieved from: <http://www.GeoConnections.NRCan.gc.ca>

³ From *Roadmap: Achieving the vision of the CGDI*. GeoConnections 2005. Retrieved from: <http://www.GeoConnections.NRCan.gc.ca>

The CGDI is widely used by consumer web mapping services, which help Canadians and citizens worldwide easily access high quality, reliable and relevant data.

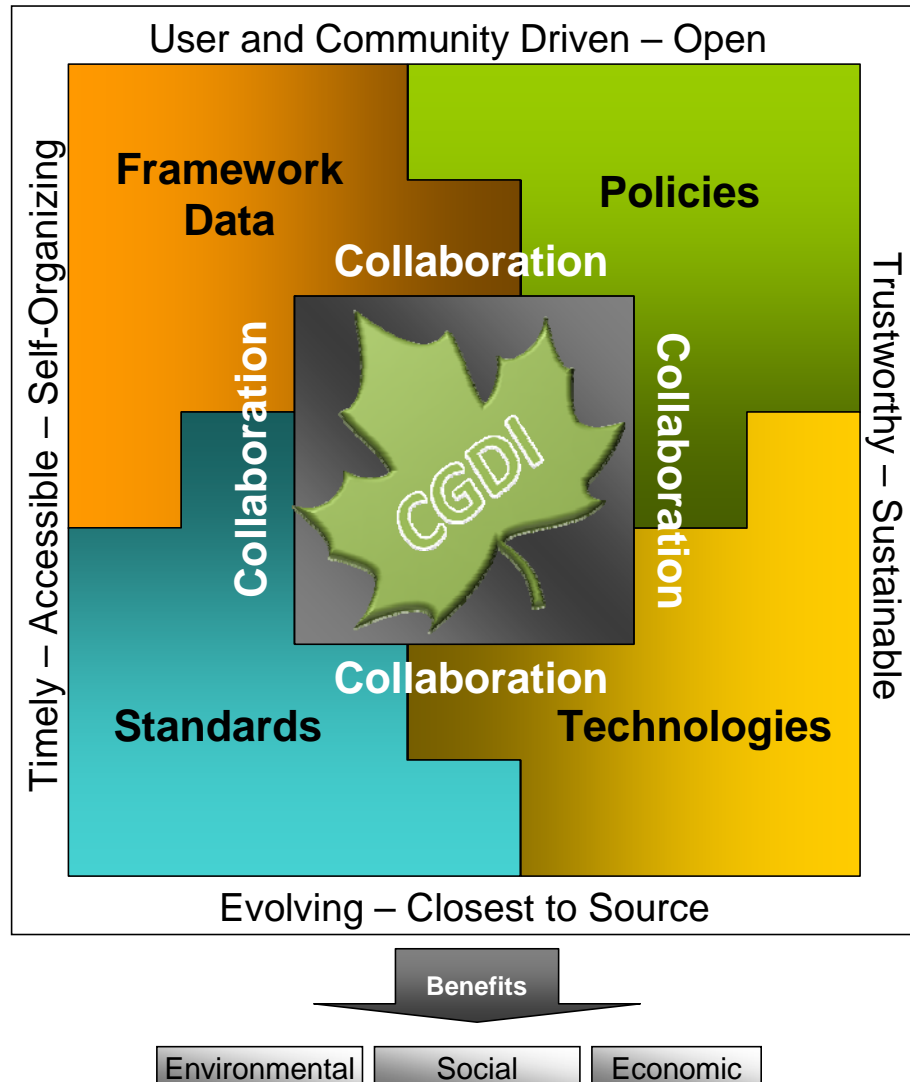
The Canadian Geospatial Data Infrastructure (CGDI)

The CGDI helps Canadians gain new perspectives into social, economic and environmental issues by providing an online network of resources that improve the sharing, use and integration of information tied to geographic locations in Canada.

Collaboration and partnerships between federal, provincial, territorial and regional governments; the private sector; non-government organizations; and academia ensure interoperability for the CGDI. This interoperability is achieved by the convergence of **framework data, policies, standards and technologies** necessary to harmonize Canada’s location-based information. See **Annex B** for a complete CGDI definition. **Figure 1** presents the CGDI’s components and guiding principles.

The CGDI is supported by contributions made by stakeholders in the geomatics community. Examples include the National Road Network and the Canadian Digital Elevation Data made available by GeoBase (GeoBase.ca), a portal that provides access to quality framework data at no cost (See Annex C).

Figure 1: Components and guiding principles of the CGDI



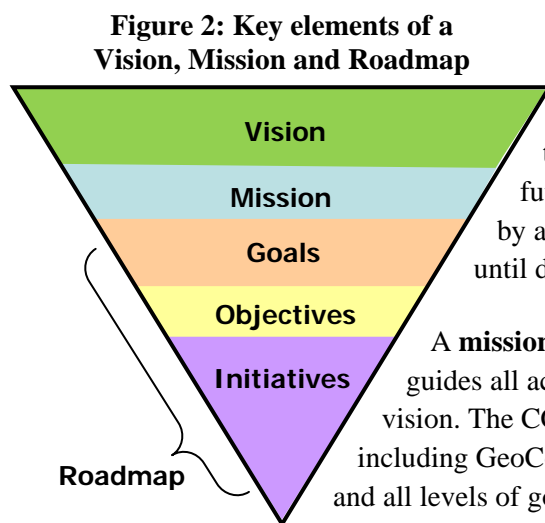
The CGDI allows users to discover, evaluate and use a wide range of geospatial data from various resources which would have otherwise been difficult to find. Standards allow the CGDI to integrate data from multiple sources, which fosters the ability for those from different disciplines to collaborate. The CGDI is not any single database or website but an assortment of online geospatial resources. These resources operate within the same set of standards and policies to maximize data availability and use.

A powerful decision making tool for the public, academia, the public sector, private industry and civil society, the CGDI provides efficient access to a vast amount of geospatial data. To complement this access, the CGDI endorses freely releasing data to support Canada's commitment to open government.

The updated vision and mission and the new roadmap will play a key role in completing a comprehensive, usable and relevant spatial data infrastructure for Canada. The VMR will also position the CGDI for future growth and development in the context of a rapidly evolving internet.

DESCRIPTION OF VMR

The VMR articulates the future of the CGDI (Vision) as it continues to grow, add value and perform well. The VMR outlines what the CGDI is seeking to achieve in the long-term (Mission) and how the mission will be implemented (Roadmap), in terms of several goals, each with a number of supporting objectives.



A **vision** describes the desired future. In this document, the vision includes both a short vision statement and a narrative description to illustrate the desired future. In this way, the vision provides enough detail to inspire, motivate and align the activities of those people interested in seeing that preferred future realized. The vision is broadest in scope and is supported by all other elements, which become progressively more specific until detailed initiatives have been laid out (see **Figure 2**).

A **mission** contains the purpose and ambitions for an initiative and guides all actors (people and organizations) interested in achieving the vision. The CGDI Mission applies to the Canadian geomatics community including GeoConnections, industry, academia, Aboriginal peoples, the public and all levels of governments. The community must work together to achieve the CGDI's common Vision.

A **roadmap** is a strategic planning tool that identifies results with high-level, overarching goals and specific, tangible objectives. Within each objective there are a series of initiatives that will contribute to achieving the goals. The following describes goals, objectives and initiatives:

- ❖ **Goals** are qualitative statements that describe what needs to be accomplished to achieve the vision in broad terms. Goals highlight the key issues raised during the research and planning phase.
- ❖ **Objectives** are measurable steps that, taken together, lead to the achievement of goals.
- ❖ **Initiatives** are investments of time and money that constitute projects or activities necessary to achieve the objectives and ultimately realize the vision.

How the VMR Links to Implementation

A strategic plan contains two levels: 1) a high level that includes the vision, the mission and the roadmap and its goals, objectives and initiatives and 2) a tactical level that includes an implementation plan (see **Figure 3**). As its name suggests, the Vision, Mission, and Roadmap document focuses on the high level elements. Each organization within the Canadian geomatics community is encouraged to develop an implementation plan that supports this Vision, Mission and Roadmap for the CGDI.

Figure 3: How the VMR links to implementation



CGDI VISION AND MISSION

A vision for a thriving CGDI in support of prosperity and well-being for all Canadians.

The vision for the CGDI was developed by working with the Canadian geomatics community to identify and analyse its needs and future role. **Annex D** presents a detailed methodology of this development process.

The CGDI Vision:

Canadians have open, secure and continually available access to comprehensive location-based information about Canada through the community-sustained Canadian Geospatial Data Infrastructure in support of prosperity and well-being for all.

More specifically:

The CGDI is a public asset.

- ❖ The CGDI is widely used to support the protection and betterment of Canada's health, social, cultural, economic and natural resource heritage and future.
- ❖ The CGDI is a source of pride for users due to the way stakeholders and Canadians at large embrace, contribute to and use the CGDI to generate trusted information products and manage Canadian data. Data once difficult to obtain is now open, accessible, transparent and interoperable. Canadian geospatial information and knowledge is widely used across all sectors, as both a public asset and a tool that supports intricate decision-making with multiple dimensions and stakeholders.
- ❖ The CGDI is sustained through contributions and collaboration across governments, industries, academia, Aboriginal peoples, civil society and the public. Users continually enrich and upgrade the CGDI and its components. It is a Canadian public asset, managed and supported by the user community, a conduit for trusted geospatial, social and environmental information that reflects and satisfies the demand of Canada's diverse peoples, varied economies, vast geography and unique needs.
- ❖ The CGDI continues to be available to support analysis as well as stimulate innovation and economic activity. It provides a collaborative environment for by eliminating barriers to data and enabling authorities and experts to rapidly develop policies, standards and technology that align with the country's economic, social and environmental priorities. In doing so, it contributes to the prosperity and security of all Canadians.
- ❖ The CGDI is recognized and used by the community as a spatial data infrastructure (SDI) model at the international level.

The CGDI is a source of Canadian pride and contributes to decision making excellence.

The Mission of the Canadian geomatics community is to:

- ❖ Communicate the benefits of maintaining a national geospatial data infrastructure.
- ❖ Encourage and inspire all Canadians to manage, access, share and contribute to comprehensive Canadian location-based data.
- ❖ Support the continued evolution and enhancement of data availability within the Canadian Geospatial Data Infrastructure (CGDI) through the development of innovative and robust policies, standards and technologies.

CGDI Guiding Principles

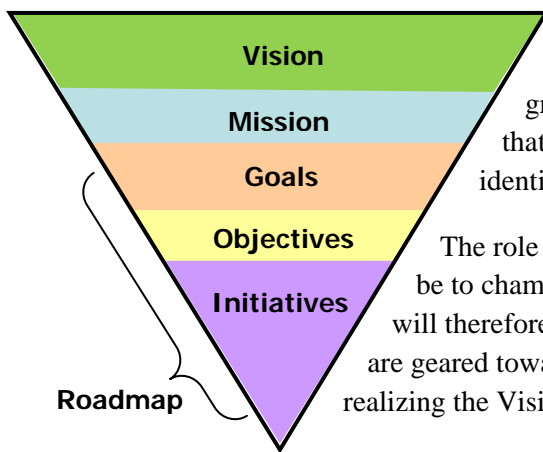
The CGDI (see **Figure 1**) is defined by a number of guiding principles. These principles serve as benchmarks for what the CGDI does and why and how the geomatics community uses the CGDI. The principles are as follows:

Principles guide how the community uses and contributes to the CGDI.

- ❖ **Open:** To enable better decision making, the CGDI is based on open, barrier-free data sharing and standards that allow users to exchange data.
- ❖ **Accessible:** The CGDI allows users to access data and services seamlessly, despite any complexities of the underlying technology.
- ❖ **Evolving:** The network of organizations participating in the CGDI will continue to address new requirements and business applications for information and service delivery to their respective users.
- ❖ **Timely:** The CGDI is based on technologies and services that support timely or real-time access to information.
- ❖ **Sustainable:** The CGDI is sustained by the contributions of the participating organizations and broad user community and through the infrastructure's relevance to these groups.
- ❖ **Self-organizing:** The CGDI enables various organizations to contribute geospatial information, services and applications, and guide the infrastructure's development.
- ❖ **User and community driven:** The CGDI emphasizes the nurturing of and service to a broad user community. These users, including Canadians in general, will drive the CGDI's development based on user requirements.

- ❖ **Closest to source:** The CGDI maximizes efficiency and quality by encouraging organizations closest to source to provide data and services. Thereby eliminating duplication and overlap.
- ❖ **Trustworthy:** The CGDI is continually enhanced to protect sensitive and proprietary data. The CGDI offers this protection through policies and mechanisms that enable data to be assessed for quality and trusted by users.

ROADMAP



During the stakeholder engagement, three general categories of activities emerged as themes for the goals: value, performance and growth. Each goal links to one of nine specific, measurable objectives that will contribute to the roadmap's completion. Initiatives have been identified corresponding to each objective in order to realize the Vision.

The role of GeoConnections and/or the Canadian geomatics community will be to champion the proposed initiatives. Designed to be iterative, the roadmap will therefore be updated as required to achieve the CGDI Vision. The initiatives are geared toward those organizations and individuals who have an interest in realizing the Vision and the capacity to take action.

GOALS

- ❖ **VALUE**—A need exists for renewed focus on what the CGDI ultimately provides: its value to Canadians. This goal emphasizes the requirement to communicate this value.
- ❖ **PERFORMANCE**—There is a need to refine how the CGDI behaves thus improving its performance. To produce these results, the CGDI must be adaptable, flexible and accessible.
- ❖ **GROWTH**—While much progress has been made, there is a need to continue evolving and enhancing the CGDI to increase the quantity and type of data and services available.

OBJECTIVES AND INITIATIVES

VALUE:

Communicate the national benefits of the CGDI as a public asset, supporting competitiveness and economic growth.

GOAL 1: VALUE—Focus on what the CGDI provides

Objective 1.1: Public asset

Ensure that the CGDI is a national asset for all Canadians, which facilitates effective decision making, innovation and the management of Canada's issues and priorities.

Initiatives
a. Document the decrease in cost and effort related to efficiently and effectively managing geospatial data
b. Document examples of the impact and benefits of open geospatial data
c. Build a case study that will demonstrate use of the CGDI for better decision making
d. Strengthen awareness to encourage more users to get involved with the CGDI

Objective 1.2: Economic Benefit

Ensure that the CGDI helps the geomatics industry to thrive and compete.

Initiatives
a. Document how SDIs contribute to a thriving and competitive geomatics industry
b. Measure economic, social and environmental impacts as part of jointly funded CGDI initiatives

Objective 1.3: Leadership / Competitiveness

Ensure that the CGDI is a leading example and a world model in SDI development.

Initiatives
a. Demonstrate Canada's SDI performance by formally evaluating the CGDI
b. Document the Canadian geomatics community's use of the CGDI to maintain competitiveness
c. Provide tools and resources to improve competitiveness of the geomatics community through innovation and cooperation
d. Strengthen CGDI governance to ensure collaborative leadership and long-term sustainability

PERFORMANCE:

Renewed focus on accessibility, efficiency, agility, quality and innovation.

GOAL 2: PERFORMANCE—Refine how the CGDI behaves

Objectives 2.1: Quality / Usefulness

Refine and promote systems that clearly identify the quality and value of data so that end-users can interpret and trust its content.

Initiatives
a. Identify data contributors to ensure quality of content
b. Develop a tool for data contributors to assess and communicate data quality
c. Promote the development of a system that will help users identify the source of data and rate its quality

Objectives 2.2: Adaptability

Ensure that data is used for maximum benefit through seamless, integrated technology that enables fluid end-user transactions and simultaneous user access to diverse sources of data.

Initiatives
a. Update the CGDI architecture to ensure collaboration and maintain relevance
b. Conduct a pilot project to establish a system that allows citizens to contribute to updating data
c. Perform a user needs assessment and develop an interface to simplify access to geospatial data improving transparency and ease of use
d. Foster standards and operational policies that will facilitate and increase the use, sharing and non-duplication of geospatial data

Objectives 2.3: Data Access / Efficiency (high-value, low-cost data)

Ensure that all Canadian data is managed for maximum efficiency at the lowest cost with the greatest positive impact on or for Canadian society.

Initiatives
a. Develop a mechanism to allow third-party reporting on data access and efficiency
b. Continue to grow CGDI framework data (GeoBase) and sustain it
c. Model efficiency by ensuring that the Canadian Government maintains a single road network
d. Continue to promote open data, with an emphasis on efficiency of data accessibility
e. Document efficiency in collaborative data management (archiving)
f. Develop stronger geospatial operational policies surrounding licensing and privacy

Objectives 2.4: Innovation / Stimulation

Update and create regulations, policies, standards and tools that will ensure the continued integration of geospatial data into functions of the Canadian economy and governance.

Initiatives
a. Update and create policies and standards related to volunteered geographic information (VGI)
b. Update and create policies and standards related to cloud computing
c. Establish tools related to VGI, cloud computing and data sharing
d. Improve mechanisms for data sharing
e. Establish and promote a Canadian geoportal
f. Build a CGDI Resource Centre
g. Establish mechanisms to make standards and policy processes easily and widely communicated

GROWTH:

To support data diversity and greater data availability within the CGDI by developing innovative and robust policies, standards and technologies.

GOAL 3: GROWTH—Continue to enhance the CGDI

Objective 3.1: Culture of Sharing / Open Data

Create and formalize a culture of open data sharing. This will be achieved by aligning policies driven by a common understanding of the importance to manage and share Canadian geospatial data.

Initiatives
a. Communicate and promote the benefits of open data sharing
b. Enhance capacity for data sharing
c. Improve mechanisms for active collaboration
d. Accelerate and clarify the role of federal departments as stewards of their geospatial holdings
e. Document and promote a case study that demonstrates benefits of sharing data
f. Encourage key federal departments to embrace new mechanisms that will increase public use of data

Objective 3.2: Collaboration / Incentive

Support the CGDI by establishing clear incentives and ongoing collaboration that focuses on sustaining and growing the data available through the CGDI.

Initiatives
a. Develop mechanisms that acknowledge the contribution of data
b. Build collaboration tools to create, maintain and improve the quality of geospatial data
c. Facilitate alignment of activities through collaboration within the Canadian geomatics community to maximize and leverage contributions relevant to the CGDI

CALL TO ACTION: IMPLEMENTATION

A vision for a thriving CGDI in support of prosperity and well-being for all Canadians.

As more and more data becomes available through the CGDI, it is envisioned that Canadians will become increasingly aware of the possibilities and benefits of using geospatial data for decision making in priority areas such as health, security and the environment. This awareness will create an even greater need for all parties to collaborate.

This Vision, Mission and Roadmap provides a starting point to achieve enhanced value, performance and growth for the CGDI. The updated CGDI Vision supports prosperity and well-being for all Canadians. The Mission involves the Canadian geomatics community working with GeoConnections for the next five to ten years toward implementing specific goals, objectives and initiatives, which constitute the Roadmap.

Through common purpose and alignment of effort the Canadian geomatics community has the capacity to eliminate barriers, innovate and grow through the use of the CGDI. It has been created by the community in the best interests of the community and of the country as a whole. As a group, the Canadian geomatics community has contributed to a common vision for the CGDI, one that will protect what is valued most, and ensure that its principles are sustained beyond 2015.

ANNEX A: PHASES I, II, AND III OF THE GEOCONNECTIONS PROGRAM

Led by Natural Resources Canada, GeoConnections is a national initiative that supports the integration and use of the CGDI. The first five years of the GeoConnections program (1999–2005) resulted in a) the development of an infrastructure that includes data and services and b) the establishment of key relationships and partnerships. The second phase (2005–2010) focussed on growing and evolving the CGDI, and the third phase (2010–present) focuses on integrating and sustaining the CGDI.

The Vision, Mission and Roadmap will play a key role in completing a comprehensive, usable and relevant spatial data infrastructure for Canada by 2015, poising the CGDI for growth in tandem with a rapidly evolving internet.

Phase I (1999-2005)—Establish and Build

This phase laid the foundation for the CGDI (the supply side, building the infrastructure). GeoConnections was concerned with constructing the CGDI: developing technology, establishing standards and making framework geospatial data more easily available. In the jargon of the time, GeoConnections and its partners in industry, academia and provincial, territorial and federal governments were building the geographical lane of the information highway.

	2001 ⁴
Vision	A Canadian geospatial information infrastructure that is accessible to all communities, pervasive throughout our country, ubiquitous for its users, and self-sustaining, to support the protection and betterment of Canada's health, social, cultural, economic and natural resource heritage and future.
Mission	GeoConnections will foster the creation of a Canadian Geospatial Data Infrastructure to enable online access and sharing of geographic information and services.

Phase II (2005-2010)—Evolve and Expand

This phase focused on promoting the CGDI for end users (the demand side, engaging user communities).

In funding Phase II, the federal government renewed GeoConnections with a focus on promoting the CGDI to decision-makers in four priority areas: public safety and security, public health, the environment and sustainable development, and Aboriginal matters. While Phase II continued the work on technology, standards and framework data, its funding contributed to the development of decision-support tools.

⁴ From *Canadian Geospatial Data Infrastructure Target Vision*. Prepared by the CGDI Architecture Working Group, Version: 1, March 27, 2001. Retrieved from: <http://www.GeoConnections.NRCan.gc.ca>

	2005 ⁵
Vision	To enable access to the authoritative and comprehensive sources of Canadian geospatial information to support decision-making.
Mission	<ul style="list-style-type: none"> • Enable decision-making and policy development that address Canada's priority issues such as health, social, cultural, economic, and natural resources. • Facilitate access to the leading sources of Canadian geospatial information. • Provide continued involvement and leadership in the development of geospatial standards and specifications. • Foster partnerships and sharing of geospatial information across all sectors, at all levels of government, and at the international level. • Support a broad and vibrant user community. • Ensure that infrastructure operations are on going and sustainable.

Phase III (2010–2015)—Integrate and Sustain

Phase III focuses on the core federal role: coordination, awareness and the development of policies and standards, in effect, tying together and sustaining the CGDI. The 2010 Federal Budget renewed commitment for the GeoConnections program and provided \$11 million in funding over two years. On March 16, 2011, the Government of Canada announced funding of \$30 million from 2010 to 2015 for GeoConnections to ensure a federal leadership role in the long-term sustainability of the CGDI. GeoConnections will continue to provide leadership and coordination and, with key stakeholders, will guide strategic geomatics policy development.

The renewed priorities for GeoConnections are 1) to promote awareness of new applications of geospatial information and 2), by adopting operational policies and standards, to educate stakeholders on the importance of interoperable solutions.

Objectives:

- Increase awareness of the benefits of using geospatial data and tools to achieve goals for key economic, social and environmental priorities;
- Keep Canada at the leading edge of accessing, sharing and using geospatial information over the Internet;
- Facilitate the integration and use of geospatial data to support effective decision making;
- Coordinate the development of national policies, standards and mechanisms and support their implementation to ensure maintenance and updating of geospatial data and compatibility with global standards.

Main Areas of Activity:

- ***Geospatial Strategy and Leadership***—The renewed program will continue to coordinate geomatics activities in Canada, enabling interoperable data sharing and thus increase economic sustainability and international competitiveness of the Canadian geomatics community.
- ***Canadian Geospatial Data Infrastructure***—GeoConnections will work with the geomatics community to advance the necessary operational policies and standards to complete the CGDI.

⁵ From *Vision. The Canadian Geospatial Data Infrastructure. Better knowledge, better decisions.* Geoconnections 2005. Retrieved from: <http://www.GeoConnections.NRCan.gc.ca>

ANNEX B: CGDI DEFINITION AND COMPONENTS

The CGDI helps Canadians gain new perspectives into social, economic and environmental issues by providing an online network of resources that improves the sharing, use and integration of information tied to geographic locations in Canada.

More specifically, the CGDI is the convergence of policies, standards, technologies and framework data necessary to harmonize all of Canada's location-based information. Consequently, the CGDI reduces barriers to using geospatial information so that Canadians can discover, access, visualize, integrate, apply and share quality location-based information and make effective decisions.

The CGDI includes four key components:

The CGDI's four key components (framework data, policies, standards and technologies) all contribute towards providing Canadians with high-quality location-based information.

- ❖ **Framework data:** The core data of the CGDI, framework data is the common, up-to-date, and maintained base of quality location-based data for all of Canada. This data provides context and reference to physical features and other types of information linked to geography. These datasets are the base mapping layers required to develop applications and are freely available for reuse. Framework data is the foundation upon which location-based information becomes spatially relevant to users.
- ❖ **Policies:** Operational policies are essential to eliminating barriers and enabling users to exchange location-based information effectively and efficiently. These data policies address topics related to the lifecycle of location-based data (i.e. collection, management, dissemination, use) and make issues such as data access, quality, ownership and integrity easier to manage.
- ❖ **Standards:** Technical and data standards allow diverse data sources, services, applications and systems to operate with each other. The CGDI is built upon international standards that allow it to work with other infrastructures in Canada and around the world. This harmonization of standards is fundamental to ensuring the efficient exchange of location-based information.
- ❖ **Technologies:** The CGDI uses a suite of innovative tools to provide a functional and accessible environment, which enables the development of systems and applications that integrate location-based information. The CGDI's open and flexible architecture continually adapts to the rapidly evolving internet. These technologies help users discover, access, integrate, share and disseminate Canada's location-based information.

Collaboration and Partnerships—Tying it all together

Collaboration and partnerships between federal, provincial, territorial and regional governments; the private sector; and academia ensure interoperability for the CGDI. This interoperability is achieved by the convergence of **framework data, policies, standards** and **technologies** necessary to harmonize Canada's location-based information.

Benefits to Canadians

The CGDI allows users to discover, evaluate and use a wide range of geospatial data from various sources, which would have otherwise been difficult to find. It helps decision-makers from all levels of government, the private sector, non-governmental organizations and academia use location-based information to make effective decisions on social, economic and environmental priorities.

ANNEX C: GEOBASE

GeoBase

Through the GeoBase portal (www.GeoBase.ca), users have access to this quality framework data at no cost, without restrictions, under a common license agreement. The GeoBase portal is accessed through a single access point (www.GeoBase.ca).

Currently the GeoBase portal contains the following nine framework data themes or layers⁶.

1. The *Canadian Digital Elevation Data* (CDED) layer consists of an ordered array of ground elevations at regularly spaced intervals.
2. The *Canadian Geodetic Network* contains horizontal and vertical geodetic control information for thousands of geodetic markers or monuments (i.e., permanent and stable survey markers for which precise coordinates have been established) distributed across Canada.
3. The *Canadian Geographical Names Database* (CGNDB) is the data bank of Canada's geographical names maintained by Natural Resources Canada.
4. The *National Hydro Network* (NHN) is framework data representing the inland surface waters of Canada.
5. The *National Road Network* (NRN) is a representation of the centerline of all non-restricted-use roads in Canada (five meters or more in width, drivable and free from barriers).
6. Full national coverage of satellite orthoimagery.
7. *Data Alignment* layer containing the control points used for the geometric correction of Landsat 7 satellite imagery.
8. *Land Cover* is a classification of land surface materials into themes such as forests, wetlands, crops and pasture, snow and ice, rock, and urban development.
9. The *Administrative Boundaries* composed of Canadian geopolitical boundaries and Aboriginal lands.

⁶ From *GeoConnections Framework Data Guide*. Geoconnections 2009. Retrieved from Chapter 2: <http://www.GeoConnections.NRCan.gc.ca>

ANNEX D: METHODOLOGY

This Vision, Mission and Roadmap is the result of multiple outreach methods that attempted to understand what information the document should convey. An environmental scan was developed as a reference tool and as a means to document research in preparation for stakeholder interviews. The interviews were conducted with 30 national and regional geomatics experts representing business, government and technical perspectives on the CGDI from both the data supplier side and the end-user side. These interviews validated the findings of the environmental scan and provided new insight on specific concerns. A SWOT analysis, derived from the environmental scan and interviews, provided a framework for reviewing the CGDI where the strengths, weaknesses, opportunities and threats (SWOT) that the CGDI will likely face in the future were documented.

This research was intended to frame the discussions with the Project Advisory Committee (PAC) during working sessions prior to developing the updated VMR. The PAC consisted of key geomatics experts and GeoConnections employees who were engaged to review the findings of the interviews and environmental scan and establish and agree upon the VMR framework. Subsequent conversations with PAC members led to the refinement of the Vision, Mission and Roadmap. The PAC and the key stakeholders were provided with the 2001 and 2005 CGDI VMR, the sustainability exercise documents from 2008 and 2009 and previous consultation documents and research for consideration as they provided input throughout the engagement.

The methodology is illustrated in **Figure 4** below. This figure outlines the multiple research methods undertaken to create the VMR and determine its focus.

Figure 4: The VMR methodology

