

GeoConnections' Canadian Geospatial Data Infrastructure (CGDI)
Technical Workshop and Technology Showcase

Wednesday, October 15, 2003
8:30 – 17:00

University of Calgary
2500 University Drive NW
Calgary, Alberta, Canada T2N 1N4
[MacEwan Student Centre](#)
[Cassio A & B – rooms 228 & 230](#)

Agenda

Objectives: To inform, engage and connect regional stakeholders in the use and further development of the Canadian Geospatial Data Infrastructure by:

- Highlighting the accomplishments and successes to date;
- Describing the technical architecture of the CGDI;
- Presenting and demonstrating CGDI-enabled software tools and services;
- Meeting and networking with regional stakeholders and partners;
- Identifying and developing opportunities for collaboration and participation in the CGDI.

Audience: Regional technical implementers and program/project managers representing the geomatics community (federal, provincial, territorial, municipal, industry, not-for-profit organizations, geomatics associations), GeoConnections' program representatives and GeoConnections' partners.

Format: Presentations, demonstrations, a panel discussion, and a technology showcase.

8:30 – 9:00 am	Registration and Networking
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9:00 – 9:45 am	Welcome, Overview of GeoConnections and the CGDI
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- Brian McLeod, GeoConnections/Natural Resources Canada

Welcome, Workshop/Showcase Objectives and Agenda, Introduction to CGDI and GeoConnections

"An overview of the workshop objectives and agenda will be presented. The CGDI vision and implementation plan, including the concept of CGDI architecture will be highlighted. Components that compose an Infrastructure including standards based works and their implementation within CGDI in a form of client applications and services will be established."

"A quick overview of GeoConnections program highlighting the major nodes of the program, the objectives, the benefits and major stakeholder partners."

"A multi-media presentation describing the development and use of CGDI endorsed standards, from the Open GIS Consortium, will be presented"

9:45 – 12:30 pm	CGDI: Standards, Technology and Applications
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A series of presentations by contributors to the CGDI will explore the implementation of geospatial standards-based components and capabilities in a variety of sectors, with a focus on CGDI-endorsed open standards such as Web Map Service, Web Feature Service and Geography Mark-up Language.

Representatives include professionals from local and regional geomatics firms, various government departments, academia and geomatics associations.

- Bridget Ady, GeoArctic Ltd

Interoperable Web Map Services for High-Resolution Geospatial Imagery

"Access to terabytes of high-resolution geospatial imagery and the ability to integrate these data online with other geospatial data will benefit everyone working in the natural resource industry. GeoArctic will demonstrate how this is possible through interoperable interfaces that are used to link globally distributed web map services into a seamless infrastructure.

- Maura Daffern, ESRI Canada

ESRI Standards and Interoperability -- An Overview

"This presentation will focus on ESRI's support for Standards and Interoperability in the GIS industry. Topics will include: ArcIMS connectors for Interoperability; ESRI Clients for OGC web services; Standards in metadata and web services, as well as IT industry standards."

- Terry Tarle, Sierra Systems

"Reality – What a Concept" Implementing Enterprise GIS using CGDI & OGC Standards

"Sierra Systems is a Canadian based System Integrator IT Company that has designed and implemented several large Enterprise GIS systems over the past several years. The most recent Enterprise GIS system designs have incorporated standards from the Canadian Geospatial Data Infrastructure (CGDI) and the Open GIS Consortium (OGC). This pragmatic presentation provides an overview of real world problems; challenges and lessons learned implementing large Enterprise GIS and CGDI and OGC standards. The presentation concludes with insightful observations and recommendations, and predictions on future trends for Enterprise GIS and the emerging Location Based Services."

12:30 – 14:00 pm Lunch (provided) and Technology Showcase

A series of on-line demonstrations will showcase CGDI-enabling technologies in action, with a focus on Web Services, data discovery and access, and visualization.

Representatives include regional geomatics project leaders from local and regional firms, academia, geomatics associations and various levels of government.

- Bridget Ady/Marta Wojnarowska, GeoArctic Ltd

The demonstration will tackle access to high-resolution imagery through interoperable interfaces.

- Maura Daffern, ESRI Canada

The demonstration will include a look at the Geography Network Canada, and the use of OGC Services in ArcExplorer Java Edition.

- Terry Tarle, Sierra Systems

The demonstration will include web-mapping services, implemented in Canadian organizations.

- Dr. Naser El-Sheimy, University of Calgary – Department of Geomatics Engineering

Mobile Multi-Sensor Geomatics (M²G) Systems

"The purpose of the demonstration is to showcase existing development of mobile multi-sensor geomatics systems applications developed for navigation and mapping. Implementation aspects will be discussed and illustrated by examples."

- Richard Schlachter, Pixxures

Web Map Services

"Market acceptance of digital imagery - both aerial and satellite - has increased significantly over the past few years as the technology to handle large volumes of spatial data has evolved. Compression technologies, more powerful desktop computers and high bandwidth

communications have combined with increased volumes of data content to create a demand for web-based imagery deployment. Several organizations have evolved to promote interoperability through shared communications standards. ESRI developed its own communication protocol, ArcXML, while other academic/government/industry cooperative bodies such as the Open GIS Consortium have created Web Map Services (WMS) using XML protocols. By working with industry-standard protocols, companies can now concentrate on what they do best – application developers can concentrate on developing desktop and web-enabled applications that consume imagery and providers can develop the services infrastructure to provide the data. The two disciplines meet in the middle using industry protocols without having to worry about interoperability.”

- Judy Guenette/Mohamed Habbane, GeoConnections/Natural Resources Canada

CGDI standards based Web services and enabling technologies

“The purpose of this demonstration is to showcase existing and emerging CGDI core services and applications. Discovery, search and visualization services, as applied to an online gazetteer and a fire mapping and validation application in the form of a demonstration application will be shown. Using disparate data and services, the applications seamlessly integrates data access, visualization and discovery to satisfy goals of end users. The services and applications demonstrate standards-based integration of GeoConnections sponsored tools and services, running within the CGDI Internet environment, with scalability to a global environment.”

- Kevin O’Neil/ Nilmini Wijayakoon, Radarsat International

Robert Orth/Ali Shankai, MacDonald Dettwiler and Associates

SMART Broker – An Innovative Web Based Service Enabling Clients to Collaborate in Sharing in the Purchase of Geospatial Data of Common Interest

“SMART Broker is a web based brokerage service that enables clients to find other users who have similar needs for geospatial products. By sharing the purchase price with these other clients, everyone saves money. SMART Broker provides a variety of online services. These include entering your geospatial product requirements, advertising this need to other clients, browsing and searching for other clients with similar needs, and ultimately collaborating with these other clients in a group or collaborative purchase. *SMART Broker is a multi-tier web based system that is being developed based on J2EE technology and advanced GIS applications. It will interface to CGDI web services and will comply with OGC standards.* Funded by NRCan’s Geoconnections Program and the industrial project partners, SMART Broker development is led by *RADARSAT International* in partnership with *MacDonald Dettwiler, DigitalGlobe, BC Ministry of Sustainable Resource Management, and The Manitoba Remote Sensing Centre.* Initial prototypes of the brokerage are currently being developed and a commercial service will be launched early in 2004.”

- Michael Schlosser, AutoDesk Canada

Autodesk MapGuide WMS Extension

“Sharing the right information with the right people at the right time is a priority for everyone who works with spatial and GIS data. The Autodesk MapGuide WMS Extension helps make that task easier. This extension for Autodesk MapGuide (www.mapguide.com) enables organizations worldwide to share their spatial data using the OpenGIS Web Map Service (WMS) specification by the Open GIS Consortium (OGC). The Autodesk MapGuide WMS Extension provides full implementation of all required interfaces described in the specification; thus it: 1) Enables data interoperability, 2) Protects investments in existing spatial data, 3) Increases the value of data by making it available to a wider community, 4) Supports OGC Web Services architecture, 5) Enables organizations to seamlessly integrate the Autodesk MapGuide software application into multi-vendor environments.”

- Rod Suddaby, Natural Resources Canada/Canadian Forest Service, Northern Forestry Centre

The Canadian Forest Fire Data Facility

“The mission of the Canadian Fire Data Facility is to facilitate and enhance existing and future research programs and to provide a single-window access to national forest fire data and information. The facility is comprised of a data warehouse and metadata management system as well as several permanent and temporary thematic data marts designed to

address a specific topic or research program. By employing the Canadian Geospatial Data Infrastructure (CGDI) and the open specifications developed by the Open GIS Consortium (OGC) the facility will also function as a node in a larger, distributed network of geospatial databases. The Canadian Fire Data Facility is designed to respond to the research needs of the forest fire research community, both nationally and internationally, and to provide the Canadian public with one-stop access to Canadian forest fire information.”

14:00 – 15:00 pm Communities of Practice
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A series of presentations will highlight local and regional CGDI use in terms of policies, technologies, standards, etc., with a focus on examples of best practices in sectors such as utilities, oil and gas, etc. and will identify the needs and challenges facing these user communities.

Representatives include geomatics professionals from academia, government, industry and geomatics associations, as well as professionals from industries that make use of geomatics.

- Dr. Naser El-Sheimy, University of Calgary – Department of Geomatics Engineering

Mobile Multi-Sensor Geomatics (M²G) Systems: The new trend in Mapping and GIS Applications

“Multi-sensor systems have become an emerging trend in mapping and GIS applications because they allow a task-oriented implementation of mapping concepts at the measurement level. Examples of such systems can be found in airborne remote sensing, airborne laser scanning and mobile mapping from vans and trains. All of them have in common that the sensors necessary to solve a specific problem are mounted on a common platform. By synchronizing the data streams accurately, the solution of a specific problem is possible by using data from one integrated measurement process only. This result in greater conceptual clarity, task-oriented system design and data flow optimization, and also offers in most cases the potential for real-time solutions, which are becoming more important in many applications. The presentation will cover both, the concept of multi-sensor integration and implementation aspects. Based on experience with a number of different systems, features common to most systems will be identified and a unified model for multi-sensor integration will be formulated. All major features will be illustrated by examples. Finally, data-flow optimization and the potential for automation of the data acquisition and feature extraction process will be reviewed with a view to real-time future systems.”

- Peter Davenport, Natural Resources Canada, Geological Survey of Canada – Calgary

Consolidating Canada’s Geoscience Knowledge – Geoscience for CGDI

“Consolidating Canada’s Geoscience Knowledge is one of a suite of new programmes implemented this year within the Earth Science Sector of Natural Resources Canada. The two interrelated thrusts of this programme are to develop, with Provincial and Territorial Geological Surveys, a ten year cooperative geological mapping strategy (CGMS) to enhance the geoscientific knowledge base for Canada to address current and future government issues, and the development and implementation of a comprehensive information management plan for the GSC’s geoscience information holdings. The IM plan includes:

- preparation of metadata for all major information holdings,
- development and adoption of data models and tools for each of the main sub-disciplines,
- population of physical databases with selected legacy data, and
- integration of these data models and tools to all new projects that collect new data and information.

The new information management regime will facilitate the identification of significant knowledge gaps to be addressed through the CGMS, the discovery of our information holdings through the Geoconnections Discovery Portal and other web search engines, and their delivery through the Canadian Geoscience Knowledge Network web site (www.CGKN.net) as well as the planned Earth Science Sector Internet portal.

Virtually all geoscientific information is spatially referenced, and geological maps, and more recently GIS, are the main ways this information is presented and integrated with other georeferenced information. In addition to the three Cartesian dimensions, time is also

important for most geological information, which when presented in geological maps and 3D models it is highly conceptualized. Although individual observations, measurements and samples can be precisely located in 2 and 3 dimensional space, their full significance is commonly best represented in relation to conceptualized 3D rock bodies (or formations) that besides their physical extent also exist within a temporal context with other conceptual units. These conceptual frameworks vary depending on the theme being addressed, and change as ideas evolve over time. These properties complicate the management of both spatial and attribute information in geology, complexities that are being addressed through, for example, the use of the North American Data Model <<http://geology.usgs.gov/dm/steering/teams/design>>. As an example, a scalable, interoperable geological map of Canada that is being developed for Internet access will be described.”

- Mark Dumka, Talisman Energy

Canada's Oil and Gas Upstream Looks Forward to CGDI Opportunities

“The Upstream (Exploration and Production) sector of Canada's Oil and Gas industry is anticipating the opportunities the Canadian Geospatial Data Infrastructure will offer. A goal of one dataset, one data model, and one node for accessing Canadian Geospatial data is a worthwhile one, and is something this sector could use to gain efficiency in mapping operations. Secondary goals of improved geometry / topology / attributes will add benefits as well. This sector will, for the most part, be a user of this Infrastructure. It is possible, however, that this sector could contribute datasets to the Infrastructure.”

15:00 – 15:15 pm Refreshments and Networking

15:15 – 16:30 pm Panel: Towards a Self-sustaining CGDI

The panel discussion will provide an opportunity for participants to share their views on the influence of standards in creating interoperability, the benefits of the CGDI for their field of work, the challenges that still need to be overcome, and the opportunities to get involved.

The panelists will include representatives from industry, federal and provincial governments, academia and geomatics associations.

Phil Mackenzie (moderator), Alberta Sustainable Resources Development
Cameron Wilson, Natural Resources Canada/GeoConnections
Bridget Ady, GeoArctic Ltd
Dr. Naser El-Sheimy, University of Calgary
Terry Tarle, Sierra Systems
Mark Dumka, Talisman Energy

Topics for discussion might include, but not limited to:

- Impression/appreciation about the workshop sessions: Industry, communities of practice, demos?
- Issues/requirements that the communities are facing?
- How the technologies that were presented might affect the participants back home
- Business view of the CGDI (Why?)
- Communications, vision sharing with participants, communities?
- Data policy issues, data access issues?
- Standards OGC/ISO TC 211 e.g. semantic interoperability, metadata, etc.
- Needs, Announcement of Opportunities (AO).

16:30 – ? pm Closing and Networking

Related documentation:

- ✓ GeoConnections web site: <http://www.geoconnections.org>
- ✓ CGDI Target Vision and Implementation Plan:
http://www.geoconnections.org/publications/reports/tvip/CGDI_Vision_E.pdf
- ✓ CGDI Architecture description:
http://www.geoconnections.org/architecture/architecture_description.pdf
- ✓ CGDI Access Technical Manual:
http://www.geoconnections.org/publications/Technical_Manual/Technical_Manual_1.1_e.pdf
- ✓ CGDI Development Network site (workshops): <http://cgdi-dev.geoconnections.org>