



GeoConnections

Canadian
Geospatial
Data
Infrastructure



Infrastructure
canadienne
de données
géospatiales

Geospatial Metadata

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The Presentation - Geospatial Metadata



- This presentation will outline the 5 W's (who, what, where, when, why) and how, in the following order:
 - What
 - Why
 - Who/Where/When
 - **How**
- Wrap-up
 - Recent Achievements
 - Current and Future Challenges

What is geomatics?



Geomatics is the science and technology of gathering, analyzing, interpreting, distributing and using geospatial data.

It encompasses a broad range of disciplines that includes:

- Geographic information systems (GIS);
- Remote sensing (data acquisition and application);
- Mapping (photogrammetry, cartography, automated mapping, facilities management and charting);
- Surveying (geodetic, cadastral, engineering and marine) and,
- Global positioning systems (GPS)



What is GeoConnections & CGDI?



GeoConnections is a national initiative to make Canada's geospatial information accessible on the Internet. One of the main roles is to facilitate the creation of the Canadian Geospatial Data Infrastructure (CGDI).

The CGDI aims to be the main source for geospatial information and services in Canada by working together with governments, private industry and academia to build and ensure fast, consistent and harmonized access to geospatial information and services for all Canadians.



Why? - Responding to Emergencies



Science played key role in search for toddler

By Allison Decker
Saskatoon Star

REGINA, Sask. — The science of geospatial information systems (GIS) played a key role in helping find a lost two-year-old toddler.

Three searchers, including the toddler's mother, were directed to look around a river which flows close to the house. After that, a group of searchers were sent to the gravel pit, where they located the boy.

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maps, topography and air photos. Using this information, a GIS operator can turn this information into precise geographic coordinates.

It is essentially a mapping tool, but it has been used in search and rescue operations before.

Harbe, an applications specialist for the Prairie Provinces Rehabilitation Administration (PPRA), was at the farm when his nephew went missing. His thoughts quickly turned to the GIS.

"Actually, I did think of it immediately, but I never made the phone call to his boss in Regina until about 11 when we saw it was going to be successful about 11 when we saw the people in



Patrick Pettit/The Leader Post

"One thing it really helped in was giving the RCMP people an idea of what the landscape was like."

— Troy Kucbe

farmhouse. Harro also used the program to keep track of where they had already searched, beginning with a perimeter directly around the farm.

"Once they were sure that this area was a dead end, the most likely area would have been around the farmhouse — that's what we started looking at how could he get out of there," said Harro.

After looking around the farmhouse, the searchers were directed to look around a river which flows close to the house. After that, a group of searchers were sent to the gravel pit, where they located the boy.

Harro said the GIS made it a lot easier, but he's not sure exactly how much time they saved by using it.

"It's hard to tell, but how long would it have been to come to the conclusion to send somebody out to the gravel pit?" he asked.

Harbe said the GIS gave the RCMP an impression of what the land was like.

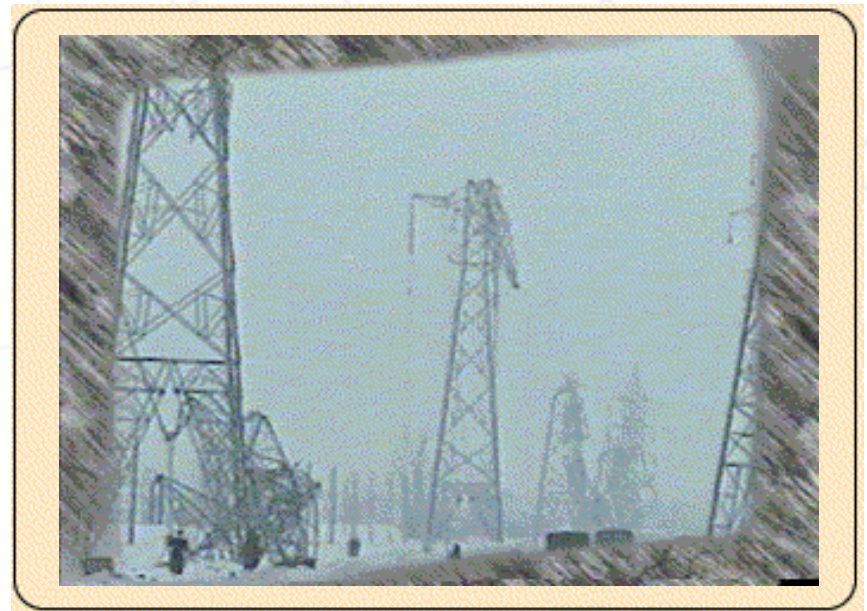
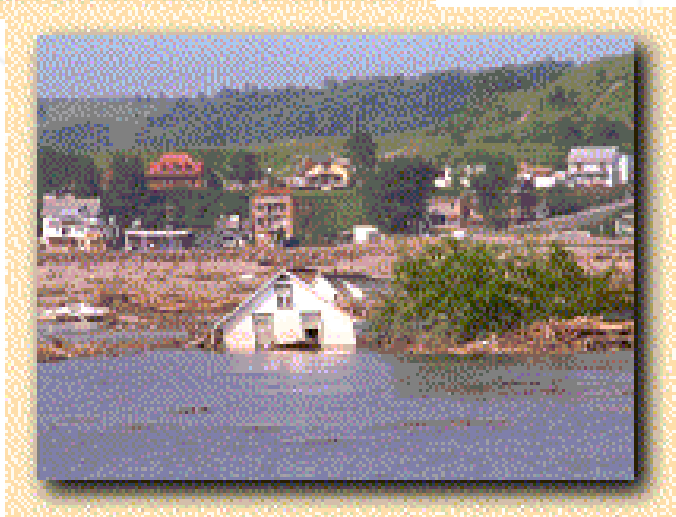
"One thing it really helped in was giving the RCMP people, who came in the dark, an idea of what the landscape was like. You know, when you're going out and it's pitch black and it's raining, you don't know what kind of topography is out there. So it gave them a relational picture of what was out there," he said.

(REGINA LEADER POST)



Audio courtesy of "As It Happens", CBC, Radio 1

Why? - Public Safety



Why? – Bringing Communities Together



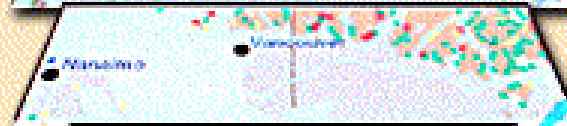
How? - The Task



Natural Resources Data



Environmental Data



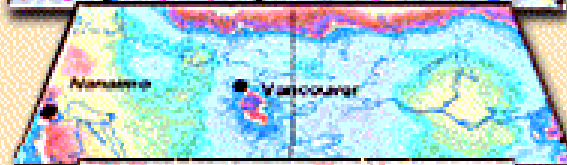
Economic Data



Natural Hazards



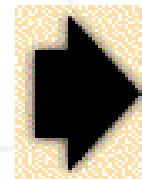
Health Data



Soils Inventory



Base Map



Who is an access provider?



The GeoConnections Discovery Portal is the primary interface through which users can find and access (or visualize) data, organizations and services within the CGDI using a powerful spatial and keyword search engine.

Operations are based in the GeoAccess Division, Canada Centre for Remote Sensing, Natural Resources Canada.

The GeoConnections Discovery Portal is at: <http://geodiscover.cgdi.ca>.

How? – The Discovery Portal



- The GeoConnections Discovery Portal system was built on the Canadian Earth Observation Network (CEONet) technology.
- Valuable keyword and thesaurus tables were (continue to be) acquired (or developed) providing assistance to metadata providers and easing the search process.
- Datasets are described using the Federal Geographic Data Committee (FGDC) metadata standard. [Fields are matched with the Directory Interchange Format (DIF) so exchanges to the International Directory Network can be achieved.]
- Connections to distributed databases use Open GIS Consortium (OGC) standards to provide access to services and resources, such as web mapping services (wms), portals or geomatics software.

How? - The Discovery Portal Service



- Content and connectivity co-ordinators monitor and assist metadata providers with population of quality entries in both official languages (English and French)
- Staff is involved in developing metadata standards, interoperability and establishing thesauri
- Reusable geographical tools, including gazetteers; API's (including XML import/export); and, a WMS Viewer are available for designers to use, embed and integrate into their web sites
- As of September 1, 2003, GeoConnections Discovery Portal had the following published (client visible) entries:
 - 1,920 Organizations
 - 13,008 Data Products
 - 463 Services (no service interface)
 - 265 Searchable Collections (Z39.50)
 - 64 CGDI Web Services (with service interface e.g. WMS)

How? – Metadata about Data



- Federal Geographic Data Committee (FGDC)
Content Standard for Digital Geospatial Metadata (CSDGM)
and extended profiles:
 - Biological Data profile
 - Shoreline Metadata profile
 - Extensions for Remote Sensing Metadata
- ISO TC211 19115
 - Contributing to a North American effort to produce a standardized implementation specification of the ISO 19115.
 - Canada, U.S. and Mexico

How? – Metadata about Services



- Redesign of the Services component within GeoConnections Discovery Portal:
 - proprietary to standards-based.
 - enhanced discoverability and access.
- Thesaurus selection process:
 - Investigated various services metadata standards and specifications– ISO 19119, OGC-OWS and CEOS IDN.
 - Researched potential keywords thesauri and Universal Standard Products and Services Classifications.
 - Engaged/consulted with other national and international colleagues.

How? – Metadata about Services



NAICS

The North American Industry Classification System replaced the U.S. Standard Industrial Classification (SIC) system. It was developed jointly by the U.S., Canada, and Mexico to provide new comparability in statistics about business activity across North America.

NAPCS

The new North American Product Classification System (NAPCS) is presently under development, with initial focus on products of service industries.

How? – Metadata about Services



- North American Industry Classification System (NAICS) and North American Product Classification System (NAPCS) selected for services categorization scheme.
 - Extracted NAICS and NAPCS categories that met Discovery Portal requirements.
- Internal working group defined new type and theme keyword categories, to support easy identification of client areas of interest and facilitate searches on the Discovery Portal.
- Provided same categories (pull-down menus) to the services metadata supplier for excellent service identification.
- Matched keywords to NAICS/NAPCS categories to ensure use of established standards. Ability to modify as required (upon advise/update from Statistics Canada)

How? – Metadata about Services



The screenshot shows a Microsoft Internet Explorer browser window displaying a web page titled "Discovery Portal - Advertising". The address bar shows a URL from geodiscover.org. The page content includes several sections for filtering services:

- Downloadability:** Three checked options: Downloadable, Orderable On-Line, and Orderable Off-Line.
- Type of Service or Resource:** A dropdown menu with options: Software/Hardware > Software Product, Software/Hardware > Hardware Product, Information > Directory, Information > Multimedia, and Information > Manual. A "Remove" button is below.
- Category of the Service or Resource:** A list of categories: Design and Development, Geophysical Surveys and Mapping, Surveys and Mapping (non Geophysical), Other Geomatics Related Services, and Design and Development > Software/Hardware. A "Remove" button is below.
- Theme Description:** A dropdown menu with options: Air, Environment, Geomatics, Human Dimensions, and Land. A "Remove" button is below.
- Service List:** A table of services with checkboxes, titled "Click on the green bar to get the word - Microsoft Internet Explorer". The services listed are:
 - Design and Development
 - Geophysical Surveys and Mapping
 - Surveys and Mapping
 - Other Geomatics Related Services
 - Acquisition
 - Processing
 - Interpretation
 - Thematic Mapping
 - Orthophoto Mapping
 - Nautical Charting
 - Aeronautical Charting
 - Geographic Information System
 - Geospatial Cataloging Services
 - Training
 - Conversion
 - Digitizing
 - Satellite Image Sales
 - Aerial Photo Sales
 - Map Sales
 - GIS Software Sales

How? – Partnerships



Partnerships with all major federal and some provincial geospatial data providers and users are being implemented. Examples of current data-partners are ...

- Indian and Northern Affairs Canada integrating the Northern Information Network into the Discovery Portal.
- Atlantic Coastal Zone Information Steering Committee integrating information about coastal management
- GeoNOVA to integrate Nova Scotia provincial and municipal entries
- Canadian Geoscience Knowledge Network to integrate their data catalogue (data products and WMS)
- NASA Global Change Master Directory to export the Discovery Portal Canadian metadata and import International information.

How? – Partnerships



Some Data-Use Partnerships include ...

- Canadian Information System for the Environment (CISE), Environment Canada
- Land Information of Ontario (LIO), Ministry of Natural Resources, Government of Ontario
- National Forestry Information System (NFIS), Pacific Forestry Centre, Natural Resources Canada
- National Land and Water Information System (NLWIS), Agriculture and Agri-Food Canada

How? – Training



Training ...

- FGDC CSDGM metadata training course held in Ottawa – June 10 to 12. Hands-on experience gained through use of the Discovery Portal as the metadata input tool. Presentations and Documents: http://www.geoconnections.org/CGDI.cfm/fuseaction/devNetwork.workshops/pgm_id/25/gcs.cfm.
- Eco-Instruct 2003 - Environmental Data Exchange in the Americas is being coordinated by Environment Canada and is scheduled for November 24 - 26 in Nova Scotia. Approximately 100 participants are expected. This 3-day workshop is based on the FGDC CSDGM Train the Trainer program using the Biological Data Profile. It is being offered in English, French and Spanish. Participants will learn about what it takes to become a successful environmental technical instructor using the latest environmental information management standards and programming techniques. Details: <http://www.eman-rese.ca/eco-instruct2003/en/>.

Recent Achievements



- Provided the English and French versions of the GCMD Theme keyword thesaurus table (on the Discovery Portal) to the National Library of Canada for publication as an authoritative federal list of earth science keywords.
- Developed and installed new Services metadata interface with keywords formulated by matching terms to the North American Industrial and Product Classification Systems (NAICS/NAPCS) categories (ensuring use of established standards).
- Updated the Discovery Portal from the 1994 to the 1998 FGDC metadata standard and added ISO TC211-19115 related fields.
- Prepared ISO TC211 19115 North American amendment proposal. Currently under review by U.S. and Mexico teams.

Current and Future Challenges

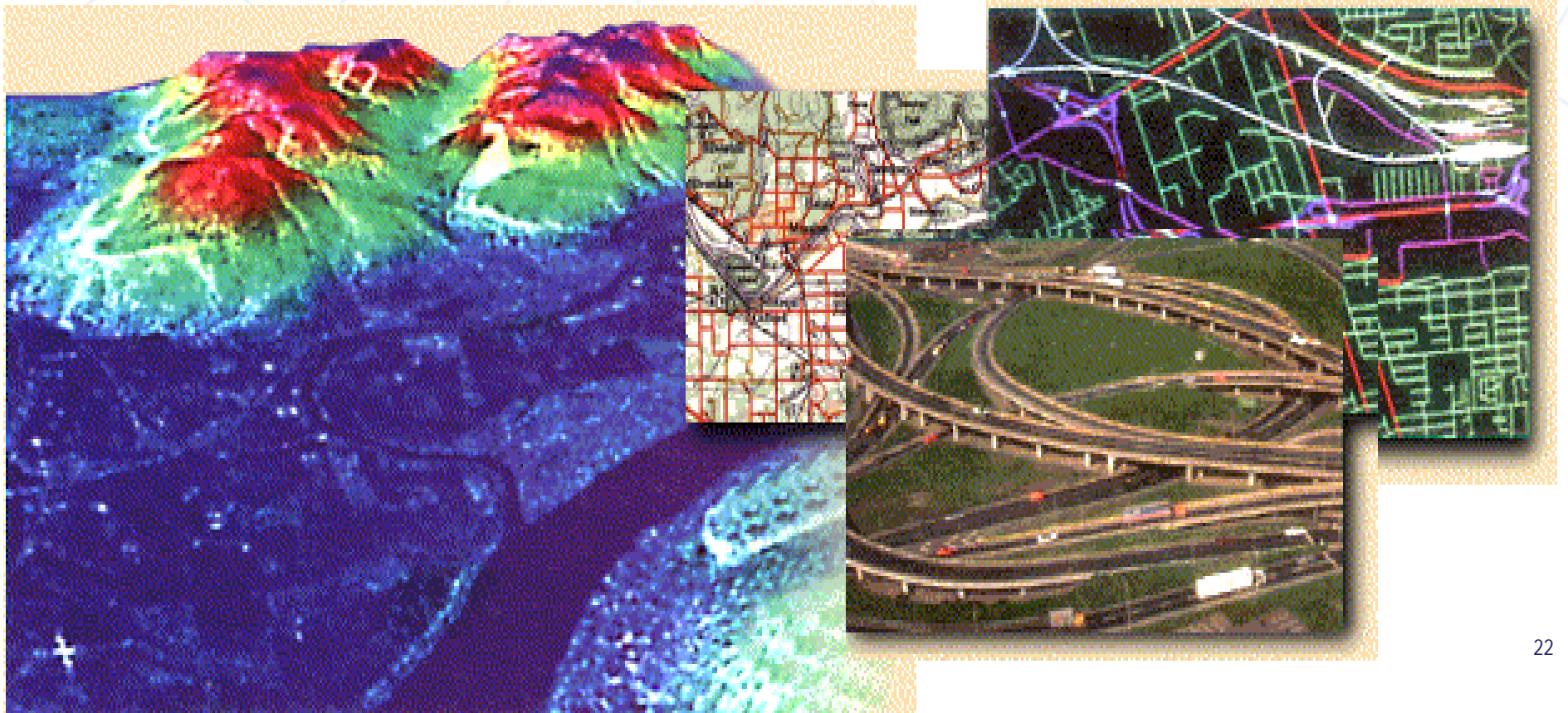


- Monitoring the evolution of geomatics metadata standards and other industry activities to reflect ongoing development on the Discovery Portal for example, ISO TC211 19115.
- Making recommendations for OGC-WMS metadata content and authority files, to promote discovery and access of web maps.
- Involvement with new partners to continue increasing quick and easy access to geospatial data using the GeoConnections Discovery Portal.
- Continue to provide an IDN representative to the Global Change Master Directory Science Users' Working Group (GCMD UWG) for the American Coordinating Node.

Current and Future Challenges



Major investment, geographic data and knowledge have amassed over time. These are national assets.



Contact Information



GeoConnections Discovery Portal site:

<http://geodiscover.cgdi.ca>.

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