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**GeoNOVA Initiative - 5 Year Strategy
Trends & Technology Workshop 5**

Canadian Geo-Spatial Data Infrastructure

Presented by Terry Tarle – February 14th, 2002



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Workshop Objectives

- To Provide an Overview of Canadian Geo-Spatial Data Infrastructure (CGDI) Initiative
- To Share Sierra Systems' Practical Experience with CGDI on the Parks Canada / GeoConnections Project.
- To Stimulate Thought & Discussion on the Implication of CGDI & OGC on GeoNOVA
- To Discuss the Opportunities for Cost Share Funding from GeoConnections for GeoNOVA



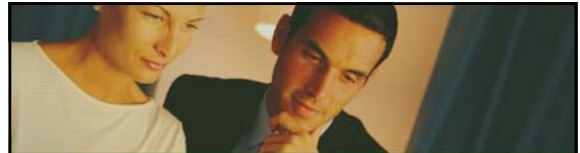
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Overview of CGDI & GeoConnections




GeoConnections Canada's geographic information on the internet

Home About GeoConnections Help Search Contact Us Français 



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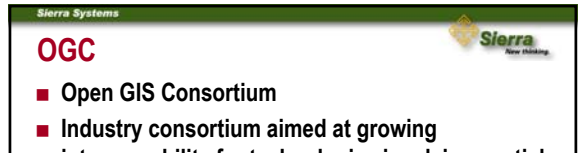
**OGC, ISO TC211, FGDC, & other TLAs'
(You Too Can Be An Expert!)**



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Two Definitions of Expert

1. "Someone Who is One Page Ahead of Everyone Else in the Manual"
2. "Someone Who Knows More & More About Less & Less, Until they Absolutely Everything there is to Know about Nothing"



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OGC

- Open GIS Consortium
- Industry consortium aimed at growing interoperability for technologies involving spatial information and location
- All Major GIS Vendors Members
- Sets Interoperability Standards rather than Data Format Standards
- See <http://www.opengis.org/> for more info



FGDC

- Federal Geographic Data Committee (US)
- GeoConnections “Sibling” Organization in the US
- Administrates the National Spatial Data Infrastructure (NSDI) for the US
- FGDC Standard for Metadata Content Broadly Accepted in US and Elsewhere including CGDI
- Wealth of Good info on <http://www.fgdc.gov>



ISO TC211

- International Standards Organization Technical Committee Number 211
- Setting International Standards for Geo-Spatial Information
- Slow, Academic & AR
- Working 5 Years plus on this – no end in sight
- Now Coordinating with OGC
- See <http://www.isotc211.org/scope.htm#scope> for more info - or for cure for insomnia!



ISO Z39.50

- ISO Z39.50
 - International Standards Organization Standards Number Z39.50
 - Search & Retrieval Protocol for Metadata
 - Used by Libraries & Museums for Many Years
 - Adapted for Geo-Spatial Data by FGDC, OGC & CGDI
 - Already Supported on Multi Platform by Many COTS



Other TLA's

- COTS – Commercial Off The Shelf Software
- SCOTS – Standards Based Commercial Off The Shelf Software
- HTML – Hyper Text Markup Language
 - standard for encoding/decoding web site page descriptions that include simple images and formatted text



Other TLA's

- XML – Extended Hyper Text Markup Language
 - allows developers to specify rules for designing text formats for any data in a way that produces files that are easy to generate and read (by a computer), that are unambiguous, and that avoid pitfalls such as lack of extensibility, lack of support for internationalization/localization, and platform-dependency



Other TLA's

- GML – Geographic Markup Language
 - OGC Standard that extends XML for encoding the transport and storage of geographic information, including both the geometry and properties of geographic features
 - Based on OGC's abstract model of geography, which describes the world in terms of geographic entities called features



What is GeoConnections?

- A. A Initiative Started in 1999 by NRCan to Fund Making Canadian Geo-Spatial Data Discoverable on the Web
- B. The Name of a Geo-Portal for Access to Canadian Geo-Spatial Data via the WEB
- C. An NRCan Sponsored Initiative that Promotes the Creation & Implementation of a Canadian Geo-Spatial Data Infrastructure (CGDI)
- D. All of the Above



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The GeoConnections Initiative

- Guiding Principles:
 1. Making Geo-Spatial *Accessible* on the Web – 7 X 24
 2. Establishing a *Framework* of Base Data to Ease Integration & Develop New Info Products
 3. Promoting International *Standards* to Facilitate Data Sharing & Position Canadian Technology Globally
 4. Collaborating in *Partnerships* with other Provincial & Local Government, Private Sector & Academia
 5. Developing *Supportive Policy* at all levels of Government to Promote Industry & to develop e-commerce, integrated technologies and services



GeoConnections 7 Programs

1. Access – a partnership program to make geo-info in government agencies accessible via the Internet. (Alias GeoExpress-Access)
2. Framework Data – a national geo-info framework (foundation) to enable integration, applications development and value added.
3. GeoPartners – a federal-provincial/territorial partnership program to facilitate data sharing, vertical harmonization of information sharing and access to geo-info holdings.
4. GeoInnovations – an industry-partnership program to accelerate the development of geo-info technologies.



GeoConnections 7 Programs

5. Sustainable Communities – builds or strengthens the capacity of Canadian communities to effectively plan and manage their economic, environmental and social development using geo-info and services delivered via the Internet.
6. National Atlas of Canada – provides national perspectives on Canada's physical, environmental, economic, social and culture issues for students and the public in general via the Web.
7. Geomatics Skills Network – a skills-matching program to sustain industry growth and fill job vacancies.



Other GeoConnection Objectives

- To develop & promote the *Canadian Geospatial Data Infrastructure (CGDI)*
- To Host the GeoConnections Discovery Portal (Formerly CEONet) WWW.GeoConnections.org

What is CGDI?

- A. Canadian Geo-Spatial Data Infrastructure
- B. A Distributed Set of Data
- C. Services & Applications that enable the sharing and use of geo-spatially referenced information
- D. All of the Above

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More on CGDI

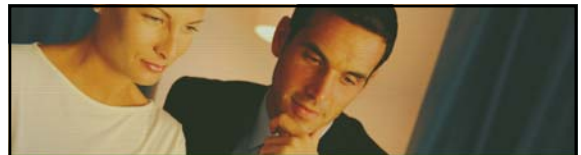
- Open Information Technology Infrastructure Based upon Publicly Available Specifications.
- Architecture Designed to Enable Implementation of Systems to Support Service & Data Providers & Application Developers
- Uses Interoperable and Re-usable Components.
- This Goal is Achieved through Specifying the Interfaces of these Services
- Based on International Organization for Standardization (ISO) 19100 & Related Specs being Developed by OGC
- A complete introduction to the CGDI and its various aspects is found in the *CGDI Target Vision*.

Characteristics of CGDI


- Enables Universal Access to any kind of geo-spatial information, anywhere, anytime;
- Enables Applications to “Discover” and Access remote online information through a distributed infrastructure;
- Enables integration of disparate geo-spatial information to provide seamless views;
- Enables the seamless chaining of applications, data and services or combinations of these;

Characteristics of CGDI

- Provides geo-spatial update and exchange capabilities, enabling collaborative activities;
- Promotes the sharing of geo-spatial semantics to make integration of information easier;
- Enable wide-scale interoperability by adhering to common and open information standards and specifications;
- Facilitate the development of effective partnerships with regional and sector-specific Spatial Data Infrastructures (SDIs), and linkages with other national SDIs to form a Global Spatial Data Infrastructure (GSDI)
.....Spatial Nirvana!!




Parks Canada / GeoConnections

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Internet Access to Geo-Spatial Data

- Client: Parks Canada & NRCAN
- Project Objectives:
 - To Improve Management of Geo-Spatial Data at PC
 - To "Connect" PC Metadata & Data Content to CGDI
- Work Completed in Phase 1:
 - Workshops on Data Management & Standards for PC Staff
 - Modeled Metadata dB & Developed Draft Standards
 - Facilitated Preliminary Inventory of Map Products
 - Connected to GeoConnection via SMMS GeoConnect Z39.50
 - Implementation of Metadata Database in Oracle 9i, & Metadata Management Application (Tried Meta Star – then SMMS)

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Lessons Learned

- Steep Learning Curve for PC GIS Resources on CGDI / GeoConnection / OGC Concepts & Jargon
- No Clear Value Proposition for Regional & Park Site Staff – Benefits not Clear – Buy-in Hit & Miss
- Significant Effort Needed to Capture Inventory & Metadata for Existing Geo-Spatial Data & Products
- Need Plain Language Description & Training on CGDI & OGC Terminology

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Lessons Learned

- Need to Define Minimum Level of Metadata that is Sustainable
- Metadata Capture Needs to Automated & Part of Production Process
- Need to Define Policy on Data Security, Cost & Liability
- Need Clearly Defined R & R for Custodians & Stewards
- Need Stick or Carrot to Enforce Discipline to Capture Metadata

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From Napster to Mapster The Need for Metadata

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What is Metadata?

- Data about Data!
- Answering the following Questions:
 - What does the data describe?
 - Who created the data?
 - Why was the data created?
 - How reliable is the data; accuracy, currency, structure, what problems remain?
 - How do I obtain the data?

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Trends - Data Sharing on the WEB

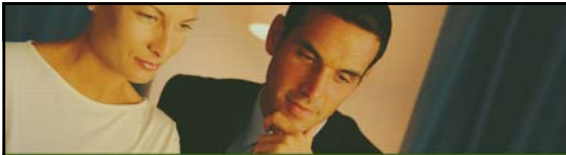
- A Logical Progression....
 - Sharing Imagery (Porno Industry)
 - Sharing Music (Napster)
 - Sharing Video (Before Release)
 - Sharing Geo-Spatial Data
- New WEB Technology
- Location Based Services
 - Market for wireless LAN Technology \$35.8 B by 2004 (source: Gartner Dataquest)
- Boom in GeoPortals

Metadata – A Necessary Evil!

- Permits Discovery of Spatial Data Through Internet Portals (e.g. CEONet)
- Important First Step in getting Geo-Spatial Data on the WEB
- Allows Users to Filter SPAM (MAPS backwards)
- Provides a Common Vocabulary by which GIS Users can Communicate

Recommendations on Metadata

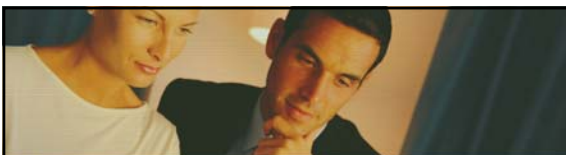
- Capture Minimum Amount Needed & Sustainable
- Must Integrate Capture of Metadata into the Edit / Update Process – Automate as Much as Possible
- Must Make Discovery Using Metadata Simple & Intuitive (Napster Example)
- Implement as Part of a Project, not Stand-Alone – or Else Doomed for Failure.
- Use Sub-set of FGDC



Topics for Discussion

Topics for Discussion

- Metadata Standards for GeoNOVA
 - How Much & What Colour
- Policy Issues Regarding Publishing on GeoConnections
 - Pricing to External Agencies
 - Copyright & Ownership
 - Confidentiality Issues
- Organizational Readiness
- Staff Training Issues



GeoConnection Funding Opportunities

Access Program

- Now Gov't to Gov't only
- Must Spend 50% in Private Sector
- Will Match \$300K per Year to 2005
- 60% to Private Sector Partner
- Profit & Profit on Labour can not be Included in Total Project Cost



Access Program

- Provincial Share can be Partially “In-Kind”
- Target Areas
 - Sustainable Development & Resource Management
 - National Ground Transportation
 - Emergency & Disaster Management
 - Marine Advisory Network



Framework Data

- Possibility
- Need more Info on This



Geoinnovation

- Geared for Private Sector
- Project Cost can't Include Profit
- Not Attractive to anyone but Software Vendors



National Atlas

- Minimal Funding Available (\$25K)
- Not Worth the Pain and Torment!
- Recommend you Forget This



Wrap Up

- Questions & Answers
- Action Items and Follow-up
- Thank You for Hanging In!!