

**GeoConnections**

Canadian  
Geospatial  
Data  
Infrastructure



Infrastructure  
canadienne  
de données  
géospatiales

# *A National Partnership to Develop the Canadian Geospatial Data Infrastructure (CGDI)*



**Dr. Irwin Itzkovitch**

The 8th United Nations Regional Cartographic Conference for the Americas  
New York, 27 June -1 July, 2005

**Canada**

# Presentation Outline

- Overview of SDIs
- Overview of Canadian Approach to SDI
- Accomplishments after Phase I
- Objectives for Phase II

**With the advent of digital cartographic technologies, mapmaking has been democratized...**




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Conference for the Americas**





...our ability to correlate social, economic and environmental phenomena to geography is unprecedented;

## Linking air quality and health care capacity


 General Medical and Surgical Hospitals, 2002

 Nursing and Personal Care Facilities, 2002

 Skilled Nursing Care Facilities, 2002

 Offices and Clinics of Doctors of Medicine, 2002

### Air Quality Monitoring Station O3, August 15 2002


 Good


 Fair


 Poor


### Population per square kilometre 2001, NB Health Regions

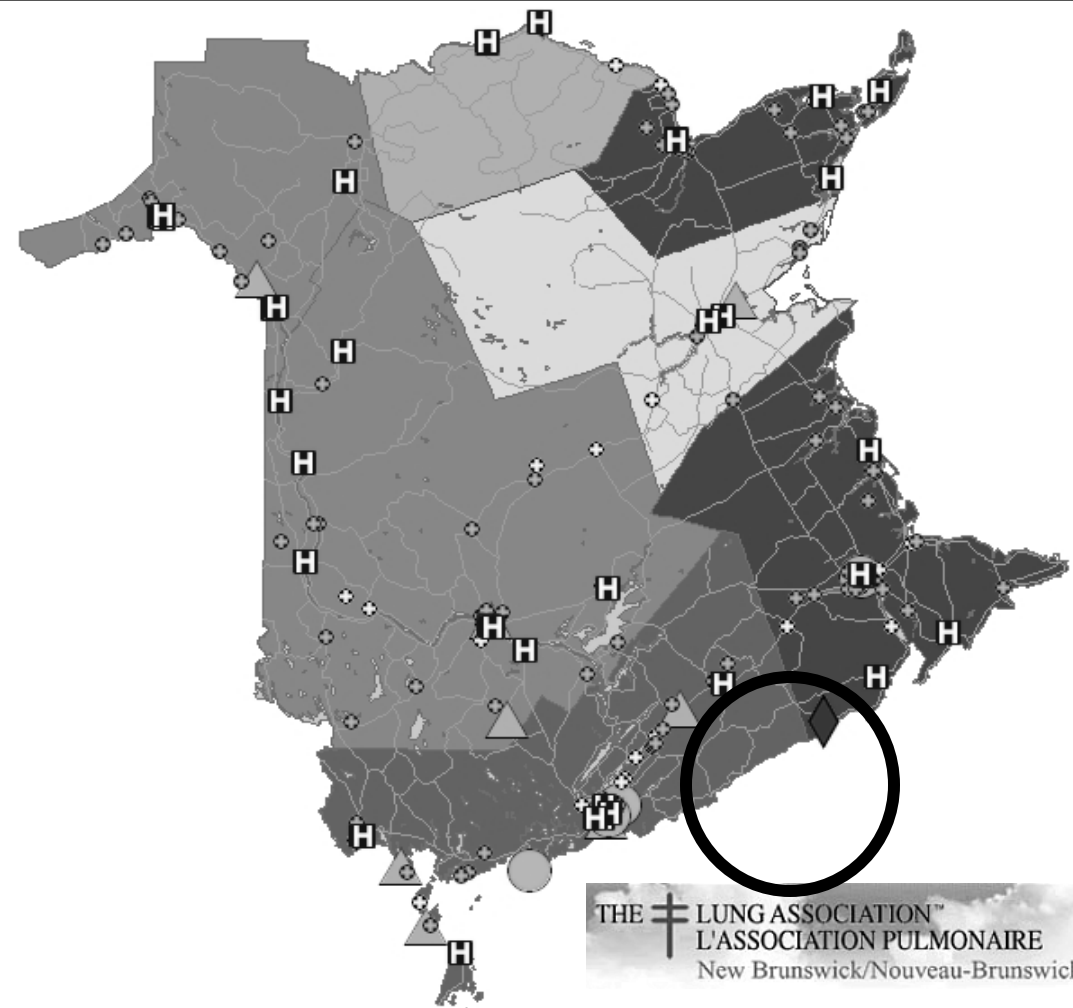
 4.84000

 4.84001 - 5.51000

 5.51001 - 7.06000

 7.06001 - 16.30000

 16.30001 - 18.25000



# However, coordination is needed to realize this potential...



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# Spatial Data Infrastructures

- A worldwide enterprise, SDIs are being developed in over 100 countries;
- Using the Internet, they harness the power of geomatics by enabling sharing of interoperable spatially correlated data;
- Now evolving from centralized warehouses to fully distributed networks.

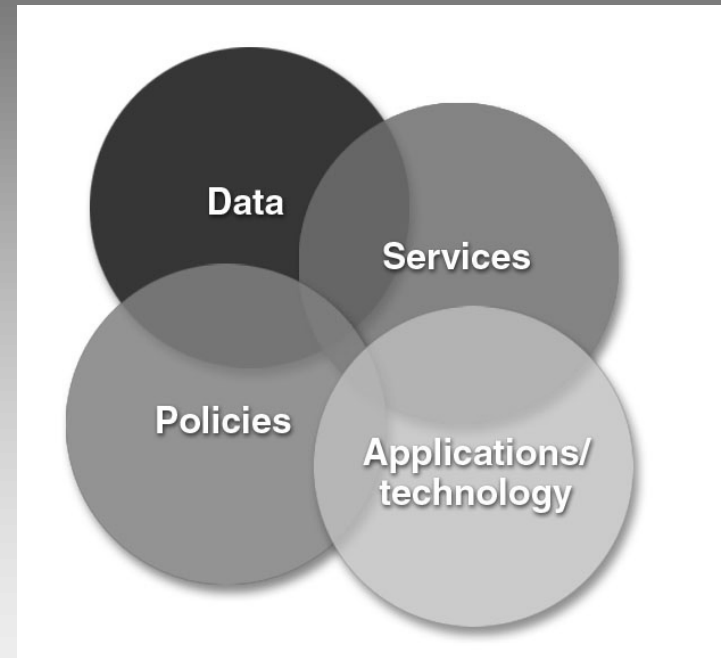
# Defining Spatial Data Infrastructure

## Definition:

an integrated, on-line mechanism to deliver geospatial data and services and information for applications, better business and policy decision-making, and value-added commercial activities.

## Components:

collection of people, policies, networked databases and enabling technologies and services



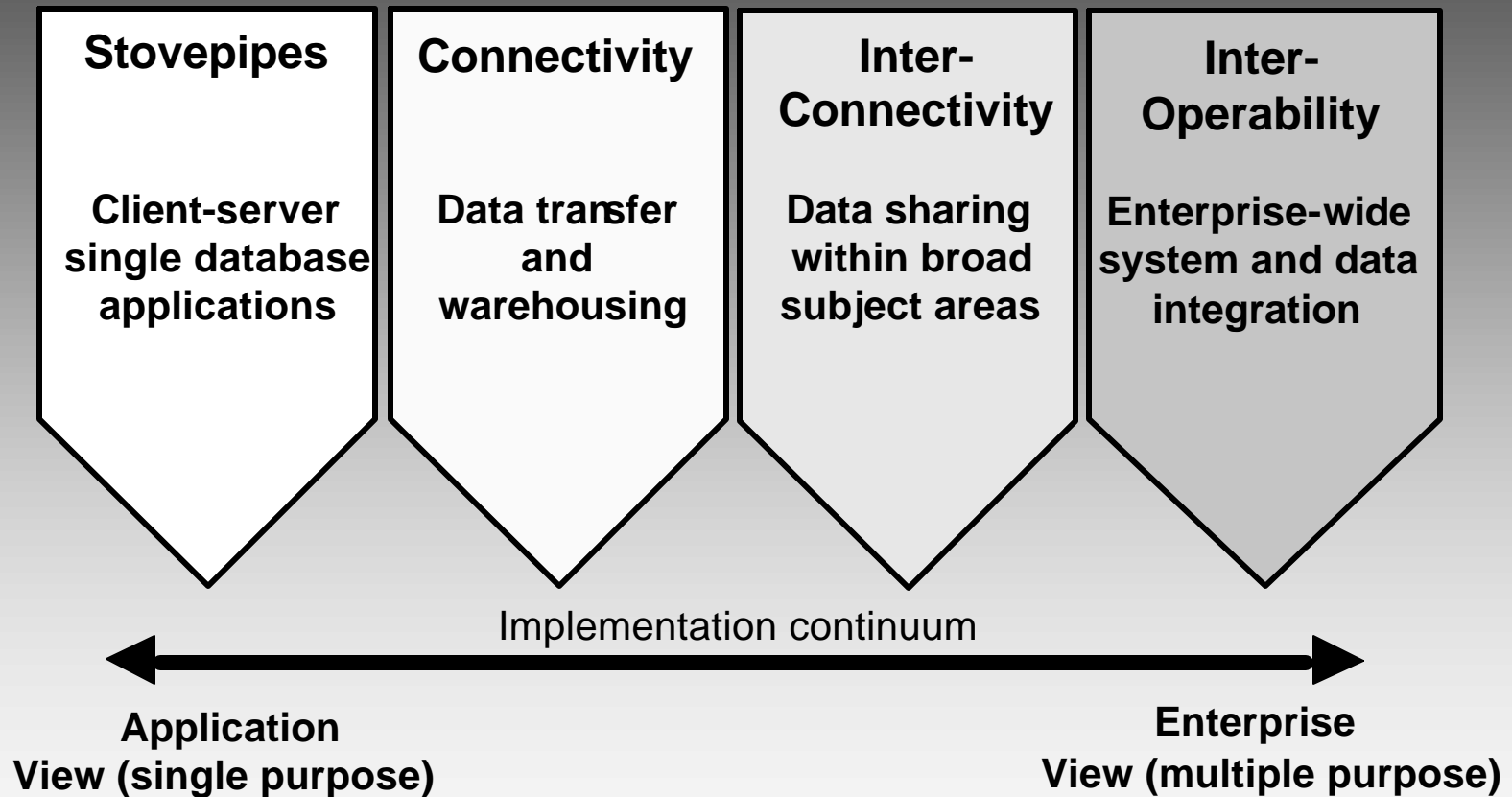
# Essential characteristics of any infrastructure

## *Components must be...*

1. Standardized
2. Networked together
3. Customized for easy 3<sup>rd</sup>-party access



# SDIs now evolving to Interoperable Networks



# A Canadian Perspective

Canada's approach recognizes:

- our nation's political realities where decision-making, and the information needed to support it, is distributed across a confederated structure;
- Private industry is best suited to develop the components in a model partnership with governments;
- A single 'backbone', properly constructed, can support many applications.

# GeoConnections: A confederated approach

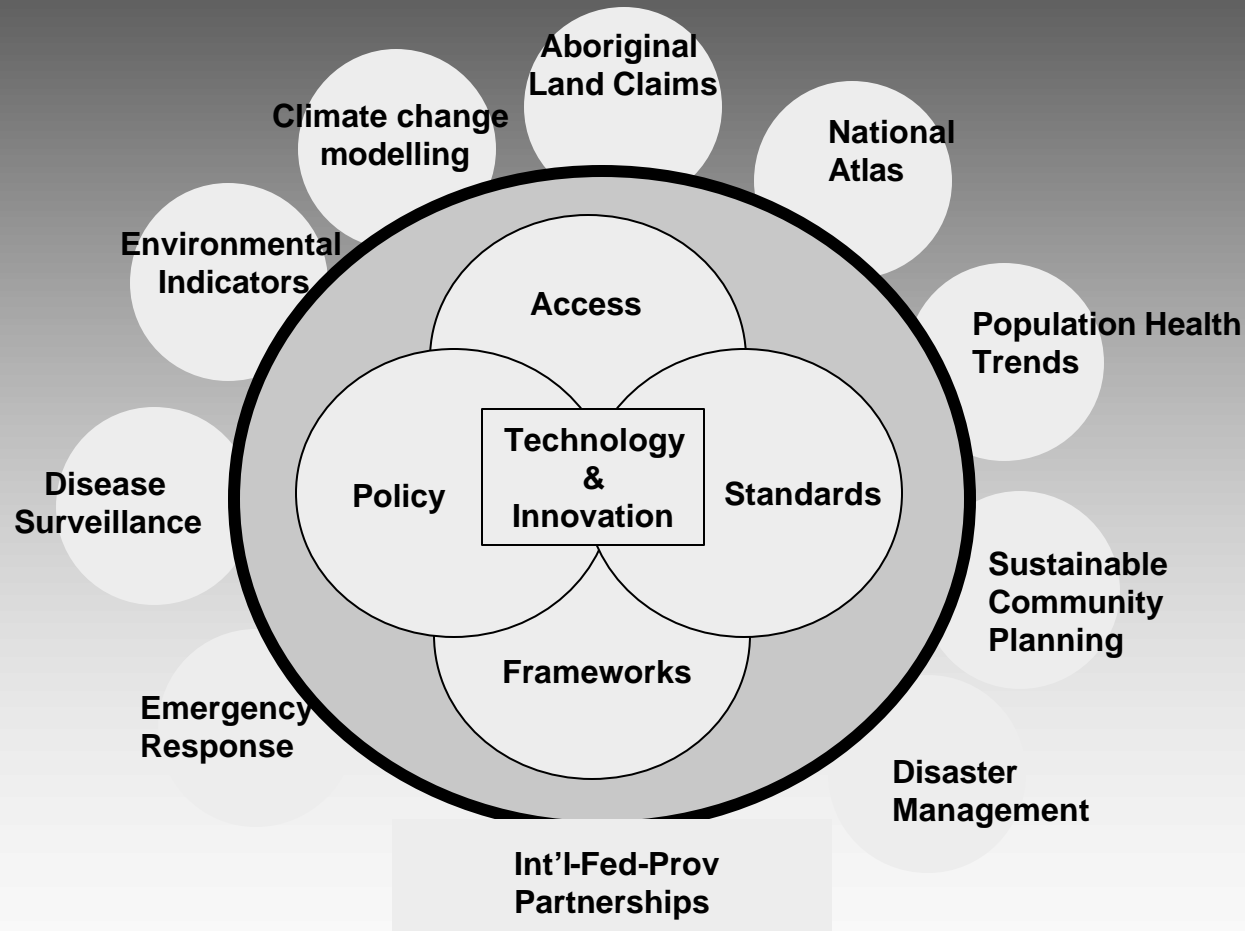
## ***GeoConnections:***

A \$60 million federal/provincial/territorial initiative launched in 1999 to build the Canadian Geospatial Data Infrastructure (CGDI) by 2004

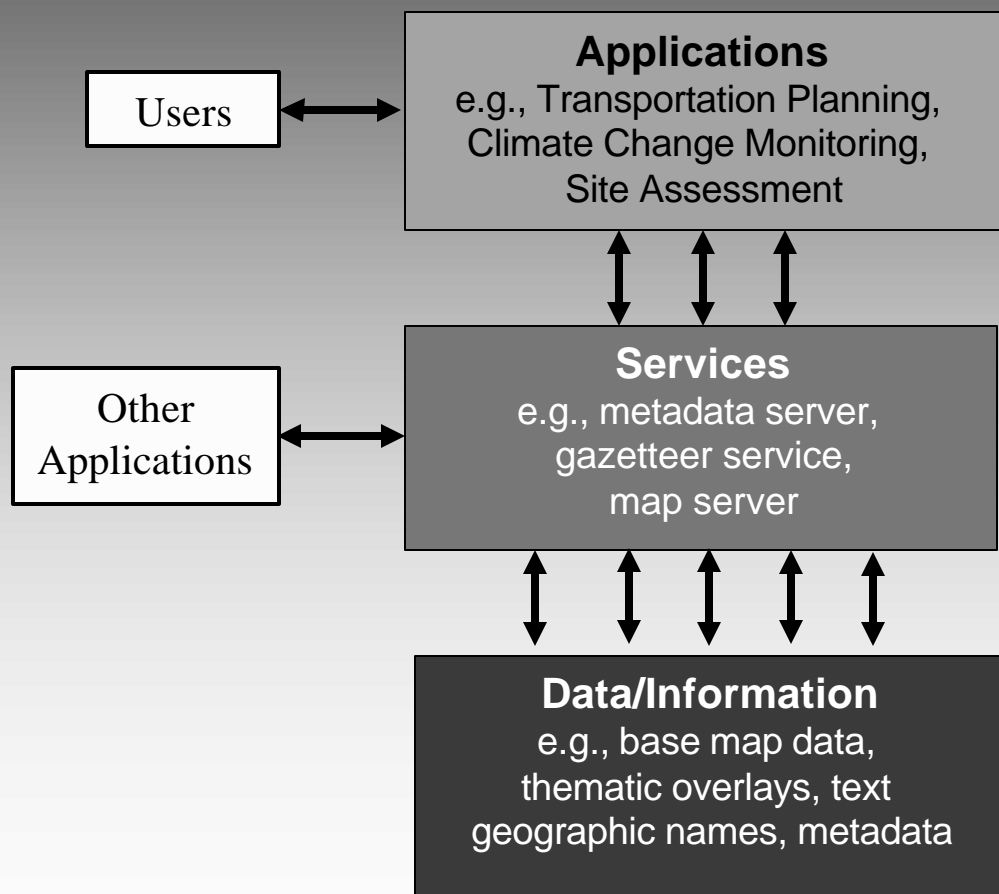
## ***Objectives:***

1. Increase the amount of geospatial data, information and services available on-line
2. Ease data integration issues through the use of data standards
3. Promote the development of innovative infrastructure technologies through private sector partnerships
4. Simplify the conditions for geospatial data use and resale

# CGDI: A single backbone



# ...Based on Web Services



For Example...

A trip planning web site that calculates the best route between two cities

Uses...

Gazetteer service,  
Road network server,  
Web mapping service

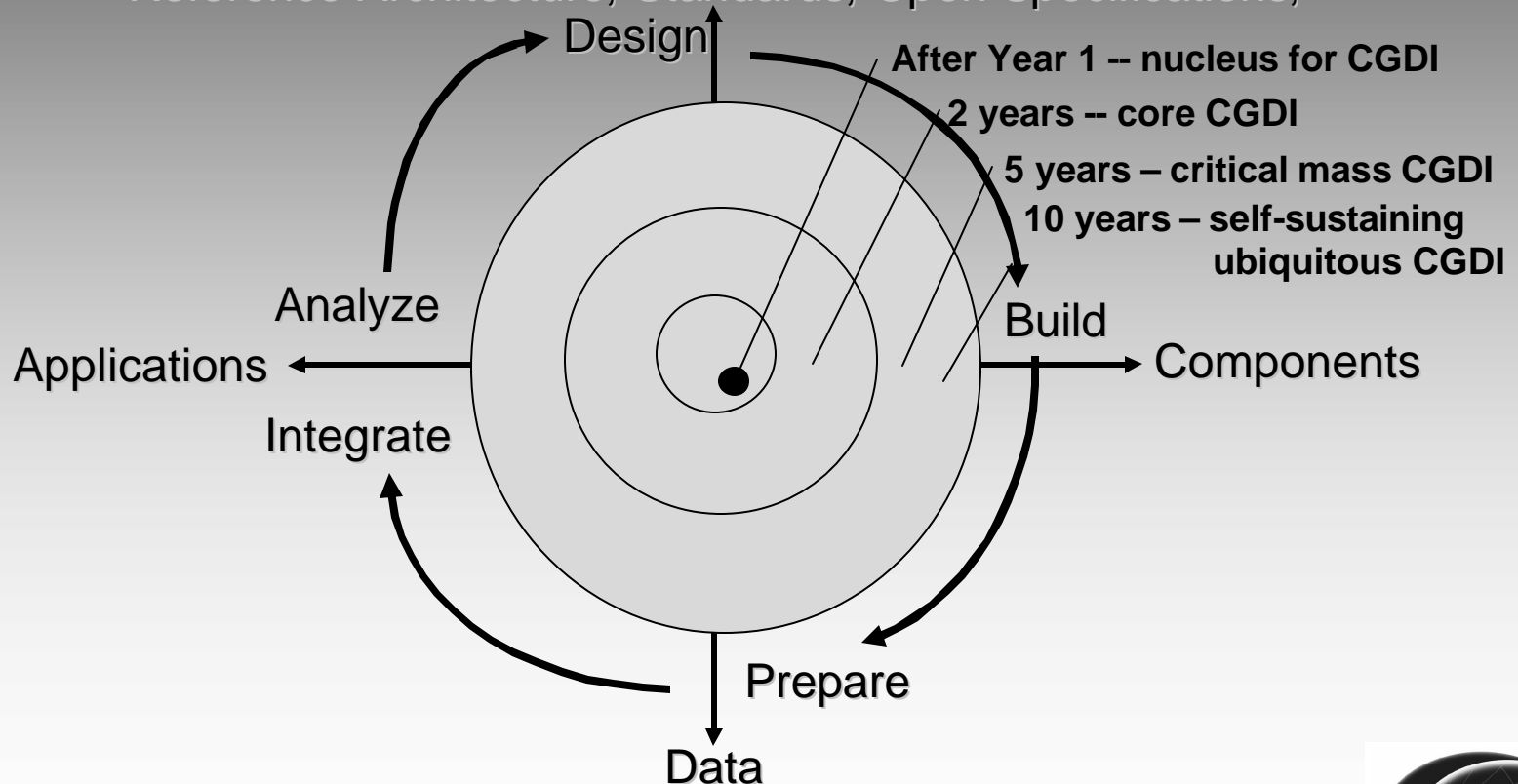
based on...

Geographical Names,  
Road network features  
Base maps

# Followed an Evolutionary Development

1. Establish a CGDI nucleus
2. Incrementally build up by pursuing opportunities along several fronts
3. Follow a spiral development approach
4. Support and deliver to Communities of Practice

Reference Architecture, Standards, Open Specifications,



# After Phase I: The Backbone is Built

- **Established the Canadian Geospatial Data Infrastructure (CGDI):** Through partnerships with industry, developed elements of the operational infrastructure such as advanced technologies and applications that increase access, sharing and use of geographic data.
- **Strengthened Federal-provincial-territorial collaboration:** Negotiated first ever Ministerial Canadian Geomatics Accord with Canadian provinces and territories; achieved common agreement and policy approach on partnership principles and to licensing data to remove policy barriers to data sharing;
- **Created foundational, standardized data framework**  
Facilitated the provision of seamless, up-to-date and maintained GeoBase framework data at no cost to users.

# ...Helping People

- **Meeting the needs of decision-makers:** Increased number of decision-makers from traditional and non-traditional sectors who are benefiting from integrating geo-info as a key tool in their operations thereby facilitating more efficient and effective decisions by and for all Canadians.
- **Empowering rural, remote and Aboriginal communities/ municipalities in Canada:** Developed capacity in over 109 communities to improve their ability to plan and make decisions towards a sustainable future through the use of modern geomatics techniques.



# ...Successful Partnerships

- **Leveraging investments and develop partnerships:** The federal government has benefited from a \$170M program based on its \$60M investment through cost-sharing partnerships with industry, academia and provinces/territories, and non-governmental agencies
- **Growing an innovative geomatics industry:** advancing innovation and growth of the high-tech geomatics sector through partnerships on Internet-applications and advanced technology development (70% of funds expended with industry = \$42M)

# Example Application: Atlas of Canada

**Natural Resources Canada / Ressources naturelles Canada**

**Canada**

[Français](#) | [Contact Us](#) | [Help](#) | [Search](#) | [Canada Site](#)  
[Home](#) | [Register](#) | [About Us](#) | [Partners](#) | [NRCan Site](#)

**The Atlas of Canada**

**Forest Fire Hotspots, 2003**

[Read Map Description](#) | [Get Statistics](#) | [Zoom In](#) | [Zoom Out](#) | Zoom to region

[Help](#) | [Print Map](#)

**Forest Fire Hotspots, 2003**

- Active
- Inactive

**Percentage of productive forest**

- < 1%
- 1% - 10%
- 10% - 25%
- 25% - 50%
- 50% - 75%
- 75% - 98%

**Populated Places**

- 1 - 4999
- 5 000 - 49 999
- 50 000 - 99 999
- 100 000 and greater
- Provincial and Territorial Capital
- National Capital

0 150 300 450 600 km

# GeoBase Portal

The screenshot displays the GeoBase Portal interface. At the top left is the 'GeoBase' logo. The top right corner shows a language selector set to 'Français'. Below the logo are buttons for 'Locate', 'Projection', 'Legend', and 'Help'. A 'Zoom Presets' section includes buttons for 1:40M, 1:10M, 1:2M, 1:250K, and 1:50K, along with a 'Quick View by province' dropdown menu. The main map area shows a portion of Ontario, Canada, with various geographical features and labels. A coordinate display shows x: 1690398 and y: 72288. A scale bar at the bottom indicates 0 to 500 km. A 'Gazetteer Service' window is open, allowing users to search for a place, postal code, or NTS map sheet. The window includes input fields and buttons for 'Locate Place', 'Locate Code', and 'Locate NTS'. The 'Gazetteer Service' window also displays the text: 'Enter the name of the place or feature that you are trying to find in the field below then click the appropriate LOCATE button.'

# GeoConnections Discovery Portal

The screenshot shows the GeoConnections Discovery Portal website in a Microsoft Internet Explorer browser window. The browser's address bar displays the URL: <http://geodiscover.cgdi.ca/gdp/index.jsp?language=en>. The website header features the "GeoConnections Discovery Portal" logo and navigation links: "Discovery Portal", "GeoConnections", "Overview", "Help/FAQ", "Feedback", and "Français". A "Canadian Geospatial Data Infrastructure" logo is also present.

The main content area is divided into several sections:

- Find...:** A search bar with a magnifying glass icon.
- Data:** Maps, satellite images, data publications and other **geospatial data** provided by Canadian and international organizations.
- Web Services:** Discover or advertise web services and related data that conform to CGDI-endorsed standards and specifications.
- Organizations:** Canadian and international organizations that provide geospatial data, services and expertise.
- Services and Resources:** Software, hardware, tools, portals, specifications, professional services, ...  
Developer resources: toolkits, servers, clients, APIs, specifications, ...  
Also see the CGDI Guide in PDF (4.5 MB) or HTML.

On the right side of the page:

- Map of the Week:** Radarsat Mosaic of Canada. Below the map is a search box with "long:" and "lat:" labels.
- On-Line Free Data:** supplied by Canadian organizations.
- Landsat 7 ETM Data:**
  - North American Archive
  - Global Data Catalogue
- What's New RSS XML:**
  - Important Message For Users Of CompuSult's MetaManager Product
  - Discovery Portal Downtime
  - Release Notes v3.2

The browser's taskbar at the bottom shows the Start button, system tray icons, and open applications: "Inbox - Microsoft Outlook", "Microsoft PowerPoint - [c...]", and "Discovery Portal - Disc...". The system clock shows "10:29 AM".

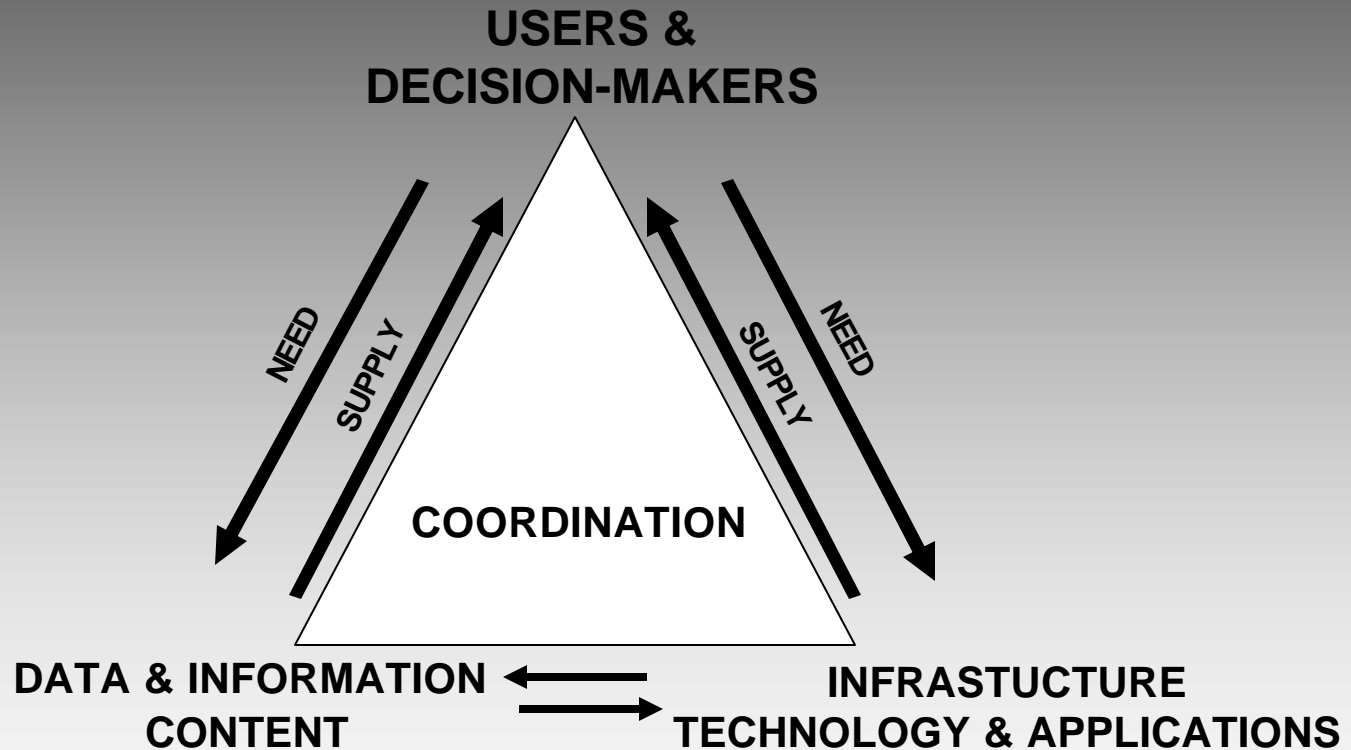
# Phase II: Building on our Success...

Now that backbone is built, we will focus on industry and government partnerships to adopt and extend the CGDI:

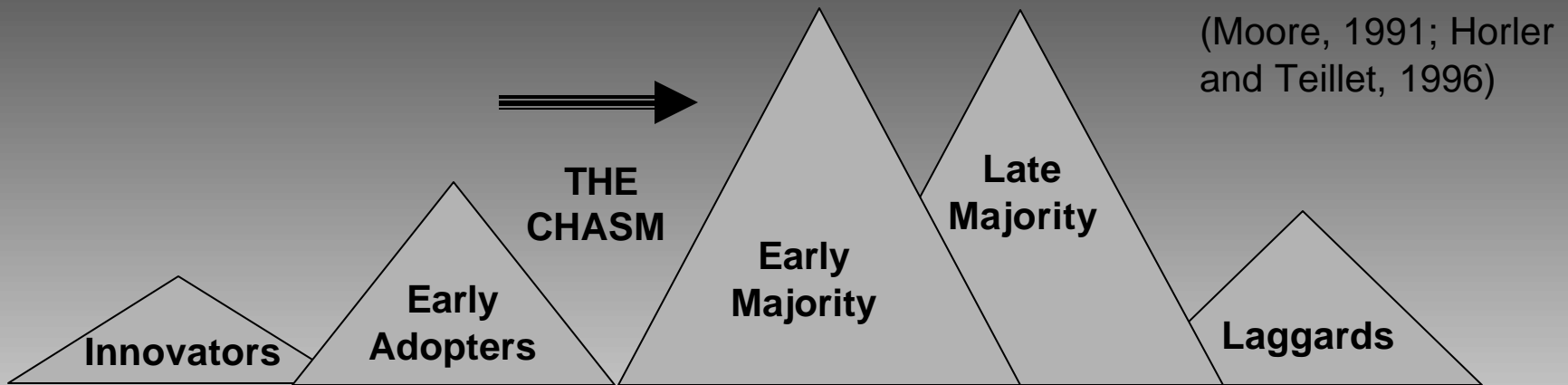
- to further meet the needs of users & decision-makers
- to address priority public issues
- to create sustainable private-public partnerships around specific solutions...

...using common geospatial infrastructure.

# Shift to User-Driven CGDI



# Innovation Diffusion Challenge: “Crossing the Chasm”



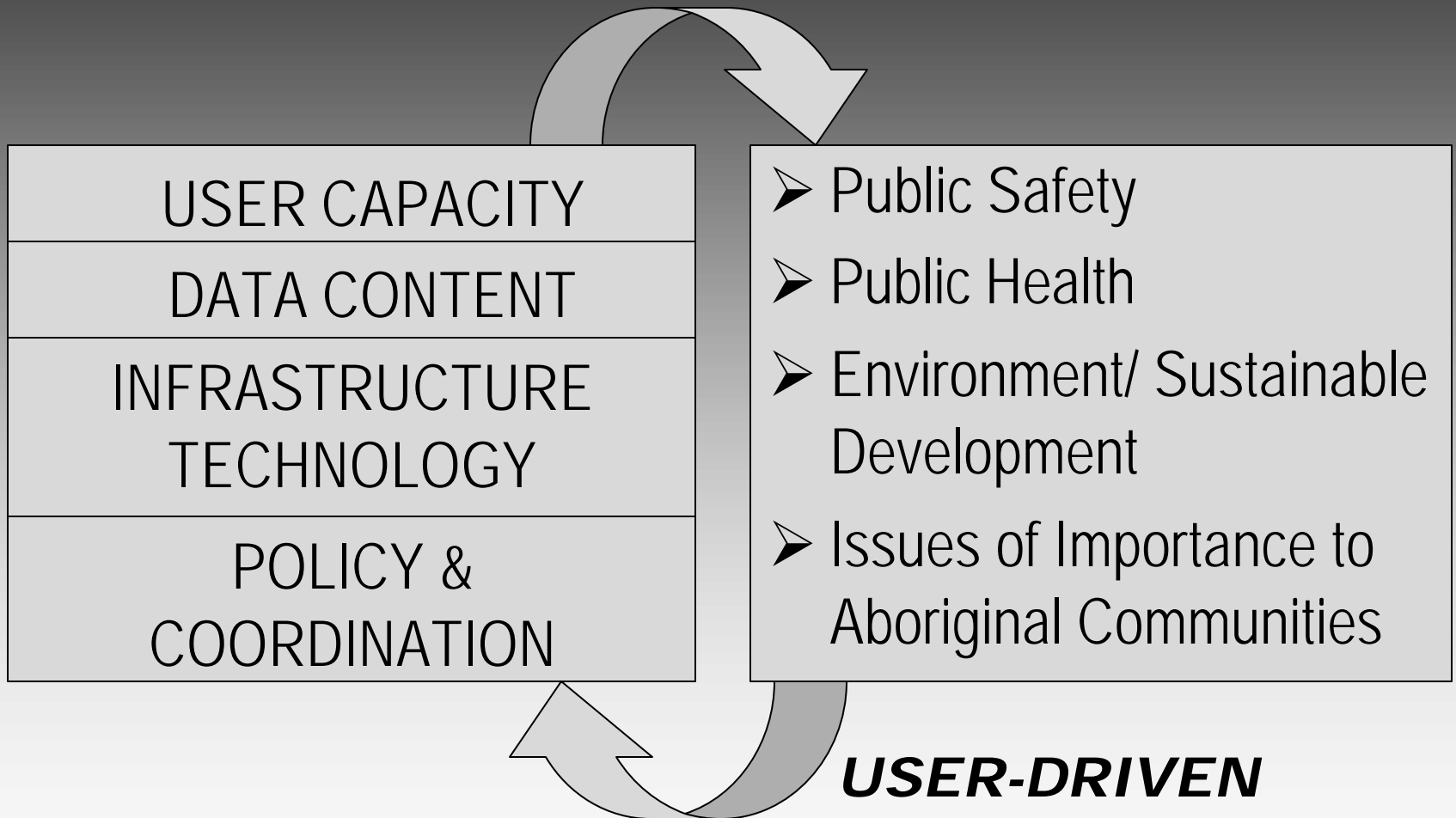
- innovators and early adopters need vision
- majorities need business plan (value proposition) to effect culture change
- laggards need guarantees

# Objectives for Next 5 Years

- Working through partner agencies, actively support decision-makers and citizens on an array of issues;
- Secure access to high quality framework data needed by these clients;
- Operate and evolve infrastructure to meet user needs (e.g. privacy, security considerations);
- Advance national geomatics policy development
- Further “operationalize” Canadian federal government collaboration through Federal Geomatics Strategy and Policy Framework



# GeoConnections Program Areas Delivering on Priority Issues



# Led through participation and “shared leadership”

- **Implemented through Advisory Committees**
  - comprised of federal, provincial, territorial government agencies
  - private sector and academia
- **Collective leadership among the participants**
  - securing matching investments and partnerships/participation
  - developing implementation projects
  - finding common interests and leverage
- **Responds to need for horizontal approach**
  - recognizes multi-participants and activities across different user communities

# Lessons learned over 5 years

- Criticality of partnerships
  - cost sharing tests partners' commitment
- Iterative development – operational cycle
  - adoption of recognized standards
- Institution/capacity building – underestimated
- Supportive policy (need for willingness to change)
- Delivering real benefits

# Criticality of Leadership

- Remains important to set direction and win support
  - champion/political champion
- Particular skill sets needed to manage more diverse partnerships
  - building trust
- Management boards (boards of directors) and advisory panels
  - > means to developing consensus
  - > sharing risk, reward and decisions

# Value Proposition

- informed decision making: easy access to current information, knowledge and expertise.
- efficiency: reducing duplication of effort on data collection, common policy and national standards, leverage of web services that support partnerships
- usability: governments, private sector, and individuals need a reliable "infrastructure" to make use of resources
- relevance: incredible potential for the use of geomatics and geographic
- global leadership: international markets and commercial opportunities as geo knowledge becomes common place

# GeoConnections Secretariat

*...Building the Canadian Geospatial  
Data Infrastructure...*

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