

# ***Innovating to Increase the Impact of Earth Observation (EO) & Geomatics in Canada***

**Natural Resources Canada**

February 25, 2014

**Prashant Shukle, Director General**

**Canada Centre for Mapping and Earth Observation**



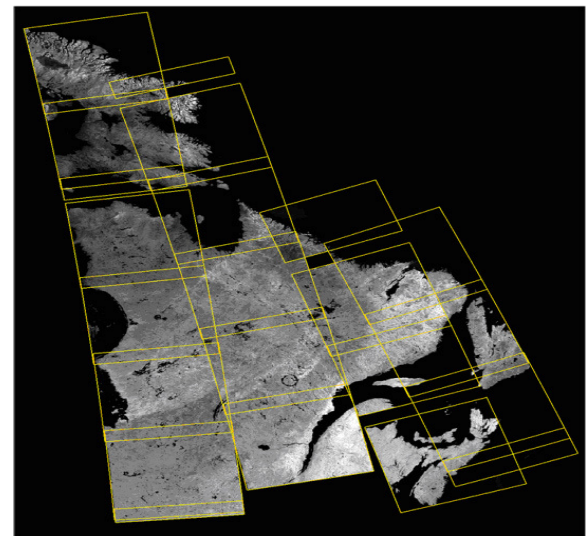
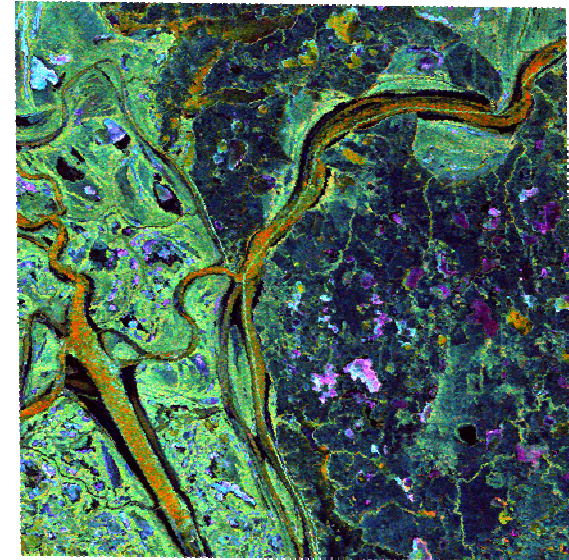
Natural Resources  
Canada

Ressources naturelles  
Canada

Canada 

# Presentation Outline

- **The Satellite to Mobile Continuum**
  - Canada Centre for Mapping and Earth Observation (CCMEO)
- **NRCan's Leadership Role in Geospatial Science & Technology**
  - Broader NRCan use of EO & Geomatics
- **Advancing Coordination and Cooperation in EO & Geomatics**
  - Federal level and beyond



# Canada Centre for Mapping and Earth Observation

- Created: June 21, 2013
- Results from merger of:
  - Canada Centre for Remote Sensing (CCRS)
  - Mapping Information Branch (MIB)
- Two main drivers for the merger are the convergence of technologies in the mapping and remote sensing areas and the convergence in the way CCRS and MIB deliver their business.



Natural Resources  
Canada

Ressources naturelles  
Canada



# From Satellite to Mobile: Integrating EO and Geomatics into Federal Operations, Reporting and Decision Making

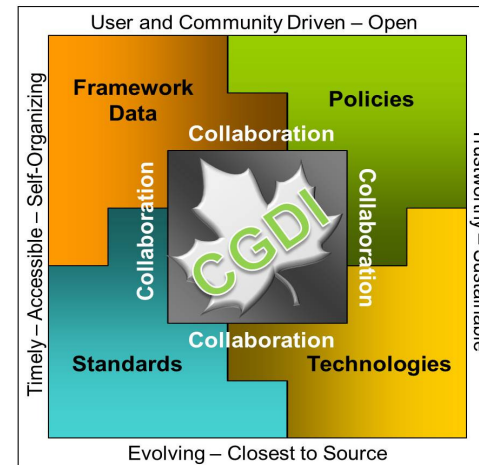


## Reception

## Data

## Information

## Application



## Online Emergency Tools

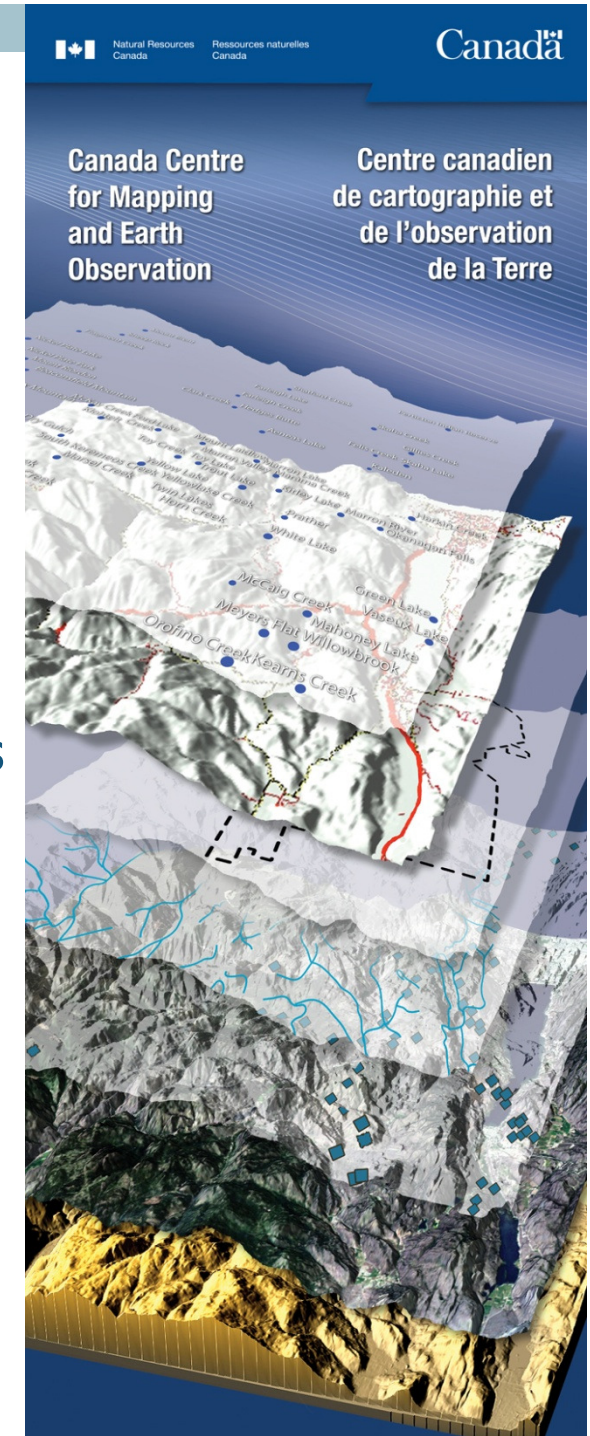


## Canada's Real-Time Disaster Map



# NRCan's Leadership Role in EO & Geomatics

- Enabling the satellite-mobile continuum
- Data reception/acquisition and archives
  - Science to add value and generate higher level information
  - Geoanalytics supported by data integration and mining
  - Web portal and services for discovery and access
  - Coordination, Standards, Interoperability and Secretariat
- Supporting NRCan and other department priorities with EO
  - Responsible Resource Development
  - Public Safety and Security
  - Essential Geographic Information

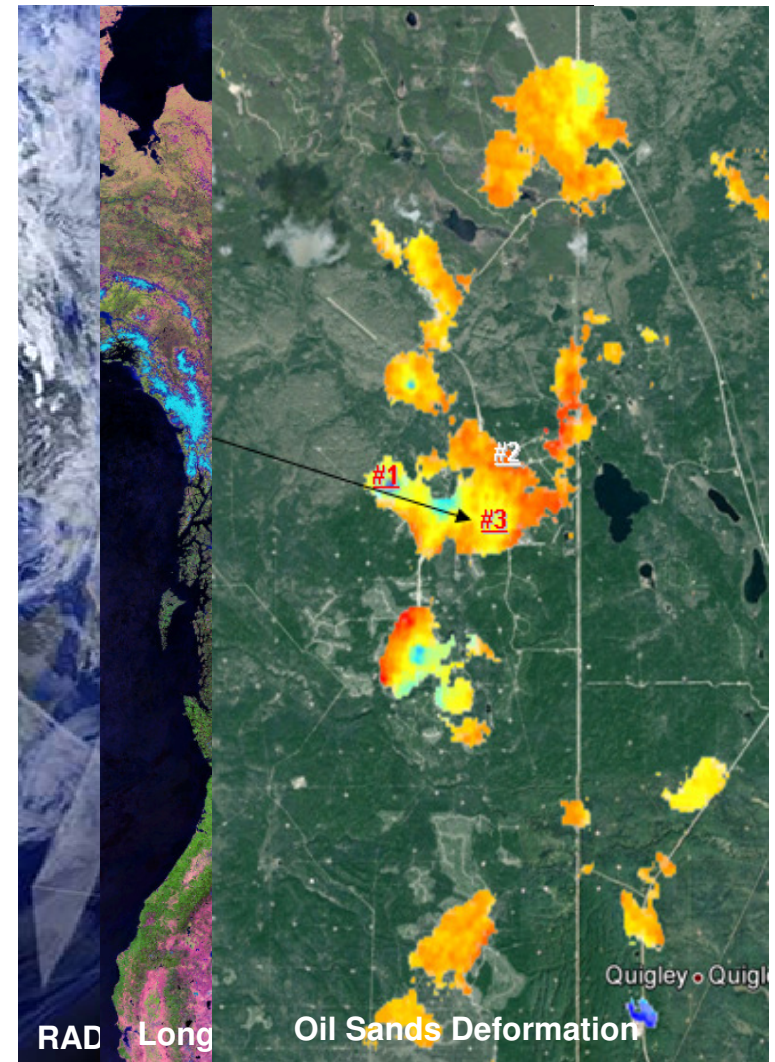


Natural Resources  
Canada

Ressources naturelles  
Canada

# Geospatial Science and Technology

- Developing core, upstream EO science, methods and tools for enhanced EO data quality
- Preparing Canada to use crucial new satellites (e.g. RCM, Sentinel, Landsat-8, ALOS-2)
- Developing value-added EO data/products to support clients in GoC and beyond (build once ~ use many times) – LTSDRs
- Targeted applications development, with operational objectives, focusing on key natural resources (i.e. oil sands) and the North.

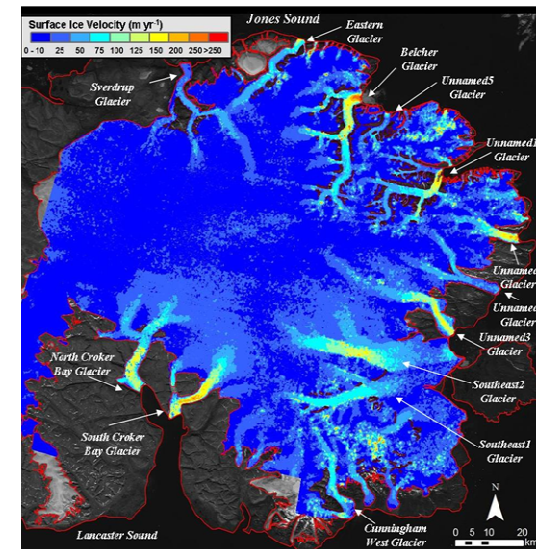




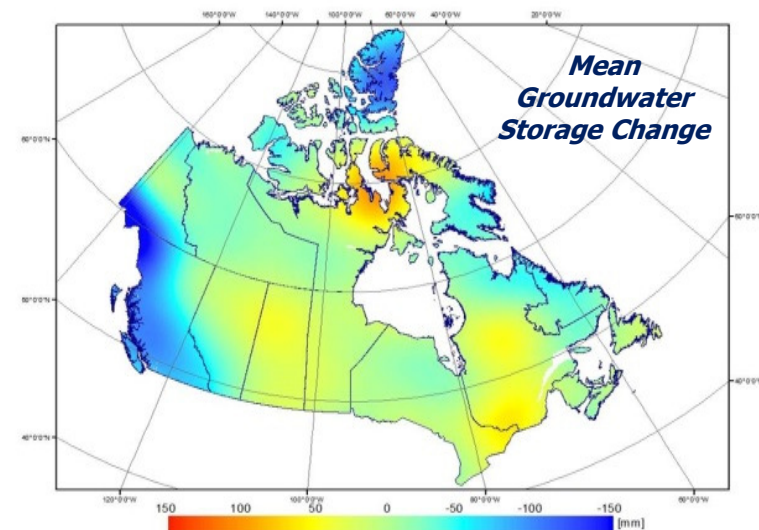
# Geospatial Science and Technology

EO technology plays an important role in earth science at NRCan:

- Estimating continental-scale groundwater recharge rates
- Monitoring mass changes in Arctic ice caps
- Measuring permafrost-related ground displacement
- Remote predictive mapping in Canada's north

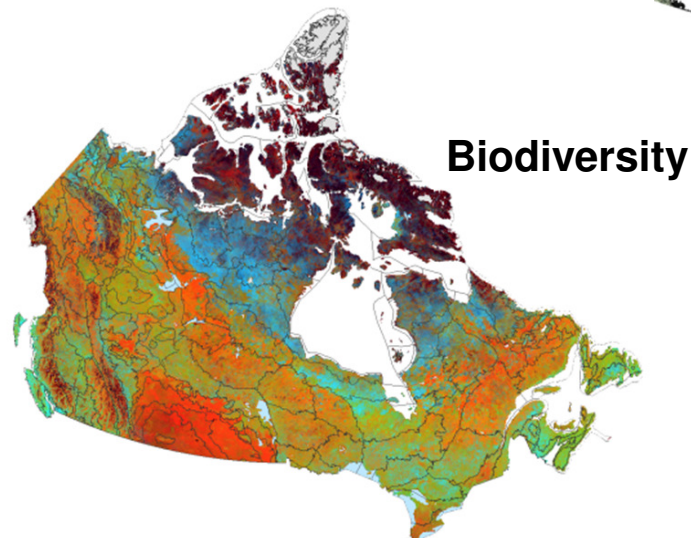
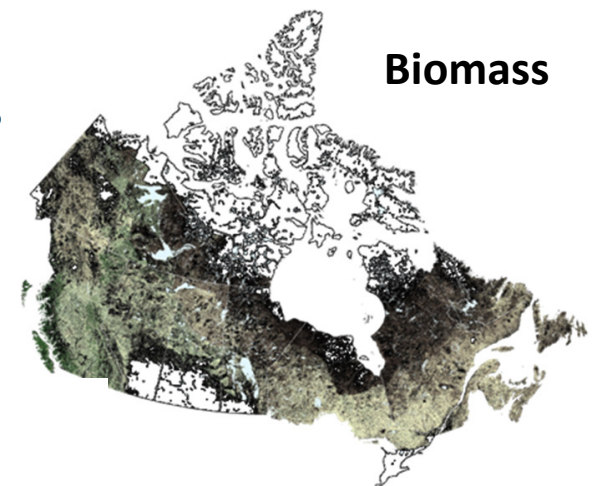


*Surface Ice Velocity Devon Ice Cap*



# Geospatial Science and Technology

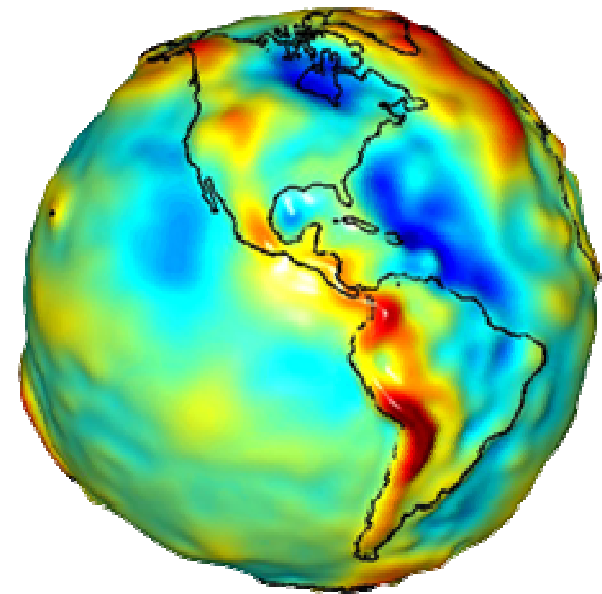
- Development of applications supporting Canada's forests and their sustainability:
  - National forest inventory
  - Natural and anthropogenic disturbances
  - Biodiversity
  - Forest change
  - Forest fires
  - Climate change





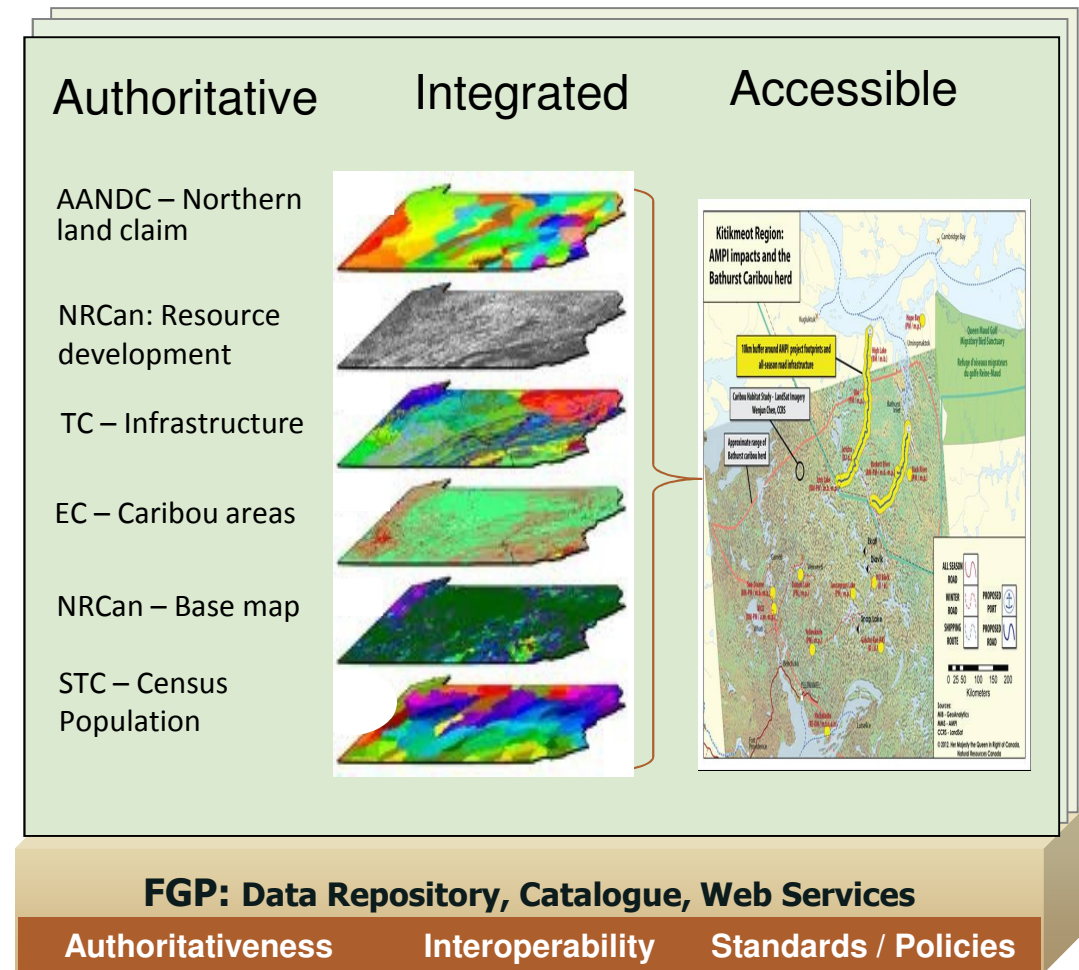
# Geospatial Science and Technology

- Global navigation satellite system (GNSS) products for efficient surveying and precise positioning.
- Formal standards for “heights above sea level” now supported by Satellite Gravimetry information.
- Dynamics of planet earth using geodetic techniques (gravimetry, GNSS).
- NRCan support and leadership of Federal GNSS Coordination Board enables unified Government of Canada response to issues.



# The Federal Geospatial Platform (FGP):

- Comprehensive collection and sharing of **authoritative** data
- Common web-based environment enabling data **integration, analysis, and visualization** to support informed decision-making
- Shared governance and management of geospatial assets and tools that are **built once and reused many times**
- Underpinned by operational **standards and policies**



...supporting decision-making within and across departments, and among stakeholders, resulting in improved services and value to Canadians



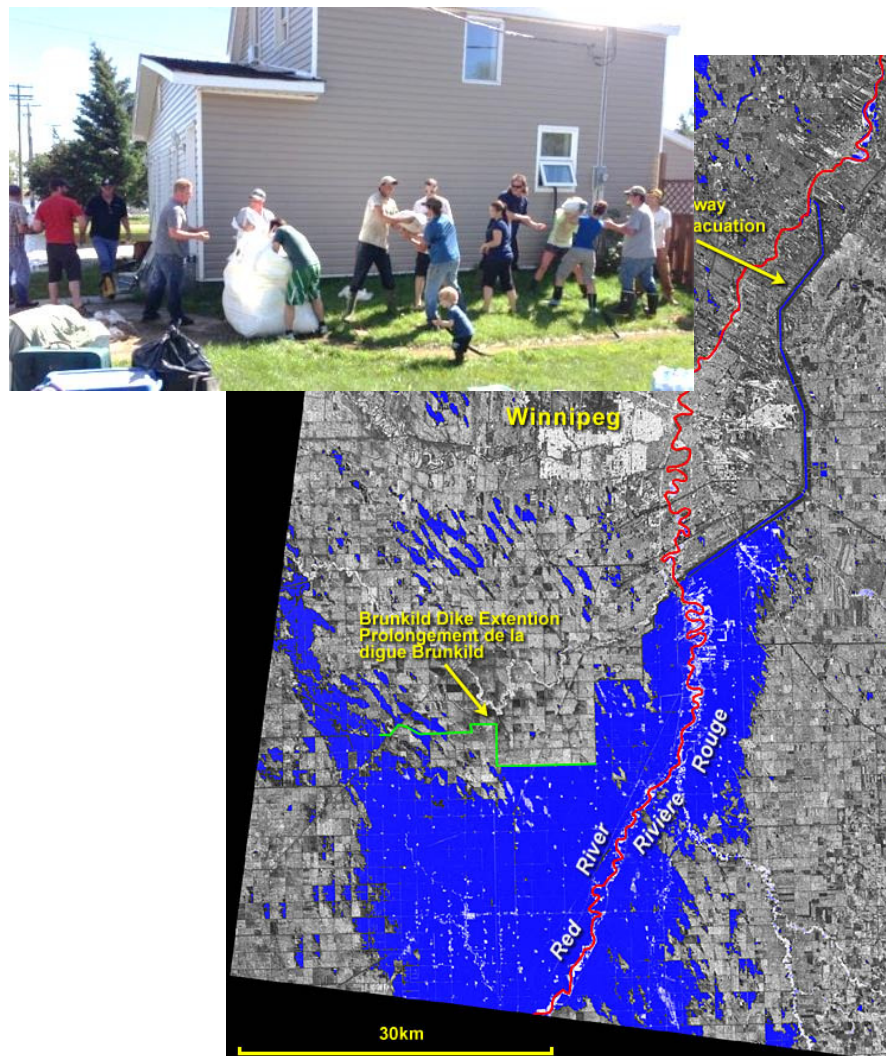
Natural Resources  
Canada

Ressources naturelles  
Canada

Canada

# Operationalizing for Service

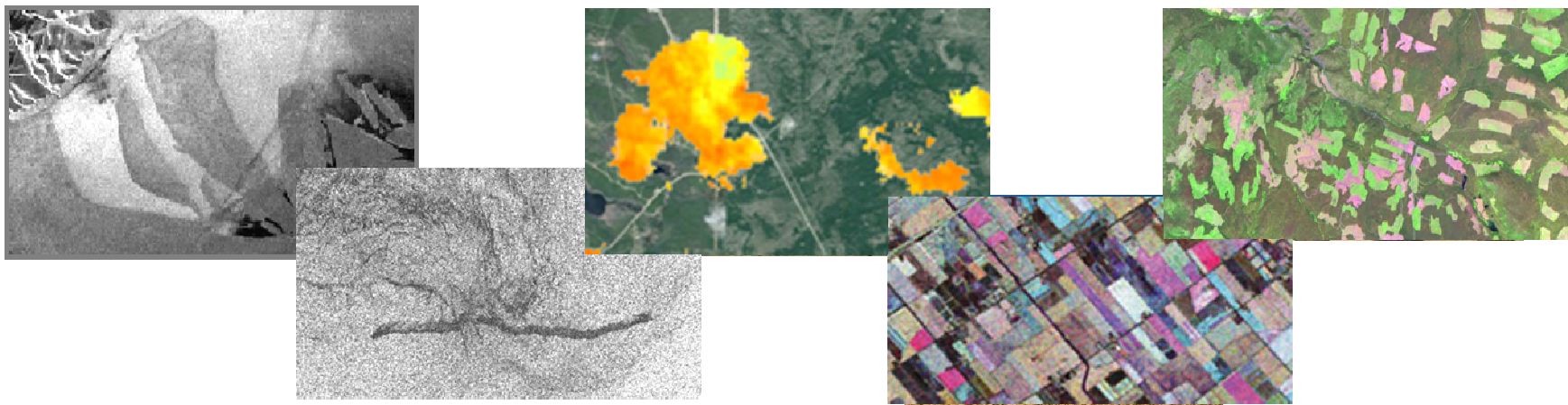
- Moving key CCMEO science and other innovations into operations
- NRCan's Emergency Geomatic Services: Near-real time flood mapping in support of emergency response to seasonal flooding in Canada



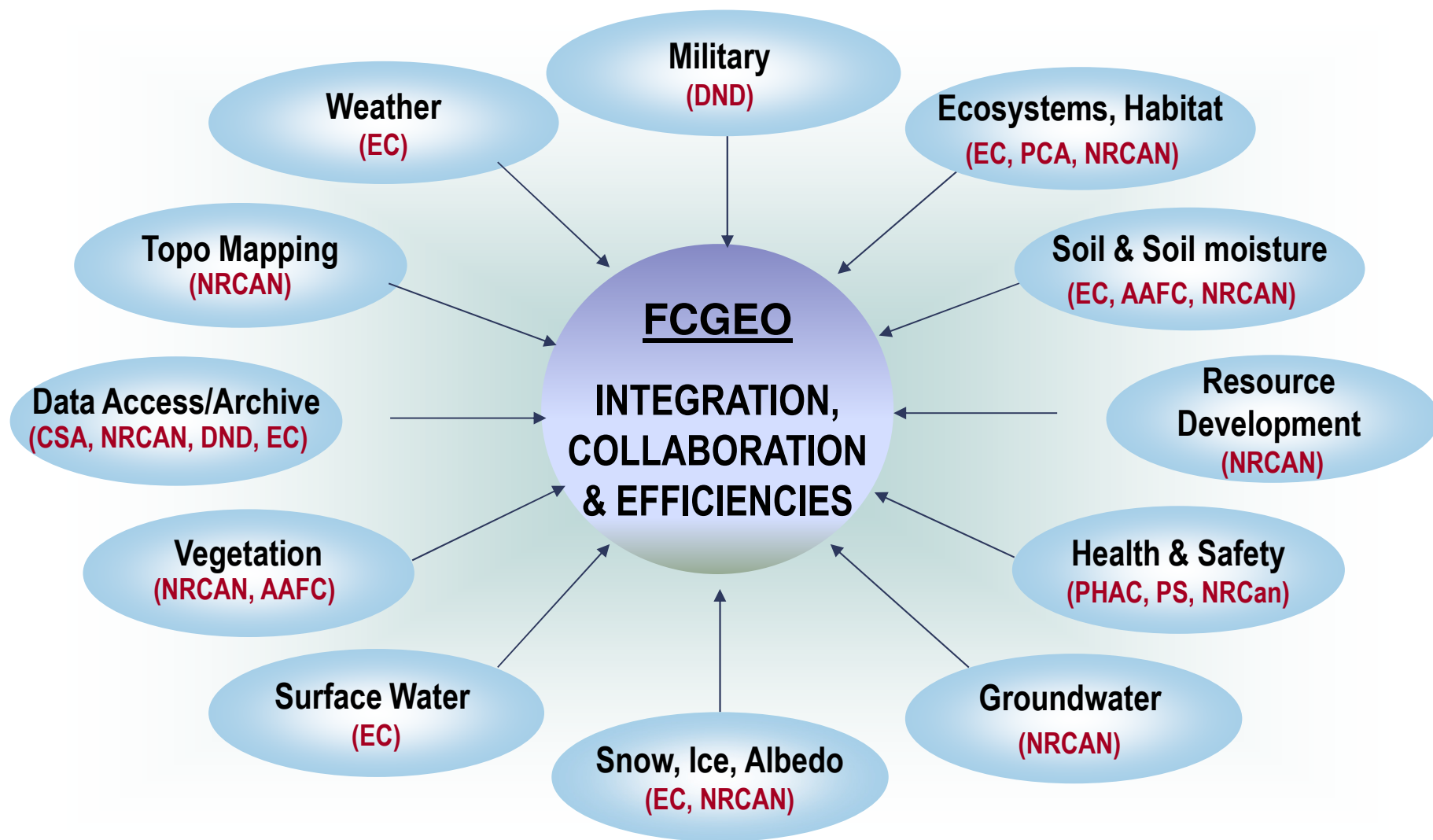


# Advancing Coordination and Cooperation in EO & Geomatics – Bringing It Back to Earth

- Turning space data into relevant geospatial information and sharing it effectively with users, from large departments to small communities, maximizes the value of Canada's investment in space
- Important to focus on improving horizontal integration (EO and geomatics), vertical integration (satellites to mobiles) and efficiencies (build once – use many times) through increased collaboration and coordination within the GoC and with other orders of government.



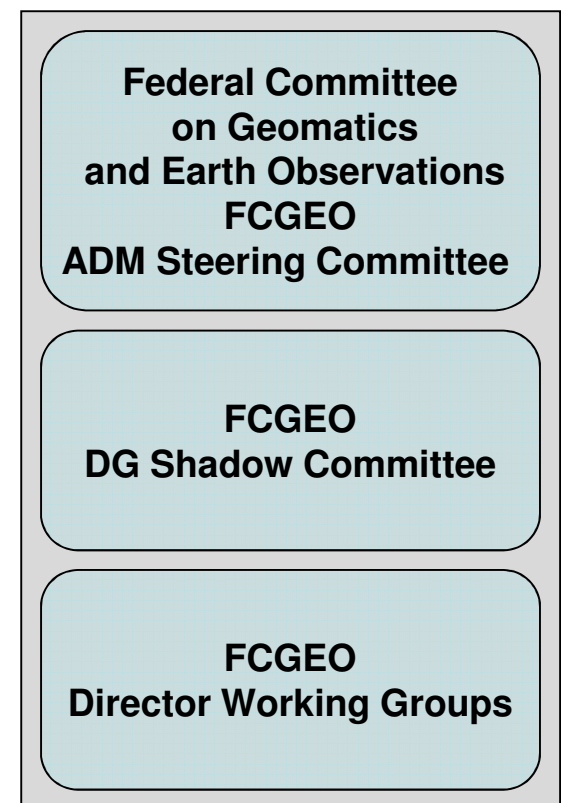
# Advancing Coordination and Cooperation in EO & Geomatics



# FCGEO

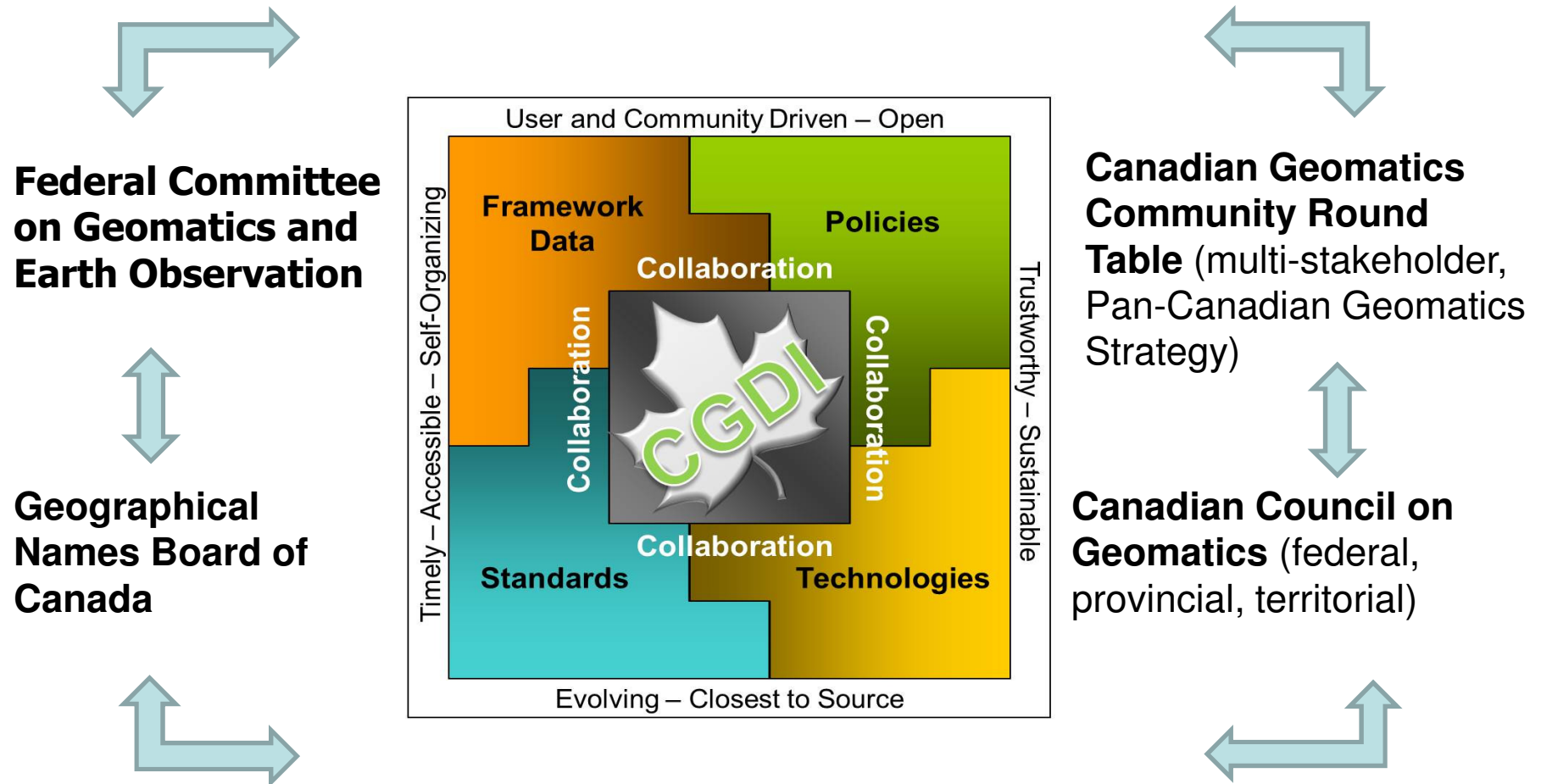
Consolidates IACG and CGEO governance and streamlines their membership and mandates into a single committee to: **FCGEO**

- provide proactive, whole-of-government leadership in establishing priorities for geomatics and Earth observations and their application to support of government priorities, decision-making, and Canada's competitive advantage
- to collectively enhance the responsiveness, efficiency and sustainability of the federal geomatics and Earth observations infrastructure





# Canadian Geospatial Data Infrastructure (CGDI):



*... fostering innovation through collaboration of 21 federal departments, 13 provincial and territorial partners, private and academic sector partners*

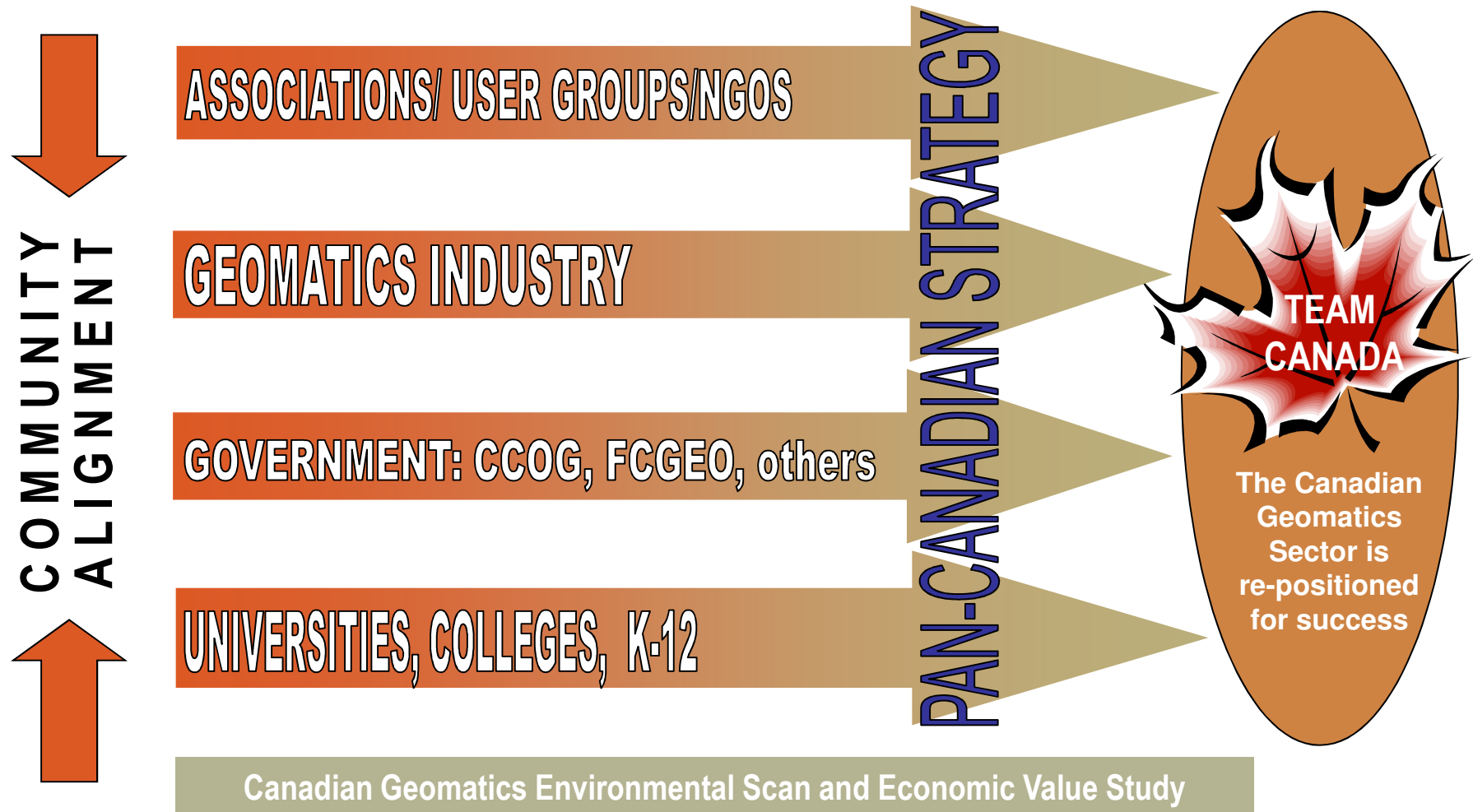


Natural Resources  
Canada

Ressources naturelles  
Canada

Canada

# Canadian Geomatics Community Round Table



Natural Resources  
Canada

Ressources naturelles  
Canada

Canada

# Satellite Ground Infrastructure: Revitalizing to Serve our Stakeholders

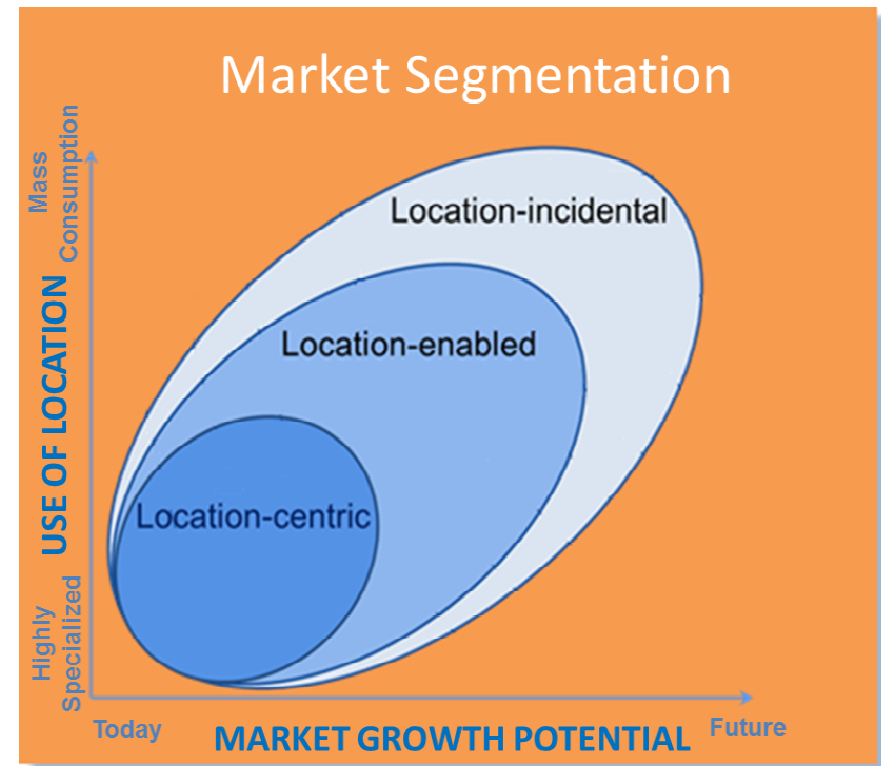
- Economic Action Plan 2012 announced NRCan infrastructure revitalization
  - 2 in Prince Albert, Saskatchewan
  - 1 in Gatineau, Québec
  - 1 in Inuvik, NWT
- The ISSF is being developed in collaboration with stakeholders:
  - accessing EO data for public good
  - ensuring commercial opportunities can be pursued, and
  - enabling local economic benefits and capacity building.





# Value Study on Canadian Economy

- State and value of the geomatics sector in Canada
- Value of open geospatial information and its contribution to innovation, productivity and competitiveness
- New and alternative roles for government, industry and academia
- ~20 case studies, including
  - Safety & Security
  - Agriculture
  - Renewable resources
  - Transportation
  - Health



# Geospatial Commercialization Challenges

- Where in the satellite to mobile continuum does commercialization best fit? Where along the value chain are the strategic partnerships with governments?
- What is the appropriate balance between open data and commercial data models? Which model better positions both users and a broad private sector to succeed? What have we learned?
- How do we ensure integration, sharing and long-term stewardship is enabled and not hindered?



# Thank-You

# Questions?



Natural Resources  
Canada

Ressources naturelles  
Canada



Natural Resources  
Canada

Ressources naturelles  
Canada

Canada

Canada Centre for Mapping  
and Earth Observation

Centre canadien de cartographie  
et de l'observation de la Terre

