CGDI Operational Policies Facilitate the Access, Use, and Sharing of Canadian Geospatial Information

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Abstract

This paper presents the role that geospatial operational policies play in overcoming obstacles to accessing and using geospatial information via the Canadian Geospatial Data Infrastructure (CGDI). Geospatial operational policies are defined as analyses, guidelines, directives and policies that direct organizations in their day-to-day business. They relate to quality, consistency, accountability and requirements of geospatial information and address topics related to the life cycle of geospatial data (i.e., collection, management, dissemination and use). Over the past several years, GeoConnections has led research and consultations to identify and fill geospatial operational policies gaps across a range of issues. Key topics in geospatial operational policies will be described and resulting geospatial operational policy guidelines and best practices will be presented for several topics including sensitive information and privacy.

Background

Canadian Geospatial Data Infrastructure (CGDI)
The CGDI helps Canadians gain new perspectives into social, economic, and environmental issues, by providing an online network of resources that improves the sharing, use and integration of information tied to geographic locations in Canada. More specifically, the CGDI is the convergence of policies, standards, technologies, and framework data necessary to harmonize all of Canada's location-based information. Consequently, the CGDI reduces barriers to using geospatial information so that Canadians can discover, access, visualize, integrate, apply, and share quality location-based information and make effective decisions.

GeoConnections
The GeoConnections program is a national initiative, led by Natural Resources Canada, designed to facilitate access to and use of authoritative geospatial information in Canada. In its third mandate (2010-2015), GeoConnections will complete the CGDI by ensuring that the infrastructure is comprehensive, usable, high-performing, relevant and poised for future growth and development. GeoConnections supports the integration and use of the CGDI and is working to advance the geospatial operational policies needed to complete the CGDI.

Relevance

"More and more, geospatial information is becoming embedded in private and public sectors activities, as well as in the everyday lives of Canadians. Among the factors contributing to the growing use of geospatial data are a rapidly expanding world market for innovative geomatics products and services, and increasing evidence of the positive impact that geospatial data has on the economy and the quality of public services.

Although technology has removed many of the technical barriers to sharing geospatial data, gaps in geospatial operational policies were identified to address the demands of a changing environment. New geospatial operational policy guidelines and best practices on key topics (see below) are needed to promote data exchange and integration, and to ensure that social, economic, and environmental decisions are taken with the benefit of the best available information." (GCPedia, 2010).

Key topics that impact geospatial operational policies:
- Security
- Privacy/confidentiality/sensitive information
- Mobile & location-based services
- Volunteered geographic information/crowd-sourcing
- Intellectual property/copyright
- Digital rights management
- Licensing
- Archiving and preservation
- Open data
- Ethical legal practices
- Liability
- High resolution imagery
- Web 2.0/social networking
- Mass market geomatics
- Data integration
- Data quality

GeoConnections is working to advance the geospatial operational policies needed to complete the CGDI. The development of tools and resources such as guidelines and best practices will educate and help organizations integrate the CGDI into their business practices.

Methods and Data

GeoConnections contracted private firms to respond to these geospatial operational policy needs. Among others, AMEC Earth and Environmental was contracted to conduct research and stakeholder consultation (surveys and workshops) in supported of the development of best practices related to sensitive geospatial information (GeoConnections, 2010 a). Also, CanadaPrivacy Services Inc. was contracted to conduct research and consult with the Federal Government Geospatial Privacy Advisory Group

to examine the interface between privacy and geospatial information in the federal public sector in Canada.

Results

"With advances in information communications technologies and associated geospatial capabilities, concerns arise in regards to the ease of sharing, layering of multiple geo-referenced datasets and viewing geospatial data and images." (GCPedia, 2010).

Sensitive Information:

Sensitive information is data and information products which contain confidential details. **Challenge**: How to protect sensitive information while sharing geospatial data? **Solution**: With geospatial operational policies.

Best Practices on Sharing Sensitive Environmental Geospatial Data

This guide highlights issues and concepts associated with the protecting, sharing and utilization of sensitive geospatial data related to the environment and sustainable development; provides frameworks for assessing data sensitivity; and describes potential mechanisms for facilitating the sharing of data, including online transactions (GeoConnections, 2010 a). These best practices provide the reader with sufficient insight and links to resources in order to assist them in implementing a consistent and documented approach to managing and sharing sensitive environmental geospatial data within their organization.

http://www.geoconnections.org/publications/Key_documents/Sensitive_Env_Geo_Data_Guide_EN_v1.pdf

How to categorize geospatial data as sensitive data

Data can generally be categorized as sensitive geospatial data if it meets any of the following criteria:

1. ***Legislation/Policies/Permits*** – the data is identified by legislation as requiring safeguarding;

2. ***Confidentiality*** – the data is considered confidential by an organization or its use can be economically detrimental to a commercial interest;

3. ***Natural Resource Protection*** – the use of the information can result in the degradation of an environmentally significant site or resource;

4. ***Cultural Protection*** – the use of the information can result in the degradation of an culturally significant site or resource; or

5. ***Safety and Security*** – the information can be used to endanger public health and safety.

Best Practices when working with sensitive data

The Best Practices identify basic principles that can be applied to assessing sensitive geospatial datasets in order to classify sensitivity consistently:

1. Unless the dataset is classified as sensitive it can be provided free of restrictions;
2. Information can not be considered sensitive if it is readily available through other sources or if it is not unique;
3. The Data Custodian of the information is the only agency that can determine whether a geospatial dataset is to be classified as sensitive;
4. Data Consumers of sensitive geospatial datasets must honour the restrictions accompanying the information in the form of an agreement, license and/or metadata; and
5. Organizations should document and openly publish their process, criteria and decisions.

Privacy

For the Office of the Privacy Commissioner of Canada (OPCC), privacy means "...the right to control access to one's person and information about one's self. The right to privacy means that individuals get to decide what and how much information to give up, to whom it is given, and for what uses." (GeoConnections, 2010 b). ***Challenge*** : How to protect the privacy of all individuals in Canada? ***Solution***: With geospatial operational policies.

Geospatial Privacy Awareness and Risk Management Guide for Federal Agencies (to be published in 2011)

This guide is intended to provide officials of federal government agencies with assistance in making decisions related to the collection, use, disclosure and retention/disposition of geospatial personal information (GeoConnections, 2010 b). While directed to the federal public sector, it is intended that the Guide be as general as possible so that it will be relevant to, and can be of utility to, the public, private, non-governmental organization ("NGO") and academic sectors.

Guidelines, including the *Seven "C's" of Geospatial Privacy*, for identifying and mitigating privacy-related risks and issues arising from the collection, use, retention, disclosure and disposition of personally identifiable geospatial information were developed. The Seven "Cs" include:

- **CHARACTERIZATION**: Data as personal or non-personal information.
- **CONTEXT**: A direct and important impact with privacy law and policy.
- **CONSULTATION**: When in doubt consult!

- **CONSISTENCY**: Each federal organization should make a concerted effort to ensure that it adopts a consistent approach to dealings with potentially identifiable geospatial information.
- **CUMULATIVE**: Geospatial data elements that are not identifiable when considered individually may become identifiable when combined with other data elements.
- **CAUTION**: "When in doubt, don't" is an appropriate initial approach to the issue of whether individual elements of geospatial data should be collected, used or released to third parties.
- **CONSTRAINT**: When disseminating either identifiable or de-identified information to third parties, be sure to consider the merits of restricting the data recipient's rights via contract.

Conclusions

Geospatial operational policy guidelines and best practices on key topics related to the life cycle of geospatial data (i.e., collection, management, dissemination and use) are needed to promote data exchange and integration, and to ensure that social, economic, and environmental decisions are taken with the benefit of the best available information. These geospatial operational policies are helping organizations in their day-to-day business to overcome obstacles to accessing and using geospatial information.

References

GCPedia (2010). Geospatial Policy Solutions for Canada, http://www.gcpedia.gc.ca/wiki/Geospatial_Policy_Solutions_for_Canada.

GeoConnections (2011). Advancing the operational policies and best practices required by organizations developing, contributing to and using the Canadian Geospatial Data Infrastructure, (internal document), 14 pages.

GeoConnections (2010 a). Best Practices for Sharing Sensitive Environmental Geospatial Data, http://www.geoconnections.org/publications/Key_documents/Sensitive_Env_Geo_Data_Guide_EN_v1.pdf, 74 pages.

GeoConnections (2010 b). Geospatial Privacy Awareness and Risk Management Guide for Federal Agencies, to be published in 2011 (see www.geoconnections.org), 66 pages.