

**POLICIES AND PRINCIPLES ON ACCESS TO AND
REUSE OF PUBLIC SECTOR INFORMATION: a review of
the literature in Australia and selected jurisdictions**

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with assistance from

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[This is an ongoing project which will seek to expand on this version of the Literature Review]

CONTENTS

Chapter 1: Australia

Chapter 2: New Zealand

Chapter 3: International

Chapter 4: Europe, United Kingdom and Ireland

Chapter 5: The United States of America

Chapter 6: Canada

Chapter 7: Asia

Index

Chapter 6: Canada	4
Introduction	4
Copyright Act 1985	5
“Blueprint for Renewing Government Services Using Information Technology”, Canadian Government (1994)	5
“Canadian Geospatial Data Infrastructure (CGDI) - Geospatial Information for the Knowledge Economy”, Jeff Labonte, Mark Corey, and Tim Evangelatos, Geomatica (1998)	5
“Canadian Geospatial Data Policy Study”, KPMG Consulting Inc. for GeoConnections Policy Advisory Node (2001)	7
“Canadian Geospatial Data Infrastructure Target Vision, Version 1”, CGDI Architecture Working Group (2001) and “Canadian Geospatial Data Infrastructure (CGDI) Roadmap: Achieving the Vision of the CGDI”, GeoConnections (2005)	12
“Spatial Data Infrastructure Funding Models: A necessity for the success of SDIs in Emerging Countries”, Garfield Giff and David Coleman (2002)	13
“Data Policy”, Athena Global (April 2004)	14
“Management of Government Information Policy”, Canadian Government (2003)	15
GeoConnections Canada	16
“Policy Solutions for Enhancing Geospatial Data Use”, GeoConnections Policy Advisory Node (2002)	18
“Archiving, Management and Preservation of Geospatial Data: Summary Report and Recommendations”, GeoConnections Policy Advisory Node (2005)	19
“The Dissemination of Government Geographic Data in Canada: Guide to Best Practices”, Canadian Department of Justice (T Werschler and J Rancourt) (Version 1.2) (2005)	20
“The Dissemination of Government Geographic Data in Canada: Guide to Best Practices”, GeoConnections Canada (Version 2) (2008)	22
GeoBase and GeoGratis	24
GeoBase	25
GeoBase Unrestricted Use Licence (2006)	25
GeoBase National Hydro Network	28
GeoGratis	28
“The Impact of Information Policy: Measuring the Effects of the Commercialisation of Canadian Government Statistics”, Kirsti Nilsen (2001)	29
“Economic Theory as it Applies to Statistics Canada: A Review of the Literature”, Kirsti Nilsen (2007)	29
“Canadian National Consultation on Access to Scientific Research Data”, Michael Sabourin and Bernard Dumouchel, Data Science Journal (2007)	31
Bibliography	33
Books and reports	33
Articles	34
Conference Papers	34
Licensing Agreements	34
Websites	34
Abbreviations and Acronyms	36

Chapter 6: Canada

Introduction

Canada, like the United States and Australia, has a federal system of government. Unlike the United States and Australia, however, Canada has historically supported a higher level of private sector participation in the development, funding and maintenance of key spatial data infrastructure (SDI).¹ This is reflected in initiatives led by GeoConnections Canada,² a national program headed by Natural Resources Canada which involves the federal, provincial (State), territory and municipal governments, and the private and academic sectors working in partnership with governments to develop the components of the SDI.³ GeoConnections Canada was established in 1999 to develop the Canadian Geospatial Data Infrastructure (CGDI),⁴ with the objective of harmonising Canada's geospatial databases and increasing the amount of geospatial data, information and services available on the internet. It coordinates members of the Canadian geomatics constituency, bringing them together to agree on policy positions and promoting the use of data standards and protocols to facilitate access to Canadian geospatial data.

In its initial phase - 1999 to 2004 - GeoConnections was fully funded by the Canadian Government, but in the current (second) phase, which runs from 2005 to 2010, its projects are jointly funded by public sector agencies and the Canadian geomatics community. The program works with partners in geomatics technology development and in four priority areas: public health, public safety and security, the environment and sustainable development, and matters of importance to Aboriginal peoples. GeoConnections co-funds projects that encourage decision-makers in these priority areas to work with the Canadian geomatics sector in development or enhancing technologies that meet their specific needs. Its collaborators include private companies, government agencies (federal, provincial or municipal), non-government organizations, academic institutions or a combination of some or all of these. By playing a coordinating role, "GeoConnections assists Canada's geomatics stakeholders in working together and thereby achieving more in less time at less cost ... [it is] helping to pave the way for Canada's geomatics innovations and successes well into the coming decades".⁵

Canada, like Australia – but unlike the United States – continues to recognise the existence of copyright in ("Crown copyright") in materials produced by the government.⁶ While there have been initiatives designed to promote access to public sector materials in Canada in recent years (notably programs such as GeoBase and GeoGratis which provide free access to government spatial

¹ Garfield Giff and David Coleman, *Spatial Data Infrastructure Funding Models: A necessity for the success of SDIs in Emerging Countries*, FIG XXII International Congress, Washington DC, 26 April 2002; see also Garfield Giff, *Financing Spatial Data Infrastructure Development: Towards Alternative Funding Models*, Proceedings of International Symposium on SDI, Melbourne Australia, November 2001.

² GeoConnections Canada is a national federal, provincial, local government initiative which commenced in 1999 and is focused on the establishment of the Canadian Geospatial Data Infrastructure (CGDI).

³ Irwin Itzkovitch, *A National Partnership to Develop the Canadian Geospatial Data Infrastructure (CGDI)*, 8th United Nations Regional Cartographic Conference for the Americas, New York, 27 June -1 July 2005.

⁴ The CGDI was to be developed by 2004.

⁵ GeoConnections Canada, *Geomatics puts your world in a new perspective*, 2008, p9, at http://www.geoconnections.org/publications/Key_documents/overview_english.pdf, accessed on 22 December 2008.

⁶ *Copyright Act 1985*, s 12.

5 Literature Review

data), the Canadian situation is similar to that in Australia in that there is as yet no clearly established information policy or strategy operating at a national level.

Copyright Act 1985

Section 12 of the *Copyright Act* (RSC, 1985, C-42) provides for Crown copyright, such that the Crown owns copyright on any work “prepared or published by or under the direction or control of Her Majesty or any government department...” This provision, conferring copyright on Canadian government entities, is in virtually identical terms to the Crown copyright provisions in the Australian *Copyright Act 1968*.⁷

“Blueprint for Renewing Government Services Using Information Technology”, Canadian Government (1994)

In 1994, the Canadian government released the discussion paper, *Blueprint for Renewing Government Services Using Information Technology*. It proposed a vision of government-wide electronic information infrastructure to simplify service delivery, reduce duplication and improve the speed and quality of service to the public at a lower cost. By using the then emerging internet technologies, the intention was that Canadians would be able to “access, on demand, relevant information without red tape and without drilling through layers of bureaucracy in federal departments or throughout various jurisdictions”.⁸

“Canadian Geospatial Data Infrastructure (CGDI) - Geospatial Information for the Knowledge Economy”, Jeff Labonte, Mark Corey, and Tim Evangelatos, Geomatica (1998)

In this 1998 Geomatica article, *Canadian Geospatial Data Infrastructure (CGDI) – Geospatial Information for the Knowledge Economy*, Labonte et al provide a valuable account of proposals for the future development of the CGDI.

Under the heading “Why Government Involvement?” the authors state that the key consideration in the development of a geospatial infrastructure is partnerships among the geospatial data producers and users with the public, private and academic sectors. Central to the initiative in the authors’ view is the concept that government has a responsibility to make information available; to keep its commitment to advancing knowledge creation; and to “play its role” in the knowledge-economy in response to the needs of Canadians, industry and development of the social and economic well-being of the nation.⁹

⁷ See *Copyright Act 1968 (Cth)*, ss 176-178.

⁸ From Jeff Labonte, Mark Corey and Tim Evangelatos, Geomatica (1998) *Canadian Geospatial Data Infrastructure (CGDI) – Geospatial Information for the Knowledge Economy*, p 6, http://www.geoconnections.org/publications/General_information/geomatica_cgdi_E.pdf, accessed on 22 December 2008. See also Canada Information Highway Advisory Council, Johnston, David L, *Connection, Community, Content: The Challenge of the Information Highway - Final Report of the Information Highway Advisory Council*, Minister of Supply and Services Canada : Information Highway Advisory Council Secretariat, Industry Canada, 1995.

⁹ Jeff Labonte, Mark Corey and Tim Evangelatos, Geomatica (1998) *Canadian Geospatial Data Infrastructure (CGDI)* continued on page

The Canadian Geospatial Data Infrastructure (CGDI) initiative is an inter-governmental (federal, provincial, and territorial), private sector and academic undertaking to provide easy, consistent and harmonized access to geographical information and services. The CGDI involves a number of technological segments. The authors identify the first of these as being access. The initiative is to deliver national electronic access to digital geospatial or geographic information held by public agencies and in this way levels of access and usage will be greatly increased.

One of identified inter-related technical components envisaged for the CGDI is GeoExpress-Data Access. This is intended to foster access and discovery of metadata, images, files, and database query and extraction in relation to public sector geographic data. The benefits flowing from such enhanced access are stated by the authors to be better policy making, commercial value-adding, applications development, improved service delivery and enhanced use of the major resource which the databases of public sector data represent.¹⁰

In order to deliver on the CGDI data access objectives, the authors indicate that it is important for resources to be allocated to:

- the development of an overall data access strategy and the design of the system;
- the development of protocols for access leading to integration of data;
- the building of meta data databases of existing data assets;
- the manipulation or altering of existing systems and data bases to ensure interoperability; and
- the enhancement of existing or the acquisition of new hardware and software to deliver data to users through a “common window”.¹¹

The authors further observe that new job growth in the geo-info industry will be driven by access to information and data. As the knowledge economy encompasses larger parts of the Canadian economy, expansion of existing industry firms and the stimulus for the development of new firms will be related to access and development of innovative technologies and services. However, they comment that it is necessary to recognise that the policy environment in Canada does differ from that in the United States, and that the Canadian Geospatial Data Infrastructure (CGDI) must make Canadian data as easily available as US data is in the United States.

The authors introduce the term “infostructure” to refer to combined technical and policy frameworks for more efficient service delivery. They list several benefits in developing the CGDI as infostructure:

- providing citizen-friendly access to government information through a single window;
- developing infostructure to support knowledge-based activities;
- retaining private-sector competitive advantage;
- encouraging and simplifying commercial exploitation of government information and the development of the

from page

– *Geospatial Information for the Knowledge Economy*, p 2,
http://www.geoconnections.org/publications/General_information/geomatica_cgdi_E.pdf, accessed on 22 December 2008.

¹⁰ Ibid, p 3.

¹¹ Ibid, p 4.

7 Literature Review

value-added reseller industry;

- extending data acquisition partnerships between federal and provincial agencies into data provider partnerships;
- promoting research and development in the academic and private-sector communities to continue the development of leading-edge technology; and
- introducing standards-based technologies and tools for greater efficiencies and government-wide savings on geo-info activities.¹²

In identifying the areas which the Inter-Agency Committee on Geomatics (IACG) might productively focus upon in the near future, the authors acknowledge that the demand for lower cost and easier access to geospatial data by scientists and academic organizations continues and suggest that a workshop on the Data Liberation Initiative would be likely to be productive.¹³

Under the heading “National Infrastructure for Access - Wide Reaching Benefits”, the authors indicate that benefits of the CGDI would extend across a wide range of areas including jobs and economic growth, public and private sector partnerships, international competitiveness, rural and remote community access, government efficiency, new model of governance and a national project. On the issue of jobs and economic growth, the authors observe that geomatics is a high-growth area of the knowledge-based economy, and is a world leader in many so-called specialised or niche markets.¹⁴

In looking forward to the next steps to be taken with “infostructure” the authors acknowledge that data licensing and associated policies would be likely to prove to be a most productive areas for the attention of the IACG in the following years as these represent continuing barriers to the use of geomatic data. It is critically important, according to the authors, that these fundamental issues be given detailed consideration and they suggest that a workshop involving both users and data producers be convened to devise better and acceptable solutions.¹⁵

“Canadian Geospatial Data Policy Study”, KPMG Consulting Inc. for GeoConnections Policy Advisory Node (2001)

This is the report,¹⁶ on a project led by GeoConnection’s Canada’s Canada’s Policy Advisory Node which commissioned KPMG Consulting to carry out the field work for the *Canadian Geospatial Data Policy Study*. The report’s Executive Summary explains that the *Canadian Geospatial Data Policy Study*:

[W]as commissioned in order to provide empirical information on the impact of current geo-spatial data policies on all three levels of government (federal, provincial, municipal) and the users and distributors of the data in the business sector and in the community at large. Based on the findings, the project was to make

¹² Ibid, pp 6-7.

¹³ Ibid, p 8, paragraph [5].

¹⁴ Ibid, p 7.

¹⁵ Ibid, p 8, paragraph [6].

¹⁶ Garry Sears, KPMG Consulting Inc. for GeoConnections Policy Advisory Node, *Canadian Geospatial Data Policy Study*, March 2001, at http://www.geoconnections.org/programsCommittees/proCom_policy/keyDocs/KPMG/KPMG_E.pdf, accessed on 22 December 2008.

recommendations on how Canadian government geo-spatial data dissemination policies and practices could be modified to facilitate business development and the improved competitiveness of the Canadian geomatics industry while still ensuring adequate funding for infrastructure.¹⁷

The study was conducted using primary and secondary data collected by a variety of methods, including a major review of 33 Canadian geospatial data producing agencies at the federal, provincial and municipal levels; a survey of Canadian clients and users of geospatial data; an international comparative analysis to collect information about the data policies and practices of Australian and US data agencies; and a review of other relevant documents, literature and international trends.¹⁸

A key concern of the study was geospatial data policies and practices which charge for data on a cost recovery basis. In most cases, data collected by government agencies in the conduct of their mandate was being charged out to Canadian data users on a cost recovery basis: according to the data users surveyed, around 59% of their data was acquired with some form of cost recovery charge while only 21% was obtained for free.¹⁹

The study found that central agencies at the federal and provincial levels (eg Treasury Boards) influence the pricing and, therefore, the accessibility of digital geospatial data in Canada.²⁰ The cost recovery policy, introduced as a result of the 1993 Program Review exercise, had been intended to lead to improvements in the provision of government services and more equitably utilised public resources rather than be used simply as a means of generating revenue to meeting the funding requirements of a department or agency.²¹ However, the study identified the lack of clarity in implementing cost recovery practices as a major challenge facing many Canadian geospatial data agencies and their departments²² and referred to reports highlighting the growing concerns about the cost recovery policy and how it was being followed.²³ In response to the ambiguity in the implementation of cost recovery policies, the Canadian Manufacturers and Exporters organisation had commissioned a report which found that cost recovery was having the opposite effect to its stated goals.²⁴ For business, the consequences of the policy were higher costs, lower research and development investments and threatened marginal products, while consumers were faced with higher prices and reduced products and services. According to this report, this meant fewer jobs (23,000), a reduction in economic output of almost \$2.6 billion and a lower gross domestic product by nearly \$1.4 billion. These findings were supported by the federal Inter-Agency Committee on Geomatics which stated that cost recovery conflicted with encouragement of the broad use of spatial data. The Committee proposed that users should pay a fee that recovers the cost of distribution for data collected by government for government use and data clients should pay a fee for service for any specialised data collection or manipulation.²⁵

The report considers the activities of a sample of 33 Canadian data agencies, the revenues obtained

¹⁷ Ibid, p 1.

¹⁸ Ibid.

¹⁹ Ibid, p 11.

²⁰ Ibid, p 3.

²¹ Ibid.

²² Ibid, p 4.

²³ Ibid, p 5: footnote 7 in original: Parliamentary Standing Committee on Finance, *Challenge for Change—A Study of Cost Recovery*, June 2000.

²⁴ Ibid, p 5: footnote 5 in original: The Blair Consulting Group & Canadian Manufacturers and Exporters, *Where Does the Buck Stop?*, Quebec, January 1999.

²⁵ Ibid, p 5: footnote 6 in original: Inter-Agency Committee on Geomatics (IACG), *Working Group on Coordination and Cooperation Report*, January 1996.

9 Literature Review

from distribution of digital geospatial data²⁶ and the pricing principles, licensing and royalty arrangements adopted by the various agencies.²⁷ A comparison with data policies and practices in the United States and Australia led to the observation that:

While certain general guiding principles appear to consistently exist with respect to geo-spatial data distribution in Australia and the United States at the federal and state level, no consistent policy appears to exist in Canada.²⁸

The study found that stakeholders in the geospatial industry and the academic, private and public sectors had expressed a willingness and desire for change.²⁹ The report set out several recommendations which it suggested should be implemented “as swiftly as reasonably possible”³⁰:

The main goal of Canada’s data policies and approaches should be the growth in use of the data. Success will be determined by how fast Canada, and its federal agencies, can supply the market with the data and tools (products and services) that will satisfy the demand. The end market does not want complicated data. It wants solutions (consumer products and services, or value-added products produced from geospatial data). The role of the government agencies in the development of a strong value-added industry is crucial.³¹

The report’s recommendations are:³²

Recommendation 1: Data Accessibility

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Recommendation — Digital geospatial data that are collected or created by any level of government should be made as readily available electronically to the public as possible by improving access mechanisms and processes, unless there are privacy, security or competitive reasons not to do so. Specifically, in implementation, the following points should be taken into consideration:

- Expand distribution of thematic data via the Internet, possibly by providing some dedicated marketing and distribution funds to expand web-based focal point(s) for free data distribution (i.e., “GeoGratis” or similar sites).
- Restrictions on redistribution should be eliminated—except where commercial data used within government is redistributed.

Recommendation 2: Core Framework Data

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Recommendation—Core framework data, particularly the geo-reference and topographical framework maps used as the underlay for thematic data, should be provided free as a public good (or more properly, licensed at no cost), to encourage use, standardization, and consistency amongst all client groups. In making this data more accessible, efforts should be made to keep distribution costs to a minimum, however, additional funding will be required for some agencies.

Recommendation 3: Thematic Data

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²⁶ Ibid, p 9: In 2001, a total of \$11 million, 40% of which was generated between government departments.

²⁷ Ibid, pp 9-12.

²⁸ Ibid, p 16.

²⁹ Ibid, p 20.

³⁰ Ibid, p 26.

³¹ Ibid, pp 21-22.

³² Note that some text has been excluded.

Recommendation—Where costs are material and exceed the “public good” of encouraging their use, costs should be borne by those seeking the data.

Notwithstanding, the cost of making data available should be minimized as much as possible. “Nuisance fees” can be utilized for non-Internet distribution (i.e., CDROM, paper), to encourage use of digital distribution and to recoup easily quantifiable hard-copy reproduction and media expenses.

Recommendation 4: Cadastral data/process

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Recommendation—Transaction fees should remain an appropriate mechanism for cadastral data systems at the provincial and municipal levels. This includes “registered user” connections and access charges. However, efforts should be made to implement unrestricted integration with municipal / assessment databases.

Recommendation 5: Copyright and Licensing

A marked difference between the digital data policies and practices between Canada and the US at the national level is the Crown copyright requirements. These requirements, coupled with complex licensing agreements, limit the broader use of geospatial data in Canada when compared to federal US data by preventing redistribution, whether within or between organizations. The use of licensing and copyright to prevent redistribution (i.e., to protect pricing policies) inherently contradicts the goals of maximizing data use and the resulting benefits, and therefore should be minimized.

Instead of preventing data use, licensing and copyright should be used to protect data integrity, essentially building a “branding” that can be recognized as a mark of quality data (especially for framework data required to facilitate data integration). This is only effective as long as the data are considered to have integrity and relevance (i.e., currency), which will require additional data collection and maintenance investments in some cases. For example, a data agency supplies an original data product and retains the sole source of the data while providing their branding to the file/product once a data set has been distributed to a user. That user may be allowed to post the same data file for free on its own website for others to access, but only if the brand remains intact. In this instance, much of the distribution effort and cost is transferred to other users.

To ensure the branding is effective, collaboration with value-added-redistributors (VARs) and distributors should strive to have them recognize the original data source as part of the copyright. This will help in addressing the branding, providing a level playing field and visibility to public sector investments. Major changes to the data sets made by users should be passed back to the agency with the original source data for updating and modification, (this could be established in a similar manner of the style of open-source programming code like Linux).

Recommendation—Digital geospatial data should be licensed at no royalty cost to users with respect to use and redistribution. Use copyright and licensing within Canada to protect quality of geospatial data originating from all government agencies, particularly at the federal level, rather than to prevent use. Most digital geospatial data should be licensed at no cost to users. “Branding” of the original source data would facilitate re-use by retaining the “brand name” as long as the original data is not modified.

Recommendation 6: Inter- and intra-governmental data sharing

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Recommendation—Develop an inter- and intra-governmental data sharing policy model which would encourage and allow the free exchange and sharing of geospatial data by data agencies with other government departments and with other levels of government.

Recommendation 7: “Value-added” services

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11 Literature Review

Recommendation—Reasonable direct costs can and should be recovered from clients (public and private sectors) when a government data agency applies some form of “value-added” service to its data. Government supply of value-added products/services should be limited to instances where the policy rationale is valid (i.e., the private sector cannot provide the value-added products/services due to public good or privacy concerns).

As well as setting out these general recommendations, the report considered the specific actions that would have to be taken by key actors at the federal, provincial and municipal levels in order to implement the recommendations and the implications for particular agencies. For federal government agencies, the report identifies the following implementation issues:

1. Federal

The implementation of the proposed approach would result in decreased revenues for some federal agencies. However as indicated in Exhibit 4, the fee revenue, after considering the costs of data distribution, comprises a relatively small portion of most agency budgets, and in most cases does not cover the full cost of disseminating data. The key to being able to absorb reduced income is to reduce the costs incurred in marketing and distributing data.

A number of approaches are possible. Distribution through the Internet reduces the cost of the second and subsequent copies distributed, but still leaves agencies with the cost of establishing and maintaining an effective site.

The second approach suggested is simply the removal of restrictions on redistribution. The agency may then retain a fee to make the first copy available, but further distribution can be free (i.e., if an association makes the purchase and distributes to its members) or at a reduced cost (i.e., a value-adder incorporates the data into a product, or a private sector reseller chooses to promote and distribute the product).

However, there would still be a reduced net budget for some agencies which can be a more significant issue for some than for others. This could require reductions in operating costs beyond the data distribution costs, or additional funding. It should be noted, however, that the costs of data collection and maintenance are, by definition, not covered by cost recovery fees in federal agencies. Given that data collection and maintenance funding is inadequate in most agencies, the recommended approach will not resolve this issue either, although the wider and more effective use of agency data may make a more compelling argument for increased funding.

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a) Framework data

The federal government could have an important role in providing the framework data, maps, systems and standards required to maximize the usefulness of data collected by all levels of government in Canada, and indeed by the private sector. Properly carried out, this mandate would lead to consistent, compatible and interoperable data sets. The current pricing and licensing practices of the agencies involved have prevented this from occurring with the result that almost all municipal, most provincial and even some federal agencies spend some level of funds to develop duplicate data, often at a higher resolution. These agencies should move quickly to make their data available as widely as possible and move to develop standards, policies and approaches that meet the needs of all three levels of government as quickly as possible. The alternative will be the continued development of a number of independent inconsistent approaches across the country.

b) Licensing principles/approaches

The federal US practice of making data available freely has helped promote a rapidly growing geomatics industry, but the lack of standards has resulted in many users changing the data to suit their own needs, leading back to a series of incompatible data sets. Federal agencies should consider using the copyright and licensing approach to limit this outcome, “branding” its original data and allowing anyone to re-use the original data with whatever overlays may be appropriate and retain the “brand name” as long as the original data is not modified. This approach will only be effective as long as the federal data is considered to have integrity and relevance (i.e., currency), which will require additional data collection and maintenance investments in some cases. It would also be possible to establish a process to review suggested data modifications from users or resellers who wanted to improve the data but retain the brand.

c) Education uses

The recommendations contained in this report should allow adequate data access for educational users.

However if they are not implemented broadly, particular initiatives will be required to encourage and assist Canadian educators to nurture "geospatially literate" graduates which will in turn help develop the Canadian GIS industry. Both the prices and the licensing restrictions (multiple users/sites, etc.) reduce the ease of access of educators to Canadian data to develop the necessary spatial awareness to make effective use of the data.³³

For implementation of the recommendations at the provincial level, the report observes:

2. Provincial

There are many more provincial agencies where the reduction or elimination of user fees will have substantial impact. However the most significant fee-based systems are the cadastral and property assessment systems where continued fees are consistent with the recommended approaches. Cadastral systems generate most of their revenues from the transaction fees which both record an individual's (or firm's) interest in property, and generate the new data required to maintain currency. The assessment systems tend to be co-operative-like, with the municipalities that require the assessment data paying the costs of developing and maintaining data. These approaches should continue. The area that could be affected is the subsequent distribution of the data. Much of the data is covered by privacy restrictions, and its distribution is either prohibited or restricted to "value added" processed data for which fees continue to be appropriate. However the balance of the data, particularly the map elements, should be treated as framework data and made available with as little cost as possible. Restrictions on redistribution of data, particularly by municipalities where the property descriptions are a key element of municipal policy and technical discussions, are counterproductive and should be removed.³⁴

"Canadian Geospatial Data Infrastructure Target Vision, Version 1", CGDI Architecture Working Group (2001) and "Canadian Geospatial Data Infrastructure (CGDI) Roadmap: Achieving the Vision of the CGDI", GeoConnections (2005)

The vision of the CGDI as described by the CGDI Architecture Working Group in March 2001 in the *Canadian Geospatial Data Infrastructure Target Vision, Version 1* is as follows:

A Canadian geospatial information infrastructure that is accessible to all communities, pervasive throughout our country, ubiquitous for its users, and self-sustaining, to support the protection and betterment of Canada's health, social, cultural, economic and natural resource heritage and future.³⁵

The external and internal environments of the CGDI, which impact upon the CGDI Roadmap, are grouped into seven thematic areas: technological, governance, legislative, legal, human resources, financial and government priorities.³⁶

The CGDI's original seven guiding principles – subsequently called "Founding Principles" in the 2005 report – as stated in the *Canadian Geospatial Data Infrastructure Target Vision, Version 1* in 2001, have been extended to ten in consultation with stakeholders by adding "Building Principles". The Founding Principles and Building Principles are:

³³ Garry Sears, KPMG Consulting Inc. for GeoConnections Policy Advisory Node, *Canadian Geospatial Data Policy Study*, March 2001, pp 2-3, at http://www.geoconnections.org/programsCommittees/proCom_policy/keyDocs/KPMG/KPMG_E.pdf, accessed on 22 December 2008.

³⁴ Ibid, pp 28-29.

³⁵ CGDI Architecture Working Group (2001) *Canadian Geospatial Data Infrastructure Target Vision, Version 1*, p 4, at http://www.geoconnections.org/publications/reports/tvip/CGDI_Vision_E.pdf, accessed on 22 December 2008.

³⁶ GeoConnections (2005) *Canadian Geospatial Data Infrastructure (CGDI) Roadmap: Achieving the Vision of the CGDI*, see pp 8-11, at http://www.geoconnections.org/publications/tvip/Roadmap_E/CGDI_Roadmap_final_E.pdf, accessed on 22 December 2008.

Founding Principles:

- **Open:** The CGDI will be based on open and interoperable standards and specifications for operational transactions and information exchange. “Open and shared” in this context means that the specifications are available for the world to take, use, and modify for other purposes. These specifications will be based on national and international standards where available.
- **Transparent:** The CGDI will allow users to access data and services seamlessly in a manner that removes the complexities of the underlying technology and information infrastructure. “Seamless” implies the elimination or hiding of artificial boundaries introduced by jurisdictions or by technical issues such as scale or quality of information.
- **Cooperative:** The CGDI will help organisations from the private sector, government and academia collaborate. The CGDI will define common technologies and standards rather than prescribe single or proprietary implementation solutions.
- **Evolving:** The network of participating organisations will continue to encompass new requirements and business applications for information and service delivery to their respective users. The CGDI will evolve to meet these changing requirements and developments.
- **Timely:** The CGDI will define and recommend technologies and services that will support timely or real-time access to information.
- **Self-sustaining:** The CGDI will be sustained through the contributions of the participating organisations and the broad user-community and through being relevant to these groups.
- **Self-organising:** The CGDI will enable various levels of participating organisations to contribute geo-spatial information, meta-data, services and applications without the requirement for centralised administration, access, and data warehousing.³⁷

Building Principles:

- **User-driven:** The CGDI will emphasize the nurturing of and service to a broad user community. This approach will include user-driven developments, services, and enhancements that facilitate policy and decision making.
- **Closest to Source:** The CGDI will build upon its principle of self organisation to encourage organisations that are closest to source to provide data. This emphasis will increase quality and efficiency by eliminating duplication and overlap. The CGDI will need to be developed further through partnerships with municipal, provincial and territorial governments; other federal departments and agencies; as well as international sources.
- **Secure:** The CGDI recognizes the importance of openness but realises that a need exists to secure sensitive or proprietary data. This need for security is augmented by the requirement for high stability and data reliability.³⁸

“Spatial Data Infrastructure Funding Models: A necessity for the success of

³⁷ Ibid, p 26. See also CGDI Architecture Working Group (2001) *Canadian Geospatial Data Infrastructure Target Vision, Version 1*, p 4, at http://www.geoconnections.org/publications/reports/tvip/CGDI_Vision_E.pdf, accessed on 22 December 2008 (where they are called “Guiding Principles”).

³⁸ GeoConnections (2005) *Canadian Geospatial Data Infrastructure (CGDI) Roadmap: Achieving the Vision of the CGDI*, p 27, at http://www.geoconnections.org/publications/tvip/Roadmap_E/CGDI_Roadmap_final_E.pdf, accessed on 22 December 2008.

SDIs in Emerging Countries”, Garfield Giff and David Coleman (2002)

In this paper presented at the FIG³⁹ XXII International Congress in Washington DC in April 2002,⁴⁰ Garfield Giff and David Coleman address the issue of SDI financing in emerging countries.⁴¹ The authors consider the models of SDI financing used in the US, Australia and Canada and observe that, when compared to other countries (in particular, the US and Australia), Canada supports more private sector involvement in the development, implementation and maintenance of the SDI:

The Canadians describe a SDI as an integrated on-line mechanism to deliver geospatial data, services and information for applications, better business and policy decision-making and value-added commercial activities (GeoConnections Secretariat, 1999). The Canadians on the other hand support more private sector involvement in the development, implementation and maintenance of their SDI. This concept will require more private sector contribution to the funding of the SDI. It is the Canadians opinion that a SDI should be funded by a joint private sector and government partnership (Labonte et. al 1998)⁴². Labonte et. al (1998) describes the Canadian Geospatial Data Infrastructure (CGDI) as having five main thrusts. They are:

1. Access (nation wide electronic access);
2. Data Framework (common national framework);
3. Standards;
4. Partnership and;
5. Supportive Policy Environment (promoting broader information usage).⁴³

“Data Policy”, Athena Global (April 2004)

The *Data Policy* Orientation Paper⁴⁴ is a short paper prepared by Athena Global⁴⁵ for the Canadian Space Agency. Of relevance for present purposes is the following passage:⁴⁶

Data policy has a dramatic impact on data usage, and consequently on the integration of EO [Earth Observation] *information into applications, products and services. In this way data policy shapes the potential promise of space programs in EO. Peter Weiss’s Borders in Cyberspace, a comparative North American-European study on the impact of government information policies, concluded in 2002 that:

- A direct association exists between pricing and its effects on public access and commercialisation of government agency information. Current pricing problems are having a deleterious effect on the affordability of spatial data in Canada, France, and the United Kingdom;

³⁹ Federation of International Surveyors, see <http://www.fig.net/>.

⁴⁰ For the Conference Proceedings, see http://www.fig.net/pub/fig_2002/proc_main.pdf.

⁴¹ Garfield Giff and David Coleman, *Spatial Data Infrastructure Funding Models: A necessity for the success of SDIs in Emerging Countries*, FIG (Federation of International Surveyors) XXII International Congress, Washington DC, 26 April 2002, at http://www.fig.net/pub/fig_2002/Ts3-4/TS3_4_giff_coleman.pdf, accessed on 22 December 2008. See also Giff, Garfield, *Financing Spatial Data Infrastructure Development: Towards Alternative Funding Models*, Proceedings of International Symposium on SDI, Melbourne Australia, November 2001

⁴² Endnote in original is: Labonte, Jeff, Corey, M. and Evangelatos T. (1998). “Canadian Geospatial Data Infrastructure (CGDI) - Geospatial Information for the Knowledge Economy.” *Geomatica* 1998.

⁴³ Garfield Giff and David Coleman, *Spatial Data Infrastructure Funding Models: A necessity for the success of SDIs in Emerging Countries*, FIG (Federation of International Surveyors) XXII International Congress, Washington DC, 26 April 2002, pp 4-5, at http://www.fig.net/pub/fig_2002/Ts3-4/TS3_4_giff_coleman.pdf, accessed on 22 December 2008.

⁴⁴ Athena Global, *Data Policy*, April 2004, at http://www.athenaglobal.com/pdf/16_data_policy.pdf, accessed on 22 December 2008.

⁴⁵ For other Athena Global reports see: http://www.athenaglobal.com/en/section_agreports.html.

⁴⁶ Athena Global, *Data Policy*, April 2004, p 1, at http://www.athenaglobal.com/pdf/16_data_policy.pdf, accessed on 22 December 2008.

15 Literature Review

- A direct association exists between the application of intellectual property rights and the degree of public access and commercialisation of government agency information. The greater the restrictions on access, the less successful dissemination programs will be;
- Reducing prices and relaxing intellectual property restrictions on government datasets are significant factors improving opportunities for access and commercialization for stakeholders in the geographic information community.

“Most Canadian government agencies charge a fee for geo-spatial data. [...] The cost-recovery policy originates from the concept of "Crown copyright," in which the government has copyrights to work it produces, including intellectual property. The situation stems, in part, from the perspective that government needs to maintain control of its products to protect information integrity and cultural nationalism, and, recently, to generate revenue. Treasury Board directs government departments to "... identify the full costs of providing goods, services, property, and limited rights and privileges to external users; identify the market value of property; determine appropriate user charges; and impose them in accordance with the principles of [the] policy.” [Similarly,] many provincial government agencies used the sale of geo-spatial data to "cost justify" new geo-spatial data collection.

[I]n the United States [...] geo-spatial data collected by any U.S. federal agency must be available to the public [...] free or, for large volumes, at the cost of filling a user request.”⁴⁷

“Management of Government Information Policy”, Canadian Government (2003)

The Management of Government Information Policy was ratified by the Canadian Government in May 2003. The policy provides direction on how government institutions, departments and agencies should create, use, manage and preserve information in a comprehensive and strategic manner. The key premise of the policy is that the preferred future record of government will be digital.⁴⁸

The policy advocates that institutions:

- Ensure that governance and accountability structures are implemented for the cost effective and coordinated management of information under their control to support effective decision-making, services and program delivery.
- Provide the infrastructure for the effective and efficient management of information, regardless of its medium or format, to ensure its authenticity and integrity for as long as it is required by legislation, departmental statutes, and other laws and policies.
- **Manage information to facilitate its universal access by anyone and in a manner that optimizes its sharing and re-use in accordance with legal and policy obligations.**
- Document the decision-making processes throughout the evolution of policies, programs, and service delivery.

⁴⁷ Quoted in text from: Allan Levinsohn, Canadian Geospatial Data Policy Stifles Productivity, GeoWorld 1999, <http://www.geoplance.com/gw/1999/0699/699can.asp>.

⁴⁸ Note that this summary and the extract are from David Brown, Grace Welch and Christine Cullingworth, *Archiving, Management and Preservation of Geospatial Data: Summary Report and Recommendations*, GeoConnections Policy Advisory Node Working Group on Archiving and Preserving Geospatial Data, February 2005, pp 2-3, at http://www.geoconnections.org/publications/policyDocs/keyDocs/geospatial_data_mgt_summary_report_20050208_E.pdf, accessed on 22 December 2008. The policy applies to all institutions listed in Schedules I, I.1 and II of the *Financial Administration Act*.

- Preserve information of enduring value to the Government of Canada or to Canadians.
- Establish a coordinated and comprehensive approach to describing the institution's information.
- Maintain a current and comprehensive classification structure(s), including metadata.
[emphasis added]

The Treasury Board Secretariat and the Library and Archives Canada are responsible for overseeing the implementation of the policy. These agencies are to work with government institutions to deal with information management concerns and issues and lead government-wide information management improvement initiatives.⁴⁹

GeoConnections Canada

GeoConnections Canada⁵⁰ is a national federal/provincial/territorial initiative launched in 1999,⁵¹ with the objective of developing the Canadian Geospatial Data Infrastructure (CGDI) and making Canada's geographic information available on the internet.⁵² It was initially funded with \$60 million over a five year period up to 2004. After successfully commissioning the CGDI, GeoConnections received further funding (for the period 2005 to 2010) to continue developing and expanding the CGDI in response to community feedback. GeoConnections seeks to develop capacity in rural, remote and Aboriginal communities/municipalities to improve their ability to plan and made decisions towards a sustainable future through the use of modern geomatics techniques.⁵³

The underlying premise of the CGDI is that private industry is best suited to develop the components of the CGDI in a model partnership with government. Consequently, GeoConnections has been developed on a collaborative model involving the participation of federal, provincial and territorial agencies, and the private and academic sectors. The GeoConnections project has been implemented through various committees or nodes (including the GeoConnections Policy Node)⁵⁴ and its activities are guided by consultations with the Canadian Council on Geomatics (CCOG)⁵⁵ and the Geomatics Industry Association of Canada (GIAC). In collaboration with the US Federal Geographic Data Committee (FGDC), GeoConnections is developing a Canada-US spatial data

⁴⁹ Note that *National Archives of Canada Act* and the *National Library Act* were harmonized into one piece of legislation to form the Library and Archives Canada on 21 May 2004.

⁵⁰ See <http://www.geoconnections.org/en/index.html> and GeoConnections Discovery Portal at <http://geodiscover.cgdi.ca/>.

⁵¹ See Geoconnections Secretariat, *A National Program to develop the Canadian Geospatial Data Infrastructure (CGDI) Program Briefing*. Geoconnections, Nov 1999, see <http://www.geoconnections.net/english/search/index.html>

⁵² See <http://cgdi.gc.ca/en/index.html> and <http://www.geoconnections.org/en/aboutcgdi.html>.

⁵³ Irwin Itzkovitch, *GeoConnections*, paper presented at 8th United Nations Regional Cartographic Conference for the Americas, New York, 27 June -1 July, 2005.

⁵⁴ The GeoConnections Policy Node is responsible for: "developing and promoting policies that facilitate access to, and use of, geospatial data from any level of government and other sectors; identifying and resolving licensing and data distribution issues and other issues that might hinder the effective distribution and use of digital geospatial data; promoting and facilitating data sharing; expanding partnerships; and simplifying access to, and lowering the cost of, geospatial data.": see Garry Sears, KPMG Consulting Inc. for GeoConnections Policy Advisory Node, *Canadian Geospatial Data Policy Study*, March 2001, p1, at http://www.geoconnections.org/programsCommittees/proCom_policy/keyDocs/KPMG/KPMG_E.pdf, accessed on 22 December 2008.

⁵⁵ The Canadian Council on Geomatics (CCOG) is a federal-provincial consultative committee.

infrastructure.⁵⁶

The GeoConnections website explains the program and its key features as follows:

GeoConnections helps decision-makers use online location-based (or "geospatial") information, such as maps and satellite images, to tackle some of Canada's most pressing challenges. The program focuses on working with partners in public health, public safety and security, the environment and sustainable development, Aboriginal matters, and geomatics technology development.

Improving Canadians' quality of life by enhancing decision making

By helping make location-based data and technologies accessible and useful to decision-makers in public health, public safety and security, the environment and sustainable development, and Aboriginal matters, GeoConnections is contributing in numerous ways to a better quality of life for Canadians.

....

Co-funding offered to develop tailored solutions

Now in its second phase, which will run from 2005 to 2010, GeoConnections is working to ensure that decision-makers in key areas benefit from the Canadian Geospatial Data Infrastructure (CGDI), a one-stop searchable portal for a wealth of location-based information. We are accomplishing this objective by co-funding projects that encourage key decision-making audiences (public health, public safety and security, the environment and sustainable development, and Aboriginal matters) to work with the Canadian geomatics sector in developing technologies that meet their specific needs.

Partners play a vital role

GeoConnections is a national partnership program led by Natural Resources Canada. Although GeoConnections acts as a catalyst in creating solutions for decision-makers in the four priority areas, the program also relies heavily on its partners. These partners can be private companies, government agencies at all levels, non-government organizations, academic institutions, or sometimes a combination of the above. We devote ample time and energy to establishing and nurturing partnerships because they anchor the success of the Canadian Geospatial Data Infrastructure as an online resource to support decision making.

Streamlining data policies simplifies data access and usage

GeoConnections also brings Canada's geomatics community together to agree on policies that simplify data licensing, access, and sharing. For example, we worked with data providers in governments across the country to streamline the data licensing process by encouraging the community to adopt a standard form for issuing data licenses. By fulfilling this role of coordinator, GeoConnections assists Canada's geomatics community to pull in the same direction and thereby do more in less time at less cost.

National standards characterize the CGDI and expand its value

GeoConnections also strongly advocates the use of national standards. By encouraging technology developers, solutions developers, and data suppliers to adhere to national standards endorsed for the Canadian Geospatial Data Infrastructure (CGDI), GeoConnections greatly enhances the CGDI's value to Canadians. That's because standardized data or applications accessible via the CGDI from one provider can then easily be layered or used with those from another. This interoperability will often produce richer and more useful information than a single data set can provide.

The standards that GeoConnections advocates for the CGDI mirror many international geomatics standards. This characteristic means that Canadian applications developers and data suppliers can easily export their technologies, data, and expertise to other countries adhering to the same international standards.

GeoConnections negotiates and develops data standards and policies with government agencies at the federal and provincial/ territorial levels domestically and with governments and standards bodies internationally.⁵⁷

In the course of its work, GeoConnections Canada has published reports dealing with various

⁵⁶ GeoConnections, *2008 NSDI CAP Category 4: Joint Canadian and United States Spatial Data Infrastructure Project*, Ottawa, Ontario, 2007, at <http://www.geoconnections.org/en/opportunities/getDoc=800>.

⁵⁷ See <http://www.geoconnections.org/en/aboutGeo.html>, accessed 17 December 2008.

aspects of its program and geospatial data.⁵⁸

“Policy Solutions for Enhancing Geospatial Data Use”, GeoConnections Policy Advisory Node (2002)

This 2002 document provides an overview of the role of the GeoConnections Policy Advisory Committee:

A Changing Environment, New Ways of Thinking

More and more, geographic information is becoming embedded in commerce and public sector 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 have on the economy and the quality of public services.

Although digital technology has removed many of the technical barriers to sharing geospatial data, government policies have not kept pace with the demands of a changing environment. New policies on such key issues as licensing, access and financing of geospatial data are needed to promote data exchange and integration, and to ensure that social and economic decisions are taken with the benefit of the best available information.

Addressing the Tough Policy Issues

That's where the GeoConnections Policy Advisory Node comes in. A collaborative initiative involving partners in the public, private and academic sectors, the Policy Advisory Node is charged with finding solutions to the difficult policy issues involved in enhancing access to government geospatial data. The Policy Advisory Node is a key component of GeoConnections, a national collaborative initiative with the goal of making Canada's geographic information widely available through the Internet via the Canadian Geospatial Data Infrastructure. As the policy arm of this broader initiative, the Policy Advisory Node supports the development and implementation of policies that:

- enable increased access to and use of government geospatial data in the public and private sectors
- resolve licensing and distribution issues that inhibit data sharing and use
- promote inter-agency geospatial data-sharing arrangements
- expand public and private partnerships
- enhance government efficiencies in collecting, maintaining and distributing geospatial data

Five Major Policy Thrusts

Working as part of the GeoConnections team, the Policy Advisory Node is focusing its efforts on creative, consensus-building approaches in five major areas of interest:

⁵⁸ See for example, *The Canadian Geospatial Data Infrastructure - Architecture Description (Version 2.0)*, 2005 at http://www.geoconnections.org/publications/tvip/arch_E/CGDI_Architecture_final_E.html; *Better knowledge means better decisions: Canadian Geospatial Data Infrastructure*, October 2004 at http://www.geoconnections.org/publications/Key_documents/CGDI_Brochure/sc_CGDI_bro_e.pdf; *CGDI Target Vision and Implementation Plan (Version 2.0)*, September 2005: components include: *Vision: Better knowledge for better decisions*, at http://www.geoconnections.org/publications/tvip/Vision_E/CGDI_Vision_final_E.pdf; *Roadmap: Achieving the Vision of the CGDI*, at http://www.geoconnections.org/publications/tvip/Roadmap_E/CGDI_Roadmap_final_E.pdf; *Architecture: Architecture Description (Version 2.0)*, at http://www.geoconnections.org/publications/tvip/arch_E/CGDI_Architecture_final_E.pdf; *A Developers' Guide to the CGDI: Developing and publishing geographic information, data and associated services*, February 2004, at http://www.geoconnections.org/publications/Technical_Manual/html_e/cgdiindex.html; and *CGDI Online Training*, August 2004, at http://www.geoconnections.org/publications/training_manual/e/index.htm.

19 Literature Review

Roles and Responsibilities: Defining the respective "areas of operation" of public and private sector interests is an essential step in the development and promotion of enabling policies. Accordingly, one of the Policy Advisory Node's focus areas is establishing partnerships with key players and identifying sensitivities and challenges affecting these fundamental relationships - including, for example, policy barriers to the effective exchange of data. One important issue is the respective roles of public and private sector data providers of road network data.

Access: A significant component of geospatial data sets supplied by government can be considered a public good with many potential benefits. Policy Advisory Node activities support making government digital geospatial data as readily available as possible.

Copyright and Licensing: Among the principal constraints to the wider use of government geospatial data are the restrictive terms and conditions governing how data can be used. At the same time, licensing helps to offset production and maintenance costs, preserve data quality and enable data tracking and liability control. Policy Advisory Node activities are aimed at balancing these interests by reducing the complexity of current licensing regimes.

Pricing: The varied application of cost recovery policies relating to geospatial data - which ranges from free distribution to value-added pricing - can be a major source of frustration for data producers and clients. In collaboration with its partners, the Policy Advisory Node is exploring principles and protocols for determining reasonable direct costs for distributing thematic and value-added products and services.

Financing: While current policies and practices may impede the distribution of geomatics data, appropriate consideration must be given to the resources required to produce and distribute government geospatial data sets. The Policy Advisory Node supports exploration and development of alternative and/or complementary mechanisms for financing data development, maintenance and dissemination activities.⁵⁹

“Archiving, Management and Preservation of Geospatial Data: Summary Report and Recommendations”, GeoConnections Policy Advisory Node (2005)

The Policy Advisory Node of GeoConnections has focused on five major areas of interest:

- **roles and responsibilities** – this involves defining the area of operation, considering the partnerships that may be forged between different actors, especially public and private sector;
- **access** – this is the general idea that the data compiled is a public good and should be as broadly available as possible;
- **copyright and licensing** – this is concerned with the constraints on the use of data, and includes the setting of licence fees, tracking of data usage and management of legal risk;
- **pricing**; and
- **financing** – this deals with the economic reality of finding and justifying funding for open access resources.

The 2005 report by GeoConnections Policy Advisory Node, *Archiving, Management and Preservation of Geospatial Data: Summary Report and Recommendations*,⁶⁰ recommends:

⁵⁹ GeoConnections Policy Advisory Node, Policy Solutions for Enhancing Geospatial Data Use (webpage), November 2002 at <http://www.geoconnections.org/en/resourcelibrary/generalInformation/id=392>, accessed on 22 December 2008.

⁶⁰ GeoConnections, *Archiving, Management and Preservation of Geospatial Data: Summary Report and Recommendations*, GeoConnections Policy Advisory Node, Working Group on Archiving and Preserving Geospatial Data, February 2005, at

As the first step in ensuring the long-term preservation and retention of valuable resources, data producers must adopt an information life cycle management approach, which will ensure that their data will be managed proactively from creation to disposition.

Recommendation #1 -- Organizations should define and implement policies and practices for the creation, use, retention, dissemination, preservation, and disposition of geospatial data.⁶¹

It also recommends that organisations adopt a custodianship model in which a data custodian is responsible for compliance with policy and procedures, advocating that:

Organisations must establish authoritative responsibility centres that empower individuals with the ability to define and apply the information management principles required to ensure the integrity of an organisation's geo-spatial data holdings.⁶²

“The Dissemination of Government Geographic Data in Canada: Guide to Best Practices”, Canadian Department of Justice (T Werschler and J Rancourt) (Version 1.2) (2005)

To develop, support and deliver the Canadian Geospatial Data Infrastructure, GeoConnections relies strongly on a broad network of partners who are developing the capabilities to disseminate geographic data on-line and to access such data from these partners. An integrated data licensing framework for geographic data is one of the cornerstones for building these capabilities.

GeoConnections has worked with the Canadian geomatics community to agree on policies to simplify data licensing, access and sharing. In particular, GeoConnections worked with government agencies that provide geospatial data, such as maps and satellite images, to develop an integrated licensing framework which streamlines the data licensing process through the use of standard data licences.

In 2005, GeoConnections released version 1 of *The Dissemination of Government Geographic Data in Canada: Guide to Best Practices* (“*Guide to Best Practices*”). The culmination of months of effort and consultation led by the Data Licensing Guide Working Group (the DLGWG), established under the auspices of the GeoConnections Policy Advisory Node,⁶³ version 1 of the *Guide to Best Practices* set out an integrated framework for the purposes of licensing government geographic data for what was then recommended as constituting the three types of geographic data dissemination and licensing models most commonly used in Canada: the end-user model, the reseller model, and the value-added reseller model.

Chapter 4 of the report deals with government licensing fundamentals, authority and constraints.⁶⁴ It from page

http://www.geoconnections.org/publications/policyDocs/keyDocs/geospatial_data_mgt_summary_report_20050208_E.pdf, accessed on 22 December 2008.

⁶¹ Ibid, p 10.

⁶² Ibid.

⁶³ A group of individuals working on behalf of the GeoConnections Program to advance discussions on policy related issues.

⁶⁴ *The Dissemination of Government Geographic Data in Canada – Guide to Best Practices*, Tim Werschler, Statistics Canada and Julie Rancourt, Department of Justice, Chapter 4 – Government Licensing Fundamentals, Authority and Constraints, Winter 2005, Version 1.2, at

http://www.geoconnections.org/publications/Best_practices_guide/Guide_to_Best_Practices_v12_finale_e.pdf accessed continued on page

21 Literature Review

states:

Government geographic data licence agreements are the written expression of a contractual relationship entered into by government in support of overarching government mandates and policy objectives. The terms governing government geographic data licence agreements find their justification in the data dissemination objectives established by government in support of the same overarching mandates and policy objectives.

The subject-matter of government geographic data licence agreements is intellectual property. A basic understanding of intellectual property, and perhaps more precisely of copyright law, is useful to appreciate the legal intricacies of government geographic data licence agreements.⁶⁵

The report comments that a “myriad of licensing terms” were being used for data sharing and that:

the complexity of the current government geographic data dissemination environment in Canada stems from the lack of a coordinated approach to dissemination and licensing of such data.⁶⁶

The report suggests an integrated framework for government geographic data, to enable easy access to the data. This framework would need to be developed logically, keeping in mind the various types of licensing arrangements commonly used by the government:

In order to reduce the complexity of government geographic data licensing practices, concerted effort should be expended to develop an integrated approach to the distribution of government geographic data. Such an integrated framework cannot, however, be designed haphazardly. Its development needs to be achieved through an articulation of the values and objectives for the various types of licensing arrangements in common use across government, and must reflect an appreciation of the continuum of objectives underlying government geographic data dissemination policy.⁶⁷

One of the key areas highlighted by the report is the need to expressly deal with copyright issues surrounding derivative datasets. Generally, the government retains copyright in their datasets but licenses them out on certain terms. GeoConnections considered copyright management to be a key issue in promoting innovation. The report states that:

Licensees of government geographic data should generally have the right to develop, manufacture and distribute commercially derived products they have or have caused to be created, which incorporate or derive from the licensed geographic data.⁶⁸

The report also highlights that any data licence must address the legal risks to the repository or database in providing the data, most likely through disclaimers of liability for use of the data. Additionally, any data accessed must be cited as licensed government data.

The Guide provides a quick reference chart to relevant issues:

Indemnification: Indemnification acts to further manage the risk of licensor liability, to the extent possible, by requiring that the licensee warrant that they will not hold the licensor liable for damages arising from the use of the licensed data. Indemnification of the government data provider may not be enforceable in agreements struck between a data licensee and their own sub-licensees, to the extent that it can be managed. However, this does not materially elevate risk of government liability, as the sub-licensee would have to demonstrate that the government:

from page

on 22 December 2008.

⁶⁵ Ibid, p 24.

⁶⁶ Ibid, p 21.

⁶⁷ Ibid, p22.

⁶⁸ Ibid, p 38.

1. knew or ought to have known that the data delivered was not accurate;
2. owed a duty of care to the sub-licensee; and
3. that the sub-licensee incurred damages as a result of the government's negligence.

Acknowledgment: Acknowledgment of government data source is expressed as a requirement to cite the data source and include any government furnished meta-data in any downstream products or services containing the originally licensed government data.

Derived Products: A derived product is any product or service made operational through use of, or derived from the licensed government data. A key objective is to promote the development of derived products and services as a stimulus to socioeconomic growth. The end-user model restricts the further distribution only of derived products containing the originally licensed data.

Intellectual Property: The intellectual property rights in the licensed data are never transferred as a result of the use or modification of the licensed data. Conversely, the intellectual property rights resulting from any extension or enhancement of the licensed data, or development of derived products or services rest with the party giving rise to those enhancements and developments.

Term and Termination of Contract: The integrated framework recommends the use of automatically repeating terms of a fixed length. Termination of an agreement is affected automatically by breach of contract, by request from the licensee, or by mutual agreement.

Other Supporting Components: The integrated framework employs the use of other standard clauses that reinforce and clarify various contractual aspects of each dissemination model for the benefit of the data producer and user. Common approaches are employed for preamble, most definitions, entirety of agreement, dispute resolution, etc.⁶⁹

“The Dissemination of Government Geographic Data in Canada: Guide to Best Practices”, GeoConnections Canada (Version 2) (2008)

Version 2 of *The Dissemination of Government Geographic Data in Canada: Guide to Best Practices* (the “*Guide to Best Practices*”)⁷⁰ was developed by the Data Licensing Guide Working Group (DLGWG) established by the GeoConnections Secretariat.⁷¹ It is based on consultations with government departments and agencies involved in producing, using, and licensing government geographic data, as well as input from the Canadian geomatics industry.

The *Guide to Best Practices* explains the legal basis of data licensing as follows:

Government geographic data licence agreements are the written expression of a contractual relationship entered into by government in support of overarching government mandates and policy objectives. The terms governing government geographic data licence agreements find their justification in the data dissemination objectives established by government in support of the same overarching mandates and policy objectives.

The subject-matter of government geographic data licence agreements is intellectual property. A basic understanding of intellectual property, and perhaps more precisely of copyright law, is useful to appreciate the legal intricacies of government geographic data licence agreements.

⁶⁹ Ibid, p 70.

⁷⁰ GeoConnections Canada, *The Dissemination of Government Geographic Data in Canada: Guide to Best Practices*, Version 2, 2008, available at http://www.geoconnections.org/publications/Best_practices_guide/Guide_to_Best_Practices_Summer_2008_Final_EN.pdf, accessed on 22 December 2008.

⁷¹ Ibid, Executive Summary.

.....
Of the various types of intellectual property protection afforded in Canada, copyright is of the most relevance to government geographic data.⁷²

Version 2 of the *Guide to Best Practices* sets out a revised integrated framework for the four types of government geographic data licensing models most commonly used in Canada:

- the unrestricted use model;
- the end-user model;
- the reseller model; and
- the value-added reseller model.

It provides a rationale for appropriate uses, explains how each model builds on common structures, demonstrates their inter-relationships and provides clear guidance to assist licensing practitioners in selecting the most appropriate model and licence agreement. Recommended approaches to fundamental concepts such as ownership of intellectual property, liability, duration and termination are discussed in detail for the benefit of licensing practitioners, and are guided by data dissemination policy directives currently in force across federal departments and agencies.

Version 2 of the *Guide to Best Practices* supersedes the 2005 version in its treatment of issues that are now at the forefront of matters of central concern to government data licensing practitioners. For example:

- version 2 addresses new Canadian federal government data dissemination policy, as well as other overarching governmental policy positions that impact on the dissemination of government geographic data; and
- it discusses how the evolving and transformative nature of geographic data, compounded with users' technological sophistication and expectations for technology-based data distribution, have spurred significant industry activity in a number of areas, including in relation to:
 - metadata and the development by industry of applications assisting in the development of metadata for geographic data;
 - web services; and
 - geographic digital rights management.⁷³

The 2008 update recognises the rapid developments and technological advances in web-based services, distributed computing, and other user applications since the earlier version of the guide was published. It acknowledges that new data distribution models and policies have emerged or become more prevalent and responds by including an unrestricted-use model template.

In the context of this unrestricted-use model involving web-based distribution and where the objective of dissemination is to promote the widest use possible of the licensed government geographic data, with no restrictions on further distribution, version 2 provides two licences as being appropriate templates. The first, where no fee is payable, is the GeoConnections No-Fee

⁷² Ibid, p54.

⁷³ Ibid, Executive Summary, pp 4-5.

Unrestricted Use Web Wrap Licence Agreement,⁷⁴ and the second, where a fee is payable, is the Fee-Based Unrestricted Use Licence Agreement.⁷⁵

With respect to web-based distribution on a fee basis, the *Guide to Best Practices* acknowledges that, in law, click-wrap agreements may be used. However, for policy, contract and risk management reasons, the Guide recommends a cautious approach be adopted and that, in the context of an integrated approach to the licensing of government geographic data, producers of government geographic data wishing to distribute their data on a fee basis refrain from entering into click-wrap agreements. Rather, the *Guide to Best Practices* strongly recommends that fee-based licence agreements be entered into using traditional methods by signing a hard copy agreement, although the actual delivery of the licensed government geographic data may occur electronically. Nevertheless, delivery is only to take place after the applicable fee-based licence agreement has been signed.⁷⁶

It contains few restrictions on how the licensed government geographic data may be used and allows for further distribution, thereby supporting the development by private sector firms of location-based services and products based on licensed government geographic data. Downstream distribution of the licensed government geographic data may occur through various means, including by system integrators, original equipment manufacturer and resellers for distribution to end-users.⁷⁷ The unrestricted use licences contain only those requirements considered as being consistent with the objectives of the unrestricted use model, being:

- widest use and distribution of the licensed government geographic data;
- indemnification and control of liability;
- promotion of intellectual property development by the licensee; and
- acknowledgement of source and incorporation of government-furnished metadata in downstream distribution or applications containing any of the licensed government geographic data.⁷⁸

GeoBase and GeoGratis

Where the stated government policy objective is to promote the widest possible use of the licensed information, the licence agreements employed need to deliver that operational outcome. Examples are the GeoGratis and GeoBase licences under which certain government information is now being made available online without cost and without restrictions being placed on the licensee's right to distribute further.

⁷⁴ Ibid, Executive Summary, p 3. The full text of the licence is in Appendix A to version 2 of the *Guide to Best Practices*. See below for commentary on these licences.

⁷⁵ The full text of the licence is in Appendix B to version 2 of the *Guide to Best Practices*.

⁷⁶ See GeoConnections Canada, *The Dissemination of Government Geographic Data in Canada: Guide to Best Practices*, Version 2, 2008, Executive Summary, p 3, available at http://www.geoconnections.org/publications/Best_practices_guide/Guide_to_Best_Practices_Summer_2008_Final_EN.pdf, accessed on 22 December 2008.

⁷⁷ Ibid, p 33.

⁷⁸ Ibid.

GeoBase

GeoBase⁷⁹ is a federal, provincial, territorial and municipal government initiative overseen by the Canadian Council on Geomatics (CCOG).⁸⁰ Its objective is to ensure the provision of, and access to, a common, up-to-date and maintained base layer of geospatial data for the whole of Canada. Through the GeoBase portal, users can access and, upon registering user details, can download quality geo-spatial information at no cost.⁸¹ The downloading of GeoBase data is under the terms of the GeoBase Unrestricted Use Licence Agreement (set out below).

In 2001, the CCOG approved GeoBase's vision, principles and data definitions. GeoBase is a key component of the Canadian Geospatial Data Infrastructure (CGDI). The GeoBase portal accords with GeoConnections' vision and principles.

The underlying principles of cooperation between the various GeoBase partners are to provide access, at no cost and with no restrictions for users, to:

- quality geospatial data (current, accurate, consistent and maintained); and
- unique geospatial data (one data, collected once and maintained closest to the source).⁸²

GeoBase's goal is to provide the geo-spatial reference and context for a broad variety of thematic data for government, business, and personal applications.

The partners consider that the availability of high-quality base geo-spatial information will promote the development of value-added products and services provided by the private sector. Another intended benefit is for Canada's geomatics industry to maintain its competitiveness on domestic and international markets.⁸³

GeoBase Unrestricted Use Licence (2006)

The GeoBaseLicence⁸⁴ provides generous reuse rights without cost and requires attribution of the source. There are certain similarities between this licence and the Creative Commons Attribution Licence (CC-BY), however, there are also several important substantive differences between the two licences including that the licence period is limited to one year's duration (with automatic renewal provided the licensee is not in breach) and the licensee is required to indemnify the licensor against any loss or damage. The full text of the GeoBase Unrestricted Use Licence follows:

GeoBase Unrestricted Use Licence Agreement

⁷⁹ See <http://www.geobase.ca/geobase/en/index.html>, accessed on 22 December 2008.

⁸⁰ See <http://www.cco-cocg.ca>. The Canadian Council on Geomatics is a federal-provincial-territorial consultative body for geographic information management.

⁸¹ <http://www.geobase.ca/geobase/en/licence.jsp>.

⁸² See About GeoBase Initiative (webpage), <http://www.geobase.ca/geobase/en/about/index.html;jsessionid=582CC8F5BD90BA422D4B9CB54DB6F17D>, last updated 1 October 2008, accessed 22 December 2008.

⁸³ Ibid.

⁸⁴ See <http://www.geobase.ca/geobase/en/licence.jsp;jsessionid=A376176D61AB9E17225D7A0F9063AA4B> accessed on 22 December 2008.

This is a legal agreement between you (Licensee) and Her Majesty the Queen in Right of Canada (Canada) as represented by the Minister of Natural Resources Canada.

BY ACCESSING, DOWNLOADING, PRINTING OR USING THE DATA, INFORMATION AND MATERIALS BEING PROVIDED WITH, OR ACCESSIBLE PURSUANT TO THIS AGREEMENT, YOU ARE AGREEING TO BE BOUND BY THE TERMS OF THIS AGREEMENT. IF YOU DO NOT AGREE TO THE TERMS OF THIS AGREEMENT, YOU MUST IMMEDIATELY DISPOSE OF ANY SUCH DATA, INFORMATION, MATERIALS AND ANY DERIVED PRODUCTS.

I. **WHEREAS** Canada is the owner of or has rights in the data (the Data) addressed by the terms and conditions of this Agreement;

II. **AND WHEREAS** the Licensee wishes to obtain certain rights to the Data, on terms and conditions herein contained;

III. **AND WHEREAS** Canada represents that it has full authority to grant the rights desired by the Licensee on the terms and conditions herein contained;

IV. **AND WHEREAS** the parties hereto are desirous of entering into a licence agreement on the basis herein set forth.

NOW, THEREFORE, in consideration of the covenants contained in this Agreement, the parties agree as follows:

1.0 DEFINITIONS

Canada's Data means any and all Data, the Intellectual Property Rights of which vest with Canada.

Canada's Licensed Rights means those rights conferred upon Canada by third parties over the use of Data which is not Canada's Data.

Data means any digital data, meta-data, or documentation subject to the terms and conditions of this Agreement.

Derivative Products means any product, system, sub-system, device, component, material or software that incorporates or uses any part of the Data.

Intellectual Property Rights means any intellectual property right recognised by law, including any intellectual property right protected through legislation, such as that governing, but not limited to, copyright and patents.

2.0 LICENCE GRANT

1. Subject to this Agreement, Canada hereby grants to the Licensee a non-exclusive, fully paid, royalty-free right and licence to exercise all Intellectual Property Rights in the Data. This includes the right to use, incorporate, sublicense (with further right of sublicensing), modify, improve, further develop, and distribute the Data; and to manufacture and / or distribute Derivative Products derived from or for use with the Data.

2. The Intellectual Property Rights arising from any modification, improvement, development or translation of the Data, or from the manufacture of Derivative Products, effected by or for the Licensee, shall vest in the Licensee or in such person as the Licensee shall decide.

3.0 PROTECTION AND ACKNOWLEDGEMENT OF SOURCE

1. The Licensee shall identify GeoBase® as a data source where any of the Data are redistributed, or contained within Derivative Products, and use of the Data shall not be construed as an endorsement by GeoBase® of those Derivative Products.

4.0 WARRANTY, LIABILITY, INDEMNITY

1. Canada makes no representation or warranty of any kind with respect to the accuracy, usefulness, novelty,

27 Literature Review

validity, scope, completeness or currency of the Data and expressly disclaims any implied warranty of merchantability or fitness for a particular purpose of the Data. Canada does not ensure or warrant compatibility with past, current or future versions of your browser to access the site's Data.

2. The Licensee shall have no recourse against Canada, whether by way of any suit or action, for any loss, liability, damage or cost that the Licensee may suffer or incur at any time, by reason of the Licensee's possession or use of the Data.

3. The Licensee shall indemnify Canada and its officers, employees, agents and contractors from all claims alleging loss, costs, expenses, damages or injuries (including injuries resulting in death) arising out of the Licensee's possession or use of the Data.

4. The Licensee shall license all individuals (or companies) who obtain Data or Derivative Products from the Licensee the right to use the Data or Derivative Products by way of a license agreement, and that agreement shall impose upon these individuals (or companies) the same terms and conditions as those contained in section 4.0 of this Agreement.

5. The Licensee's liability to indemnify Canada under this Agreement shall not affect or prejudice Canada from exercising any other rights under law.

5.0 TERM

1. This Agreement is effective as of the date and time of acceptance (Eastern Time) and shall remain in effect for a period of one (1) year, subject to subsections 5.2 and 6.0 below.

2. At the end of the first term, this Agreement shall automatically be extended for successive one (1) year terms, subject to section 6.0 below, provided the Licensee is not then in breach of any of the terms and conditions of this Agreement.

6.0 TERMINATION

1. Notwithstanding section 5.0, this Agreement shall terminate:

- i. automatically and without notice, if the Licensee commits or permits a breach of any of its covenants or obligations under this Agreement;
- ii. upon written notice of termination by the Licensee at any time, and such termination shall take effect thirty (30) days after the receipt by Canada of such notice; or
- iii. upon mutual agreement of the parties.

2. Upon the termination for whatever reason of this Agreement, the Licensee's obligations under section 4.0 shall survive; and the Licensee's rights under section 2.0 shall immediately cease.

3. Upon the termination for whatever reason of this Agreement, the Licensee shall delete or destroy all Data acquired under this Agreement immediately or within a reasonable timeframe where the Data is required to complete orders of Derivative Products made before the termination date of this Agreement.

7.0 GENERAL

1. Applicable Law

This Agreement shall be construed and enforced in accordance with, and the rights of the parties shall be governed by, the laws of Ontario. The parties hereto attorn to the jurisdiction of the Superior Court of the Province of Ontario and Canada as applicable.

2. Entire Agreement

This Agreement constitutes the entire agreement between the parties with respect to its subject matter. This Agreement may only be amended in writing, signed by both parties, which expressly states the intention to amend this Agreement.

3. Dispute Resolution

If a dispute arises concerning this Agreement, the parties shall attempt to resolve the matter by negotiation.⁸⁵

GeoBase National Hydro Network

The National Hydro Network (NHN), the standard for which was officially adopted by the Canadian Council on Geomatics (CCOG) in August 2004, focuses on providing a quality geometric description and a set of basic attributes describing Canada's inland surface waters. The NHN is being conducted within the GeoBase project. The NHN provides geo-spatial digital data describing hydrographic features such as lakes, reservoirs, rivers, streams, canals, islands, obstacles (e.g. waterfalls, rapids, rocks in water) and constructions (e.g. dams, wharves, dikes), as well as a linear drainage network and the toponymic information (geographical names) associated to hydrography.⁸⁶

The NHN forms the hydrographic layer of the GeoBase. The best available federal and provincial/territorial data are used for its production, which is done jointly by the federal government and interested provincial and territorial partners.⁸⁷

The NHN is a vector, topographic data product primarily designed to allow hydrographic network analysis. It is intended for water flow analysis, water and watershed management, environmental and hydrographical applications, as well as for a multitude of cartographic applications.⁸⁸

GeoGratis

GeoGratis⁸⁹ is a portal provided by the Earth Sciences Sector (ESS) of Natural Resources Canada (NRCan), which provides geospatial data owned by the Canadian government at no cost via the internet. The GeoGratis website encourages users to voluntarily register, as this allows Natural Resources Canada to “better know its users and to increase the quality of products and services offered on GeoGratis.”⁹⁰ This may be contrasted with the mandatory user registration requirement under the GeoBase portal mentioned above.

The geospatial material on the GeoGratis website is available at no cost under the GeoGratis Licence Agreement for Unrestricted Use of Digital Data.⁹¹ This licence is almost verbatim with the GeoBase Unrestricted Use Licence Agreement set out above, with the only substantive difference appearing to be that under the GeoGratis licence, Canada (the Crown, through the Federal Minister of Natural Resources Canada) is the owner of the data whereas under the GeoBase licence, Canada (the Crown, through the Federal Minister of Natural Resources Canada) may either be the owner or have been granted the necessary legal rights in the data to authorise Canada to enter into the licence.

⁸⁵ See <http://www.geobase.ca/geobase/en/licence.jsp;jsessionid=A376176D61AB9E17225D7A0F9063AA4B> accessed on 22 December 2008.

⁸⁶ National Hydro Network (NHN) (webpage), <http://www.geobase.ca/geobase/en/data/nhn/description.html>, last updated 15 December 2008, accessed on 22 December 2008.

⁸⁷ Ibid.

⁸⁸ Ibid.

⁸⁹ See <http://www.geogratias.ca/geogratias/en/index.html> accessed on 22 December 2008.

⁹⁰ See <http://www.geogratias.ca/geogratias/en/user/register.jsp;jsessionid=733FF6896C7AB47D31297A3852722BA9> accessed on 22 December 2008.

⁹¹ Ibid.

It follows that the GeoGratis Unrestricted Use Licence grants to the licensee the same generous re-use rights as those under the GeoBase licence. Similarly, the licence period is limited to one year's duration (with automatic renewal provided licensee is not in breach) and the licensee is required to indemnify the licensor against any loss or damage.

The free thematic data available through the GeoGratis portal is grouped in collections (e.g. raster and vector data) that are compatible with popular geographic information systems (GIS), with image analysis systems and the graphics applications of editing software.

“The Impact of Information Policy: Measuring the Effects of the Commercialisation of Canadian Government Statistics”, Kirsti Nilsen (2001)

In this book,⁹² Kirsti Nilsen focuses on the impact of information policy as applied to the dissemination practices of Statistics Canada. The book includes a review of the literature on government information policy for governments around the world in general and specifically in Canada. It then looks at how changes in overall information policy affected decisions and practices at Statistics Canada in data availability and user charges during the mid-1980s. Following these descriptive sections, the author provides research results on the change in the usage of statistical sources by social scientists during the years following the increased application of cost recovery practices by Statistics Canada.

The case study of developments at Statistics Canada provides a good summary of the events relating to the change in Canadian information policy to emphasize cost recovery and a market orientation toward government information.

“Economic Theory as it Applies to Statistics Canada: A Review of the Literature”, Kirsti Nilsen (2007)

In this literature review, Kirsti Nilsen provides a comprehensive overview of published materials on the economic theory of information and considers the implications of current theories of information economics for Statistics Canada's production and dissemination of statistical data. In the Executive Summary she comments:

Any pricing of public sector information is considered economically inefficient. Nevertheless some governments argue that cost-recovery pricing and user fees are justifiable or necessary in order to avoid increases in taxation. The problems of determining costs for information mean that cost-recovery pricing cannot be determined on an objective basis. Research suggests that cost-recovery pricing may not be the best approach for maximizing the economic value of public sector information nor for government finances in general. It is economically inefficient for government agencies to charge each other for goods and services; doing so raises transaction costs and generates no new government revenue.

.....

Official statistics are valued by economists, who make much use of them, but their value to the economy or to research is not generally recognized. Official statistics seem to be a given, and their economic impact has not been much studied. Nevertheless, the level of production of official statistics and whether national statistical

⁹² Kirsti Nilsen, (2001) *The Impact of Information Policy: Measuring the Effects of the Commercialization of Canadian Government Statistics*, Westport CT, Ablex.

agencies should add value or allow the private sector to do so is an ongoing controversy. In countries where Crown copyright prevails, statistical agencies appear to be under pressure to generate revenue by adding value to their data. In the U.S. and increasingly in the European Union, adding value is seen as a role for the private sector. Some economists argue that statistical agencies should produce raw and basic statistics, and aggregate economic data, but should not seek to provide specialized benefits that add value to underlying data. If marginal costs are high, official statistical agencies should not seek to compete with the private sector data providers. High marginal costs imply that the benefit is likely to be more specialized, and official agencies should not enter those markets. The economic benefits of providing public sector information for commercial re-use by private sector providers are increasingly noted.

It is argued then that government should not be allowed to withhold information from the public in order to generate revenue. If a government role in any activity is justified, then seeking to generate revenues means that the agency is not filling its mission. If no government role is justified, then the activity should be undertaken by the private sector.

The impact of information on economic efficiency has been long recognized. The various models for distribution of public sector information are under discussion in Europe where it is argued that adoption of the American open access model would have positive economic impacts and contribute to the growth of the information industry. Research comparing the U.S. and the E.U. information markets supports this perception.⁹³

Nilsen concludes the study with the following observations:

6. Areas where Statistics Canada's Program could be Argued to be Sub-Optimal in Light of the Identified Theory.

Statistics Canada continues to expand access to free information on its Web site. This expansion of free access can be identified as economically efficient and socially beneficial. At the same time, however, the Agency imposes various mechanisms to make its information excludable. Economists would identify these exclusionary mechanisms as sub-optimal.

While the Agency provides a great deal of information free of charge on its Web site and through DSP, the extent of free provision should be expanded considerably. Much information is now accessible through the Web site only on payment of user fees. Presumably, this is information that has been identified as "specialized" or of interest only to a specialized audience. While some of this information may have a limited number of users, its social and economic benefit would be much greater if it were available free or at marginal cost of dissemination. Statistics Canada's identification of much information as "specialized" and its consequent overpricing must be seen as suboptimal because of the extent to which that same information might have value to a broader public. In effect, categorizing and pricing information in this way results in under-utilization of the Agency's output.

Because the DSP provides an economic and social benefit to the public and benefits the Agency as well, Statistics Canada should seek to eliminate barriers that prevent some materials from being distributed via the DSP. In order to further eliminate exclusionary practices, the Agency should expand the DLI and RDC programs in such a way as to include independent researchers who are unaffiliated with member institutions. The DLI model should be applied to other communities of users who can pool their demand and provide benefits to users. However, it must be recognized that many user communities are highly dispersed and pooling demand would be extremely difficult. Opportunity costs to individuals in both the existing programs and future "pools" need to be factored into any analysis of potential benefits. In addition the Agency faces its own opportunity and transaction costs in administering these programs.

⁹³ Kirsti Nilsen, *Economic Theory as it Applies to Statistics Canada: A Review of the Literature*, Submitted to Statistics Canada, 7 May 2007, pp iii – iv, at <http://www.chass.utoronto.ca/datalib/misc/Nilsen%20Economics%20Paper%202007%20final%20version.pdf>, accessed on 22 December 2008. See also, presentation at OECD Working Party on the Information Economy workshop on public sector information, *The Socioeconomic Effects of Public Sector Information on Digital Networks: Toward a Better Understanding of Different Access and Reuse Policies*, Paris, 4-5 February 2008, available at <http://www.oecd.org/dataoecd/12/32/40066153.pdf>.

31 Literature Review

In order to avoid imposing opportunity costs on remote users, the Agency should expand its current use of multiple access channels. In particular, it should consider those who do not have physical access to libraries or who face a digital divide in obtaining access to the Internet. In addition to providing access via email and postal mail enquiries, the Agency should continue to maintain its telephone service and ensure rapid response to all of these channels. Economists note that time spent⁹⁴ is an opportunity cost for users and decreases consumer surplus.

Statistics Canada is justified in recovering the marginal cost of producing custom products on demand for individual clients. However, it should examine whether serving individual clients is implicit in its mission, and whether it should consider allowing private sector providers to re-use its data to serve individual clients. This can be accomplished by licensing and Statistics Canada should eliminate licensing fees for redissemination of its products. At the same time it should issue only non-exclusive licenses, which economists argue result in a competitive private sector information industry that generates taxation revenue for the government.

Because Statistics Canada is in a monopoly position and at the same time is subject to a fixed budget, there is temptation to over-price and under-produce data and information. The Agency should guard against this tendency. Economists would argue that while such activity might improve the internal accounting picture, doing so is neither economically efficient nor beneficial for society as a whole.

The Agency should avoid data restrictions which limit the ability of researchers (in any sector) to generate new knowledge by reanalyzing the data or their ability to replicate any analyses Statistics Canada may have done with the data, so as to verify their accuracy and ratify their conclusions. The positive externalities of such activities provide a net social benefit to society as a whole.

....

The Agency should make every effort, where marginal costs of distribution of its information products and services are effectively zero, to eliminate pricing in order to encourage the broadest possible use of its information by all Canadians and to promote Canadian economic development.

Statistics Canada should evaluate its pricing policy, as well as its other exclusionary mechanisms, in light of the economic theory reviewed in this paper. Though there are always practical limitations to applying economic theory in real world environments, the theory may provide ammunition for consideration of affordable alternatives to present practices that would improve benefits for all Canadians.⁹⁴

“Canadian National Consultation on Access to Scientific Research Data”, Michael Sabourin and Bernard Dumouchel, Data Science Journal (2007)

In the article, “Canadian National Consultation on Access to Scientific Research Data”, published in the *Data Science Journal* in June 2007,⁹⁵ Sabourin and Dumouchel report on a forum - the National Consultation on Access to Scientific Research Data (NCASRD) - which brought together more than 70 Canadian leaders in scientific research, data management, intellectual property and other relevant areas. It addressed the varied and complex issues raised by increased access being provided to the vast array of databases across various disciplines.

At the forum, the Canadian research community identified a pressing need for a national data

⁹⁴ Kirsti Nilsen, *Economic Theory as it Applies to Statistics Canada: A Review of the Literature*, Submitted to Statistics Canada, 7 May 2007, pp 89-91, at <http://www.chass.utoronto.ca/datalib/misc/Nilsen%20Economics%20Paper%202007%20final%20version.pdf>, accessed on 22 December 2008.

⁹⁵ Michael Sabourin and Bernard Dumouchel, “Canadian National Consultation on Access to Scientific Research Data”, *Data Science Journal*, Vol. 6, Open Data Issue (17 June 2007) pp 26-35, at http://www.jstage.jst.go.jp/article/dsj/6/0/6_OD26/article accessed on 22 December 2008.

preservation organisation and the adoption of a national strategy on data access policies. Once a national strategy is broadly supported, it is proposed that a Data Task Force will be created to prepare a full national implementation strategy and assume leadership in the development and execution of a strategic plan.⁹⁶

The forum participants identified a number of inhibiting factors to the broad acceptance and implementation of a Canadian open access and preservation system, including:

- **priority of need:** issues concerning the priority given to open access issues;
- **champions for change:** identifying champions within the research community and government;
- **culture:** a need for a culture of collaboration to support the public good, rather than an emphasis on financial return for access;
- **training:** need to develop training in database development and preservation to implement accessibility, security and preservation requirements;
- **archival expertise:** data archivists can, with training, become valued research partners and consultants;
- **standards and processes:** a need for the implementation of a multi-disciplinary standard to enhance and simplify interoperability of databases nationwide; and
- **responsibilities, systems and tools:** a better intellectual property meta data regime needs to be defined.⁹⁷

⁹⁶ Ibid, p 26.

⁹⁷ See Ibid, pp 30-31.

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35 Literature Review

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Abbreviations and Acronyms

BY	Attribution
CC	Creative Commons
CCOG	Canadian Council on Geomatics
CGDI	Canadian Geospatial Data Infrastructure
DLGWG	Data Licensing Guide Working Group
EO	Earth Observation
ESS	Earth Sciences Sector
FGDC	(United States) Federal Geographic Data Committee
FIG	Federation of International Surveyors
GIAC	Geomatics Industry Association of Canada
GIS	Geographic Information Systems
IACG	Inter-Agency Committee on Geomatics
NCASRD	National Consultation on Access to Scientific Research Data
NHN	National Hydro Network
NRCan	Natural Resources Canada
SDI	Spatial Data Infrastructure
US	United States
VAR	Value-Added Redistributors