HOUSE OF COMMONS
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# OPEN DATA: THE WAY OF THE FUTURE

## Report of the Standing Committee on Government Operations and Estimates

**Pierre-Luc Dusseault**
**Chair**

**JUNE 2014**

**41st PARLIAMENT, SECOND SESSION**

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# THE STANDING COMMITTEE ON GOVERNMENT OPERATIONS AND ESTIMATES

has the honour to present its

**FIFTH REPORT**

Pursuant to its mandate under Standing Order 108(3)(*c*)(ii), the Committee has studied the Government's open data practices and has agreed to report the following:

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# OPEN DATA: THE WAY OF THE FUTURE

# CHAPTER ONE: INTRODUCTION

## A. Study overview

Governments collect and produce a wealth of data. Increasingly, governments worldwide have started to implement open data strategies and to launch open data portals to enable the release of these data in open and reusable formats. In this context, the House of Commons Standing Committee on Government Operations and Estimates (hereinafter "the Committee") adopted the following motion:

> That the Committee undertake, consistent with Canada's signing of the G8 Open Data Charter, a study to assess and enhance the government's open data practices; that this study include examining how Canadian businesses can better obtain and utilize high-value information with strong economic potential from the government and reviewing the processes and practices of other governments with respect to their collection, storage and transfer of open data; and that the Committee use its findings to provide the government with direction and advice focused on improving the way this high-value data is collected, stored and transferred to Canadians, resulting in access to useful and useable open data that will drive economic growth as part of an information economy.

Over the course of its study, the Committee held 11 meetings and heard testimony from federal, provincial and municipal officials, industry representatives, academics and other stakeholders. As well, witnesses from the United Kingdom and the United States each discussed the open data initiatives in their countries. In addition, a representative from the Organisation for Economic Co-operation and Development (OECD) provided insight into the open data experience in other countries. The Committee focused its study on users' needs in relation to the federal government's open data initiative, the best practices of other jurisdictions with respect to open data and the economic and social benefits associated with the use of open data.

In his remarks, the President of the Treasury Board told the Committee that open data is Canada's next "natural resource." Likewise, Richard Stirling, International Director of the U.K. Open Data Institute, added that open data is a raw material for the digital age. Many witnesses agreed – there is value in open data.

Several witnesses underscored the importance of understanding the terminology in relation to open data. At the outset of the study, the Chief Information Officer (CIO) of the Government of Canada explained the following:

- **Raw data** is machine-readable data at the lowest level of integration that can be reused alone, or mashed up with other data in innovative ways. The government either generates or collects and aggregates a vast amount of raw data.

- **Metadata** is data about data. It describes the contents of a dataset and the specific kinds of information in each field.

- **Open data** is the practice that takes the raw data and the metadata and makes it available through a portal, as is the case of *data.gc.ca*.

**B. Federal initiatives**

The federal government first launched its open data portal as a pilot project in March 2011. The following year, the federal government announced Canada's membership in the Open Government Partnership (OGP), a group of countries working toward making government more open, accountable and responsive to citizens. As part of its commitments to the OGP, Canada endorsed the OGP Open Government Declaration, which includes improving access to open data. In April 2012, the federal government also released *Canada's Action Plan on Open Government* with a focus on three activity streams – open information, open data and open dialogue – consistent with the objectives of the OGP. While the three activity streams are interrelated, the Committee focused its study on open data.

Under *Canada's Action Plan on Open Government*, the federal government outlined two commitments with respect to open data: to establish a new open data portal and to publish additional resource management and performance data in relation to federal departments and agencies. The federal government's *Implementation of Canada's Action Plan on Open Government (Year-1) Self-Assessment Report* summarizes the progress made in 2012–2013 in relation to these commitments. In particular, the new *data.gc.ca* open data portal was launched in June 2013, and the Treasury Board of Canada Secretariat (TBS) expenditure database with historical financial information on departmental spending was released in April 2013.

Moving ahead with its open data initiative, Canada formally adopted the G8 Open Data Charter in June 2013. Under the G8 Open Data Charter, Canada agreed to develop a country-specific action plan for implementing the Charter's requirements; release high-value datasets in 14 keys areas; and contribute to a G8 metadata mapping exercise. In February 2014, the federal government released its open data action plan, *G8 Open Data Charter – Canada's Action Plan*. The open data action plan summarizes the progress made to date and details the eight commitments that the federal government will pursue in relation to open data. The open data action plan also outlines certain high-value datasets that the federal government intends to release through its open data portal.

In order to promote its open data portal, the federal government launched its first "appathon" in February 2014. The 2014 Canadian Open Data Experience – a mobile and web-based application challenge – brought together 927 registered participants from universities in all provinces across Canada. The "appathon" challenged participants to develop applications using the federal government's open data.

Overall, the federal government has commitments related to open data as part of its membership in the OGP, in accordance with its action plan on open government, and in

accordance with its action plan on open data. These commitments build on each other, and represent the federal government's plan with respect to open data.

In accordance with the G8 Open Data Charter, Canada agreed to implement five foundational open data principles by 31 December 2015: Open Data by Default; Quantity and Quality; Useable by All; Releasing Data for Improved Governance; and Releasing Data for Innovation. The various themes and findings that emerged throughout the study are presented in the report according to these five principles. These foundational principles represent an interconnected web that support open data, and as such, some findings may relate to more than one principle.

# CHAPTER TWO: OPEN DATA BY DEFAULT

> *There are good reasons why some public data wouldn't be made open, but I think the presumption should be that public sector data should be made open where possible.*
>
> *Richard Stirling, Open Data Institute*

The first open data principle – Open Data by Default – encourages the government to foster expectations that government data be published openly while continuing to safeguard privacy. As noted in the G8 Open Data Charter, in certain cases, "there are legitimate reasons why some data cannot be released." These reasons are listed in *G8 Open Data Charter – Canada's Action Plan* and are mainly related to privacy, security and confidentiality. Throughout the Committee's study, witnesses discussed the implementation of the open data by default principle, the creation of an inventory of datasets, the prioritization of certain datasets and the protection of personal information.

## A. Implementation

Many witnesses emphasized the importance of the open data by default principle. In fact, some witnesses reasoned that government data is a public asset, and therefore should be published openly. Ray Sharma, founder of XMG Studio Inc., who also contributed to the Government of Ontario report entitled *Open by default: A new way forward for Ontario*, stated that even though open data is an intangible asset; it can be just as valuable to the public as a physical asset.

In the past, certain federal datasets were only available to the public on a cost-recovery basis. Throughout the study, the Committee heard from many witnesses who acknowledged the federal government's initiative to provide free access to certain federal datasets. For example, Ted Mallett, Vice-President and Chief Economist for the Canadian Federation of Independent Business, supported the decision to make data from Statistics Canada's CANSIM database available free of charge. This data is also available on the federal government's open data portal. As a result, Mr. Mallett noted that researchers can now analyze this data to a greater extent. Some witnesses also agreed that datasets should be made available for free and accessible within quicker deadlines.

Open data by default requires a cultural change in government. A representative from the Government of British Columbia explained that if we anticipate that our data will be shared, then from the outset, we will design our data so that it can be usable by all, which will essentially reduce red tape.

As of June 2014, there were over 200,000 datasets available through the federal government's open data portal, the vast majority of which were geospatial data from Natural Resources Canada. The other data providers were primarily federal departments

and agencies, with Statistics Canada being the second largest in terms of datasets. As well, some Crown corporations have provided data through the open data portal. However, Crown corporations will not be included under the directive on open government, as confirmed by a TBS official.

### B. Inventory of datasets

The CIO of the Government of Canada indicated that the upcoming directive on open government would require departments to compile and publish an inventory of all datasets that they possess, provide it to the TBS and gradually publish those datasets on the federal government's open data portal. This directive will be issued by December 2014. Officials from the governments of Ontario and Newfoundland and Labrador explained that they were already building an inventory of their datasets. The representative from the Government of Ontario added that it would be useful to have such an inventory at the federal level.

Several witnesses agreed that there is a need for transparency in relation to the principle of open data by default. According to Barbara-Chiara Ubaldi, E-Government Project Manager for the OECD, "there is a need for transparency in the actions taken, in the case of Canada, by the cabinet office in relation to which data sets to open." Several witnesses mentioned the U.K. as one of the leaders in the development of its governmental open data initiative. One of the U.K.'s practices consists of requiring each department to report its progress on open data through the Cabinet office, which then publishes reports on departmental progress.

### C. Prioritizing the release of datasets

One challenge to implementing the principle of open data by default is the resource constraints that governments face. A representative from the Government of British Columbia explained to the Committee that because they had limited resources to verify data quality, they had to pick specific datasets to publish. An official from the Government of New Brunswick also emphasized that there is a need to consult with the public and the industry to know what data constitutes a priority.

When governments release open data, they often start with the datasets that are already publicly available and can be easily added to their open data portal. Denis Deslauriers, Director of the Information Technology and Telecommunications Service for the City of Québec, said that that his city chose to prioritize the release of data that would be most useful to citizens. Along the same lines, an official from the Government of Newfoundland and Labrador mentioned that his government prioritizes the release of data on its portal based on the number of requests by users. In the federal context, a Health Canada official said that the Department has two criteria for the prioritization of data: relevance to the Health Canada mandate and strategic outcomes; and responsiveness to what users want.

## D. Privacy and confidentiality

Government data often include personal information, such as data related to an individual's income, education and occupation. However, when data are published, they have to be aggregated in such a way that no individual or organization can be identified. Some witnesses raised concerns about confidentiality issues. For example, Mr. Sharma warned that, no matter the aggregation method used, nothing is absolute. In some cases, there is still a small risk that personal information could be identifiable through the release of a dataset.

An official from Citizenship and Immigration Canada observed that many techniques can be used to protect privacy, such as aggregating data by categories (e.g., income ranges), rounding data or masking certain values. All federal departments and agencies that appeared before the Committee reiterated having similar techniques and viewing this aspect as a fundamental part of their work. An official from Statistics Canada specified that the agency does not release public use microdata files on the federal government's open data portal because additional licensing restrictions apply. These restrictions are in place to ensure that these microdata files are not linked with other files, which could put confidentiality at risk.

A TBS official pointed out that their colleagues in the U.S. and the U.K. are developing new technologies to anonymize data. An official from Health Canada said that the data published by the department were only aggregated data, not individual data, and therefore did not need to be anonymized. Mr. Stirling remarked that in the U.K., there is an organization called the UK Anonymisation Network, an independent group that helps to ensure that all the necessary steps have been taken before any large dataset is released.

According to Ms. Ubaldi, "in order to protect privacy it is extremely important to have clear guidelines for the public servants." She explained that public servants are key actors in the open data ecosystem, and therefore it is essential to train public servants and raise their awareness of breaches of privacy that may emerge from a number of actions they can do in relation to open data.

With respect to open data by default, the Committee recommends that:

**RECOMMENDATION 1**

**The Government of Canada continue to implement its open data action plan and report back to the Committee on its progress by 31 March 2015. In addition, the Government of Canada should report back to the Committee on the implementation of its commitments in relation to the G8 Open Data Charter.**

**RECOMMENDATION 2**

**The Government of Canada should make its datasets available by default to the public free of charge through its open data portal.**

**RECOMMENDATION 3**

**The Government of Canada should examine the possibility of including Crown corporations in the list of organizations covered by its directive on open government.**

**RECOMMENDATION 4**

**The Government of Canada, in its directive on open government, should require departments to publish an annual progress report with respect to their release of datasets on the open data portal.**

**RECOMMENDATION 5**

**The Government of Canada, in its directive on open government, should require departments to document the reason for which a particular dataset will not be released on the open data portal and publish this justification as part of its inventory of datasets.**

**RECOMMENDATION 6**

**The Government of Canada continue to take all precautionary measures to ensure the confidentiality of data, using the most current techniques to ensure that information published on its open data portal cannot be linked to a particular individual or organization. In addition, the Government of Canada should consider engaging an independent organization to verify whether all the necessary steps are taken to ensure confidentiality of data before its release on the federal government's open data portal.**

**RECOMMENDATION 7**

**The Government of Canada should develop guidelines for public servants so they are able to ensure that confidential information is not revealed through the release of datasets on the federal government's open data portal.**

# CHAPTER THREE: QUANTITY AND QUALITY

> *There are always going to be errors in the data, so let's surface them more quickly so that we can then get to better quality data faster, so that governments make better decisions with more reliable datasets.*
>
> *David Eaves, Open Data Consultant*

The second open data principle – Quantity and Quality – is centered on the release of well-described, high-quality and timely open data. Throughout the Committee's study witnesses discussed a variety of ways in which to increase the quantity and quality of open government data. These suggestions have informed the Committee's recommendations in relation to standardized and high-quality metadata and enhanced open government data.

### A. Well-described open data

Metadata is data that describes the contents of a dataset. It describes the specific types of information in each field of a dataset. According to the CIO of the Government of Canada, metadata is integral to the potential of open data. Many witnesses agreed that well-described open data is central to the quality of open data. Moreover, several witnesses added that metadata is important to users in order to make open data interoperable and comparable among different jurisdictions.

One barrier to the interoperability and comparability of open data is the lack of standardized metadata that can facilitate the integration of datasets released by different jurisdictions. According to Michael Chui, Partner, McKinsey Global Institute, "[s]tandards also have to be developed in order to make data comparable from multiple sources. Then actually releasing metadata, data about data, can make open data more usable."

Under its commitments to the G8 Open Data Charter, the federal government contributed to the G8 metadata mapping exercise, which involved defining standards for describing datasets internationally. According to a TBS official, there is still ongoing work for Canada and other OGP countries in relation to developing a standardized view of the metadata that should be used to describe open data. He added that several non-governmental organizations are also feeding into the development of these standards, such as Schema.org, World Wide Web Foundation and Open Knowledge Foundation.

In terms of technical standards, developing consistent metadata may present certain challenges. As the independent researcher responsible for reviewing Canada's commitments to the OGP, Mary Francoli, Assistant Professor, School of Journalism and Communication at Carleton University, collected feedback from users of the federal government's open data portal in preparing her first progress report. Ms. Francoli informed

the Committee that according to some stakeholders, metadata have been removed from certain datasets in the name of standardization and consistency.

Several witnesses agreed that further work needs to be done in terms of standardizing metadata. A representative from the Government of Ontario informed the Committee that there is currently no "set standard or metadata […] that is being used across all the different levels of government." Nevertheless, while the work on metadata standards may be tedious, his colleague argued that the benefits are huge and that common metadata standards can contribute to efficiencies.

In addition to the technical standards, there are also policy standards related to metadata that need to be considered. For example, a representative from the City of Toronto mentioned that with "different levels of government, even ministries within governments, releasing data sets called poverty, there needs to be a consistent metadata set that defines what all those indicators mean." This served to illustrate the point that governments should consider whether there is a need to develop consistent policies in defining indicators related to a particular theme, so that data is comparable across multiple jurisdictions.

**B. High-quality open data**

According to the CIO of the Government of Canada, there is a wealth of data and datasets within departments that have not yet been published. With respect to the role of individual departments, she added that, "the departments have to be in a position to maintain and assure the integrity of the data."

Most witnesses commented that Canada is doing relatively well in terms of open government data. However, David Eaves, an open data consultant, cautioned that there is a danger in using international comparisons too early on. According to Lyne Da Sylva, Associate Professor, School of Library and Information Science at the Université de Montréal, in terms of comparing Canada to other jurisdictions, "the results are quite variable both in terms of the number of datasets and degree of real openness." In addition, Mr. Deslauriers questioned whether the volume of open data necessarily equals usefulness. In fact, some witnesses agreed that the federal government should focus its efforts on releasing higher quality and more timely open data.

Users of open data have a role in defining what quality data is. In part, this can be linked to which data is most demanded. Several witnesses shared their views with the Committee on what datasets are most valuable. Colin McKay, Head of Public Policy and Government Relations for Google, commented that the government "needs to focus its efforts on identifying and making available the kind of data that generates the most interest from users and will have an impact." He added that the datasets should be "well structured, machine readable, and regularly updated." In addition, Mark Gayler, Technology Strategist for Microsoft Canada, commented that "[l]ocal data has a lot more relevance to the average citizen in many cases than […] national trending data."

In terms of what datasets are most valuable, John Pineau, Chief Executive Officer of the Canadian Institute of Forestry, mentioned that quality data on natural resources and in particular forestry is essential to making good decisions, both for the economy and the protection of ecosystems. Geospatial data was mentioned by Mr. Mallett as key information that is important to the members of the Canadian Federation of Independent Business.

Currently, the federal government's open data portal is largely populated with geospatial data. In terms of stakeholder concerns with respect to the diversity of federal datasets, Ms. Francoli informed the Committee that, "[t]here are few to no data sets in many other areas, including employment insurance, health and issues related to specific demographics such as seniors or Aboriginal persons." In addition, some municipal government representatives expressed that they would like open data from the federal government in relation to transportation, environment, health, government spending and socio-economic trends.

Several witnesses shared the view that there is a demand for open data at a more granular level. Mr. Mallett added that there is also need for microdata, at a small geographical or industrial level. Mr. Deslauriers, from the City of Québec, and a representative from the Government of Newfoundland and Labrador, both agreed that there is a demand for open data at a local or neighbourhood level. According to a representative from the City of Toronto, "[w]e need data at smaller levels of geography." He noted that "[w]hen we look at the data we need, we're going to need unemployment rates [and] we're going to need health care statistics. Those have to be at a level of granularity that makes it useful for cities in their place-based evidence planning." Mr. Mallett also mentioned that there is a need for forward-looking data or projections, but admitted this is harder data to obtain. As an example, federal departments and agencies possess forward-looking data such as occupational projections or forecasts related to economic growth.

### C. Open linked data

The datasets released by the federal government on its open data portal can be characterized as static files. As an example, Renée Miller, Professor, Department of Computer Science at the University of Toronto, explained to the Committee that the federal charities dataset is a static or "dead file," with no linked data. She added that "[h]ow much federal money [a charity] gets is in [the] file but other information like whether it gets provincial funding, private funding, who those private funding agencies are and information about them, [is] not there."

Several witnesses suggested that the quality of open government data could be enhanced with open linked data – in particular with data from the public and data from non-governmental organizations. According to Ms. Miller, open linked data is "dereferenceable," meaning that users can get important and interesting information about the data, including relationships to other data and other important information. Ms. Miller recommended that "the open data portal should adapt the principles of open link data." She explained that making data linkable is easy to do with existing technology.

Crowdsourcing is the practice of obtaining services, ideas, or content by soliciting contributions from a large group of people, most often through an online community. Some witnesses suggested that the public should be able to contribute to open government data. According to Ms. Miller, the federal government should "look to activate the power [of] the crowd [and create] datasets where the community itself can contribute to those datasets." Mr. Gayler noted that in terms of crowdsourcing, it's important to have a feedback loop to ensure that more accurate data is reflected on a timely basis and to ensure that the quality of data is improving over time. A representative from the Government of Ontario noted that "[t]he more sets of eyes on the data the higher the quality becomes."

Meanwhile, other witnesses raised concerns with respect to allowing users to contribute to the federal open data portal. For example, Mr. Eaves warned that to "crowdsource the creation of data creates an enormous number of methodological problems." He cautioned that there needs to be accountability, especially around datasets that government is using to make decisions, and highlighted that the federal government already has a large volume of verifiable data that it can leverage.

As mentioned earlier, some witnesses suggested that open government data could be enhanced with data from non-governmental organizations. According to Mr. Gayler, if the federal government established partnerships with third-party commercial sources of data, "transformative things [could] start to happen." As an example, according to a representative from the City of Toronto, "[t]he federal government is sitting on a gold mine of health data through […] the Canadian Institute for Health Information." The municipal representative also noted that information from the Canada Mortgage and Housing Corporation would be beneficial in terms of data at a specific level of geography. As well, he urged the federal government to consider the granularity, the frequency and the timeliness of the data that it collects and releases. As an example, the long-form census was of particular importance to many witnesses.

With respect to metadata, the Committee recommends that:

**RECOMMENDATION 8**

**The Government of Canada should work with provincial, territorial and municipal governments to standardize metadata for all of the high value datasets identified in the G8 Open Data Charter.**

**RECOMMENDATION 9**

**The Government of Canada should establish working group level bodies organized by sector to develop metadata standards.**

With respect to the quality of open data, the Committee recommends that:

**RECOMMENDATION 10**

**Through federal departments and agencies and through Crown corporations, the Government of Canada should provide additional**

**data by demographic group, geographic region and by industry on its open data portal.**

**RECOMMENDATION 11**

**The Government of Canada should collaborate with provincial, territorial and municipal governments to provide data at more granular levels of geography and industry.**

**RECOMMENDATION 12**

**That the Government of Canada should release forward-looking data, such as projections and forecasts, on its open data portal.**

# CHAPTER FOUR: USEABLE BY ALL

> *It is not enough to publish data for that data to serve as an excellent example of open data.… [O]pen data is about having more easily reusable formats.*
>
> *Lyne Da Sylva, Associate Professor, School of Library and Information Science, Université de Montréal*

The third open data principle – Useable by All – is centered on the release of as much data in as many open formats as possible. Throughout the Committee's study, witnesses suggested ways to improve data formats and search functionality in order for open data to be truly useable by all, from researchers and academics to the general public. These comments have informed the Committee's recommendations about potential ways to make open government data more accessible and easily useable.

## A. Data formats

Before open data, the federal government published many sources of data. However, these were not necessarily presented in machine-readable formats and were often published under restricted licensing terms. According to the CIO of the Government of Canada, open data allows users to search and then download data in machine-useable formats, so that they can develop programs and information systems that can manipulate the data and produce other uses for it.

One barrier to utilizing open data is licensing restrictions. As such, the development of a common open license is an integral part of open government data. The federal government released its open government license in June 2013. As well, Mr. Deslauriers explained that the Government of Québec and the cities of Québec, Gatineau, Montréal and Sherbrooke released a common license in February 2014. Moreover, these four cities and the provincial government are merging their open data portals to provide users with a single point of access. Ms. Miller noted that licenses should be designed to allow governments to release data while still maintaining ownership over the data.

According to a TBS official, while federal departments and agencies are "owners" of the data, "[c]ertain legislation doesn't allow for the data to be shared." According to Ms. Ubaldi, there are also restrictions that concern the sharing of data within the public sector. She explained, "at times, for instance, linked data sets can support their data analytics, which can help identify trends to improve policy making and service delivery, but still some legal restrictions do not enable different parts of the administration to access the various data sets."

Some witnesses even suggested legislative changes. For example, according to Mr. Eaves, Canada should consider core datasets whenever it passes new legislation, to

answer the question: “What are the core datasets that allow for the transparency so that the public can assess whether the legislation is working?” In addition, he recommended that the federal government should update the *Access to Information Act* in order to require departments to respond to requests for data with datasets that are in a machine-readable format.

According to several witnesses, including Ms. Ubaldi, technical challenges that governments deal with in relation to open data include how to enable interoperability and integration of data and how to foster the linkage of datasets to be released in open formats. According to a representative from the Government of New Brunswick, “[o]ne issue is that today data is available in each government's format and very few are using international standards.” A representative from the City of Ottawa informed the Committee that “it's difficult to get common data formats for particular topics across the levels of government simply because in many cases you're working with different types of data.” With respect to this lack of standardization, Mr. Sharma commented that the federal government has a role to play to standardize formats and protocols so that applications created locally can serve in other jurisdictions inside or outside Canada.

A TBS official explained that the federal government has incorporated the use of an international openness scale on its open data portal to indicate the level of openness of its datasets. This scale indicates the extent to which the dataset is available in a well-structured format, and whether or not proprietary software is required in order to open the dataset. The U.S, the U.K. and a variety of other jurisdictions are also using this scale.

The Committee heard several suggestions on which formats are best for releasing open data. According to Mr. Chui, data formats should be machine-readable and although most formats are, “some [formats] are easier to use [and] easier to process, such as comma-delimited.”

According to some witnesses, the best format for open data is the Resource Description Framework (RDF) format. Ms. Da Sylva told the Committee that RDF format is the champion of “reusability.” She explained that RDF format is an extremely simple but highly-structured format, and while it is more challenging for a person to write and read the format, it can be easily manipulated by a computer. As explained by a representative from the Government of British Columbia, “RDF is a really interesting and powerful data format because it can create those interconnections among different datasets.”

Comma-separated values (CSV) is another widely used format. According to Ms. Da Sylva, producing data in CSV format is quite easy and there are no real technological barriers to doing so. In addition, she explained that CSV format can be readily manipulated by computer and can be converted into RDF format.

In terms of international best practices, Ms. Da Sylva told the Committee that the U.K. publishes a large number of its datasets in RDF format. In comparison, she added that some governments publish their documents as zipped PDF images, which is not a desirable format for open data. She also noted that some federal data is presented in zipped text files – also not a desirable format, since the data is unstructured and much

more difficult to analyze directly with a computer. In terms of the federal government's progress, the President of the Treasury Board noted that harmonizing data formats is a work in progress.

Some witnesses raised concerns around the usability of open government data by the general public. A representative from the Government of British Columbia commented that data has to be accessible and usable. According to Ms. Francoli, "[t]he raw format that the datasets are released in really does privilege data scientists; people who have high degrees of expertise in the use of raw data. Many others, non-governmental organizations for example, would benefit greatly from the datasets and the information, but they're not able to use them because they lack the resources, they lack the expertise." A representative from the Government of British Columbia emphasized that "making sure that people can connect to the data in a way that is relevant to them and that serves their needs is really important." According to Ms. Da Sylva, "[t]he [federal government] site is just so huge – there are so many things – that to figure out what might be of use to you might take a while." With respect to usability, a representative from the Government of Ontario suggested that visualization tools would be one way to address this issue in order "to make it simpler to understand."

**B. Discoverability**

Several witnesses suggested that the federal government should develop a federated search function, through a national search engine, which would include open data from federal, provincial and municipal governments. This single point of access would facilitate the research of open data in relation to a specific subject from all levels of government in Canada. According to an official from the Government of Ontario, this "would help the adoption and use of open data by improving access." Representatives from the Government of British Columbia, the City of Toronto and the City of Ottawa all agreed that there should be a federated search function for open government data in Canada.

A federated search function could also lead to economies of scale for individual governments. An official from the Government of Ontario suggested that governments could collaborate and jointly develop a common search engine, so wherever the data resides, users can search federal, provincial and municipal government data. A representative from the City of Ottawa agreed and noted that the federal government could act as the lead on this collaborative effort.

The federal government also recognizes the value of a federated discovery approach. The CIO of the Government of Canada remarked that "[i]t would certainly be very useful to civil society to be able to tap data sets across Canada without any challenge to usability or licensing." In particular, a TBS official shared that, "through our international collaborations and through our national cooperation with the provinces and municipalities, we have discovered that this is something that users want. […] As such, in the coming years, we will work to create as many links as possible between the different portals as well as between the different access points in order to permit relatively transparent navigation between these sites."

In addition, several witnesses suggested that search capabilities need to be further expanded to allow users to search by geography, as well as by theme. A representative from the Government of British Columbia agreed that the open data portal should be improved in terms of the discoverability of data. The CIO of the Government of Canada indicated to the Committee that the department is working internationally with the U.K. on greater search capabilities.

### C. Building awareness

In terms of building awareness of the open data portal, the CIO of the Government of Canada informed the Committee that there is no separate advertising budget for the federal government's open data initiative. However, she explained to the Committee that the open data portal is being promoted online, through consultations and search engines. While several witnesses agreed that the federal government should advertise its open data portal, there were various suggestions as to which approach was best in terms of raising awareness.

Some witnesses suggested that the approach to advertising the open data portal should depend on which users the government is trying to reach. For example, Mr. Stirling remarked that rather than paying for advertising, the most effective way to increase the awareness of the open data portal could be to send letters to certain charities or civil society organizations, asking those bodies to spread the word to their members.

Meanwhile, several witnesses agreed that the focus should be placed on awareness, engagement and dialogue. According to them, with an engaged group of individuals, open data has the potential to become more valuable. On this theme, Donald Lenihan of the Public Policy Forum emphasized the importance of engaging the public, consulting and raising awareness around open data. Ms. Ubaldi also commented, "it is very important to know what's going on before advertising, and awareness raising is essential." She added that "[i]t's about businesses as actors, but it's also about other groups in society, so taking active steps to advertise and let people know and engage is […] essential."

With respect to data formats and licensing, the Committee recommends that:

**RECOMMENDATION 13**

**The Government of Canada should assess whether there are restrictions in existing federal legislation which prevent the release of certain datasets on its open data portal, and consider making legislative changes where appropriate. In addition, the Government of Canada consider open data requirements when introducing new legislation.**

**RECOMMENDATION 14**

**The Government of Canada should update the *Access to Information Act* in order to require federal departments and agencies to provide datasets that are in a machine-readable formats when responding to access to information requests for data.**

**RECOMMENDAITON 15**

**The Government of Canada accelerate its efforts to harmonize data formats by consulting sectorial roundtables, involving provincial, territorial and municipal governments, and other stakeholders.**

**RECOMMENDATION 16**

**The Government of Canada should continue to prioritize the release of high value datasets and align the format of those datasets with its G8 partner countries.**

**RECOMMENDATION 17**

**The Government of Canada should update its procurement policies to require that information technology purchases support open data; and that these policies include a requirement in terms of data formats, such as RDF and CSV formats, in order to support the release of open data in machine-readable formats.**

In order to have a single point of access for open government data in Canada, the Committee recommends that:

**RECOMMENDATION 18**

**The Government of Canada, in collaboration with provincial, territorial and municipal governments, should develop a federated search function to enable users to access open data from all three levels of government through a single point of access.**

In relation to building awareness of the federal government's open data portal, the Committee recommends that:

**RECOMMENDATION 19**

**The Government of Canada should continue to promote its open data portal through additional promotion to the public.**

# CHAPTER FIVE: RELEASING DATA FOR IMPROVED GOVERNANCE

> *If you want to make good decisions, you need good information, and the availability of data makes that promising and important.*
>
> *Don Lenihan, Senior Associate, Public Policy Forum*

The fourth open data principle – Releasing Data for Improved Governance – directs the government to share expertise and be transparent about its data collection, standards and publishing processes. The Committee heard from several witnesses that open data can create value within government in terms of enhanced governance, increased efficiencies and citizen engagement.

### A. Enhanced governance

The CIO of the Government of Canada told the Committee that, "we're strong believers that open data helps to reinforce accountability and the government's agenda." In addition, several witnesses also highlighted the importance of open data in relation to good governance. For example, Ms. Ubaldi commented that with open data, there is governance value, or political value, that is created, linked to "the fight for higher transparency, higher accountability, and higher responsibility of governments." She later added that open data "has an impact of changing the way the government conceives a number of actions, ranging from policy making to service delivery."

Several witnesses noted that open data is not an end product. Instead, it should be considered core infrastructure and governments should be using it to make good decisions. A representative for the Government of British Columbia stated that users want the government to use their own data as a signal of their commitment to enhance the data. A representative for the Government of Ontario noted that when public servants review open data, they are in a position to question missing data or anomalies, which improves the quality of the data. Industry representatives Mr. Sharma and Mr. McKay, and Paul Baker, Chief Executive Officer of the Chicago Open Data Institute, each suggested that open data would help increase productivity within the government, in particular by increasing information available to public servants, decreasing duplication of work and increasing feedback from the public. A representative from the Government of British Columbia explained that with open data, "[g]overnment can make more evidence-based decisions about programs and policies and use the data in its own services [to] improve results for taxpayers."

In terms of government expenditures, one international best practice is to publish detailed spending data. In the U.K., all spending data down to £500 (approximately CA$913) is downloadable and publicly available. According to Mr. Eaves, this has been

interesting to the public, but more so it has been interesting to public servants within that government.

**B. Efficiencies within government**

According to a TBS official, the value creation related to improved governance is demonstrated through the "increased collaboration on the development of datasets specifically that meet multiple mandates from different departments." He explained that the federal government has realized efficiencies in the management of the data, because instead of the same dataset being maintained and managed in multiple departments, it will be managed in one place.

Several witnesses noted that public servants represent a significant proportion of open government data users. Mr. Eaves noted that "roughly 30% of the users of an open data portal come from computers that are located within the government that made that open data available." This estimate was further supported by a representative from the Government of Ontario who commented that, "experience has shown that the number one users of government data are the public servants in that jurisdiction [and n]umber two are public servants elsewhere." A TBS official noted that provincial and municipal employees are a significant user of federal open data. As well, in terms of federal use, he suggested that "some of the more generic, underlying foundational data sets like census data or geospatial data are really of more significant use to multiple departments, because [that data] can be used to augment the information [those departments] already have in many different ways."

In fact, according to some witnesses, the data that government creates is most useful to people who work within government. Mr. Eaves suggested that "there are huge opportunities in reshaping how public servants work with one another and in using open data to vastly improve the efficiency and productivity of public servants." He explained that before the open data portal, if a public servant wanted a specific dataset from another department, that individual might have to go through multiples levels of approval to get access to the data. With open government data, a barrier has been removed and public servants can get access to the data in a more timely manner. As a result, Mr. Eaves posited that there is an "opportunity for open data to dramatically improve analysis and productivity" and that "the productivity opportunities within government […] are quite significant."

Mr. Eaves suggested that transparency and open data can drive a particular policy agenda. Based on an example from the U.S., he explained to the Committee that "if you want to drive a policy outcome of reducing health care costs, it turns out that publishing restaurant inspection results in a useful manner is a great way of driving that." As another example, a TBS official mentioned the oil sands monitoring portal, a joint initiative between Environment Canada and the Government of Alberta, with a specific focus on open data. Meanwhile, according to the CIO of the Government of Canada, sharing scientific data is very important on the international front.

### C. Engaging citizens

In terms of assessing the value of Canada's open data policies, Mr. Eaves noted that a key question is: "Where are the things that make government transparent so that citizens themselves can better understand and make government more legible, so they can become more engaged in the political process and contribute in interesting ways in the policy debates?" According to Ginny Dybenko, Executive Director of the University of Waterloo's Stratford Campus, "lack of engagement of the citizenry is the biggest challenge that government faces today." She added, "I would see open data as a very useful tool to not only speak to the electorate but also to get opinion[s] from them, and in doing so to get them involved in government affairs."

According to Mr. Gayler, open data itself is not an end point. Rather, "[i]t's an enabler particularly for citizen engagement, getting citizens actively involved and participating in the business of government." He added that "it's important that the government provide a framework to encourage parties to collaborate around the sharing and reuse of open data – private-public partnerships, for example – and particularly engage those parts of the citizenry with whom perhaps we are not already engaged and get them actively involved in the business of government." According to him, "this is where we see this going: an increase in data, the increase and ubiquity of technology, engaging consumers and crowdsourcing to enable government to engage and make better decisions."

With respect to data for improved governance, the Committee recommends that:

**RECOMMENDATION 20**

**The Government of Canada establish performance measures to evaluate its implementation of open data in line with its commitments under the G8 Open Data Charter and its membership in the Open Government Partnership, and include these performance measures in departmental reports on plans and priorities and departmental performance reports.**

# CHAPTER SIX: RELEASING DATA FOR INNOVATION

> *I view open data as an enabler of things in the economy. The benefits of open data come from people being able to find out how to do things faster, cheaper, or better.*
>
> *Richard Stirling, International Director, Open Data Institute*

The fifth open data principle – releasing data for innovation – directs the government to consult with users and empower the future generations of innovators. The Committee heard from several witnesses that open data can drive innovation and value creation in a number of ways.

### A. Value creation

According to the CIO of the Government of Canada, open data is a key catalyst for innovation. In Canada, the federal government recently announced the creation of an Open Data Institute, a public-private partnership based in Waterloo, Ontario. Joanne Bates, Lecturer in Information Politics and Policy at the University of Sheffield (U.K.), commented that the Open Data Institute model is a great one. According to Mr. Stirling of the U.K.'s Open Data Institute, many of the really interesting things happen at the intersection of open data and closed data, or open data and big data, or open data and personal data. However, as some witnesses noted, a lack of venture capital in Canada may be one barrier to innovation.

Many witnesses agreed that open data creates value. Ms. Ubaldi explained that "[t]here's no clear data yet that demonstrates the value, but there are a number of examples from all levels of jurisdictions that demonstrate there are changes in the way the government interacts with society in creating economic and social value."

### B. Empowering innovation

One way to empower innovation is through crowdsourcing. To this end, governments can leverage the power of the crowd by sharing data in order to find a solution to a particular problem. Several witnesses agreed that open data is a way of providing solutions into government. Mr. Sharma noted that crowdsourcing is being used by the U.S. Government, which has a site named *challenge.gov*. The site is used by NASA and the Department of Energy, among others. It provides data to users to solve specific problems and reach savings for the government. A TBS official confirmed that currently, the Government of Canada does have such a website.

Another way to empower innovation is by directly engaging users of open data. According to Mr. Gayler, an "appathon" – a competition to develop a mobile or web-based

application – “is a very simple example of transformational cultural change that can be brought about by sharing open data.” Ms. Dybenko agreed, saying that “one of the most important benefits will be the engagement of a populace, particularly a younger demographic, that today feels very disconnected from government processes.”

One way that the federal government has recently engaged youth, is through the 2014 Canadian Open Data Experience. This “appathon” challenged university students to see what kinds of applications they could develop using the federal government’s open data. Several witnesses agreed that this event had been successful, with over 100 different applications developed.

### C. Dialogue

According to a TBS official, the federal government’s approach to conducting public consultations was to work with various municipal governments in order to “contact local users – local companies, the post-secondary institutions, civil society organizations, and government representatives as well.” According to the CIO of the Government of Canada, “[Canadians] were invited to participate in online consultations and were asked questions over a certain period of time […] by submitting their comments and their questions.” As well, the President of the Treasury Board used online discussion forums and established a dialogue on Twitter during several hosted sessions which were announced on the TBS website to encourage participation. He also participated in a series of open discussions throughout Canada, in several municipalities, to promote open data in various regions. Finally, the federal government is currently developing its consultation plan for the second phase of its action plan open government.

Beyond public consultations, Ms. Miller advocated that “open data is about information flow and that information flow can't be unidirectional. If the flow of information is solely from the government to the public then there's no incentive for people to do interesting and creative things with that data.” She added that “open data is fundamentally about creating participatory opportunities where people can become invested in that data and are incentivized to contribute to the data itself and incentivized to improve the data and to create new innovative ways of using the data. I think this investment creates trust.”

### D. Economic value

Of particular interest to the Committee were the potential economic benefits associated with open data. However, as the Committee noted, few studies have been conducted to measure the economic impact of having access freely to more information. In fact, many witnesses explained that this impact is difficult to measure. The CIO of the Government of Canada reported that the TBS was not tracking the economic results of open data, and that they were struggling to find key indicators of success. Mr. McKay stressed that success would be hard to measure, but that the metrics could be developed alongside opportunities.

According to Mr. Sharma, there are intangible ways to measure the success of government open data portals, such as looking at the participation in “appathons” or

measuring the number of datasets downloaded from the federal government's open data portal.

The main report on the economic impact of open data, mentioned by many witnesses, was published by the McKinsey Global Institute. Mr. Chui, author of the report, appeared before the Committee to discuss its content. The McKinsey Global Institute report, *Open data: Unlocking innovation and performance with liquid information*, looked at the potential impact of open data in seven sectors: education; transportation; consumer products; electricity; oil and gas; health care; and consumer finance. According to the report, open data could help unlock an economic value between $3.2 trillion and $5.4 trillion annually worldwide, for those seven sectors only. These sectors were chosen because of their variety, representing a mix of goods and services, a mix of public and private sectors, and a cross-section of different industries.

The McKinsey Global Institute report also estimates that the potential value of open data would be divided roughly between the U.S. ($1.1 trillion), Europe ($900 billion) and the rest of the world ($1.7 trillion). Mr. Chui also acknowledged that a rough estimation of the potential impact of releasing open data in Canada (from government at all levels and from the private sector) would be close to $100 billion, based on the ratio of Canada's Gross Domestic Product (GDP) to the U.S.' GDP. As well, according to him, the federal government's open data represent only a portion of all the potential open data in the Canadian economy. He added that this is not a direct impact on GDP, since over half of the impact is on consumer surplus, which is not included in the GDP.[1]

According to Mr. Chui, one third of this potential impact comes from the combination of various sources of open data, which could help businesses comparing themselves with each other, defining new products and services, automating human decision making and segmenting the population to tailor specific actions or products. It could also help them to increase their productivity and create new products and services.

Some witnesses were skeptical about the magnitude of some of the estimates of open data's potential impact. For example, Mr. Eaves cautioned that there is a risk of overplaying the economic benefits of open data. He added that he "would be very, very cautious about believing every figure that passes by […] or why it's going to have an economic impact."

Witnesses provided numerous examples of how open data can help increase productivity, develop new markets and innovate. An official from the Government of British Columbia talked about the way open data can create more knowledge for students and researchers. Businesses can also make more informed decisions. Mr. Baker provided some examples of how the economic benefits could be reached in the agriculture and health sectors, from products related to weather data to innovations based on genomic

1 Consumer surplus is an economic concept measuring the difference between what consumers are willing to pay for a product or service and the price they actually pay. By creating savings, open data would decrease prices, thus, increase consumers' surplus.

data. Some witnesses gave the example of transportation, where businesses in this field could benefit from open data by knowing, in real time, border wait times, traffic congestion or road repairs. This could save time and costs, as well as reduce pollution.

As another example, Mr. Eaves underscored the success of the Canadian Boreal Forest Agreement, highlighting that its total impact on the Canadian economy could be in the billions. According to Mr. Eaves, "[the] entire project is supported by government data." Commenting on this project, he stated, "the economic opportunities around analysis that open data can provide is the place where […] federal government data becomes enormously valuable and interesting."

Mr. Sharma explained that, according to a report by the Information and Communication Technology Council, Canadian employment in the mobile and web-based applications economy stood at 64,100 in 2014. Authors of this report expect this number to grow to 110,000 by 2019. Canadian applications enterprises are expected to generate $1.7 billion in revenues in 2014 – 43% of these revenues coming from exports (28% from the U.S. and 15% from the rest of the world). Their revenues are expected to grow to $5.2 billion by 2019. According to Mr. Sharma, all these jobs and revenues are not uniquely derived from the existence of the federal government's open data portal, but it may be helpful in developing this industry.

Mr. Pineau, from the Canadian Institute of Forestry, mentioned that having information and quality data collected in collaboration saves time and money. He added that getting good data should not be seen as a cost, but as an investment to make better decisions. Mr. Chui expressed the opinion that Canada should perform its own analysis of what the economic benefits of open data may be in Canada and what data is more likely to create these benefits.

Several witnesses cautioned about the effects of placing too much emphasis on economic value. According to Ms. Bates, "all economic growth is not necessarily good growth" and it doesn't necessarily equal positive social implications. She argued that "the prioritization of data over other aspects of the democratization process, could lead to an empowering of the empowered and a disempowering of those people who are already socially excluded." For example, she explained that open weather data is very valuable for financial market trades around weather derivatives. However, she noted that open weather data "have a very questionable impact upon climate change mitigation because […] when businesses are buying these [derivative] products, they are essentially removing the financial impact of weather instabilities on their businesses." As a result, she argued, it gives those businesses less of incentive to demand action on climate change mitigation.

### E. Social value

The President of the Treasury Board told the Committee that "bureaucrats thinking of ways to create wealth is fine, but that's not the whole story […] the creativity of the marketplace can really unleash [open data] in a way that will create value for Canadians for years to come." According to a TBS official, innovation doesn't necessarily need to be attached to profit. According to Mr. Eaves, "the vast majority of [federal government] data

is actually geared toward policy analysts, so it's geared to trying to do analysis and understanding what's going on in society or what's going on in the community."

According to Ms. Ubaldi, open data can generate social value, for instance in terms of empowering citizens to make more informed decisions in their own lives. She added that this tends to do with a different type of engagement, participating in policy making and service delivery. In terms of generating social value, Ms. Bates suggested that when making policy decisions, governments should consider what they are aiming to achieve with open data, and then think about the wider policy ecology that needs to be in place in order to achieve the desired outcome. Mr. Baker added that some businesses use open data for social good, for example in relation to climate change.

With respect to how Canada compares internationally, Ms. Bates, noted that "in terms of social impact, and this includes things such as environmental sustainability and the inclusion of marginalized populations in policy making through using open government data, Canada is scoring relatively low." Related to this finding, a few witnesses explained that social value can be created from open data but qualified that other groups need to be included in the dialogue. According to Ms. Ubaldi, "in terms of social value, there is certainly an increasing number of examples showing how open data has increased the participation and the engagement of parts of society that otherwise would not be brought into the discussion and dialogue with governments in terms of service delivery and policy-making." Moreover, a representative from the City of Toronto noted that at-risk population groups, such as seniors, new immigrants, and youth, can benefit from open government data.

With respect to the release of data for innovation, the Committee recommends that:

**RECOMMENDATION 21**

**The Government of Canada should create a crowdsourcing website where federal departments and agencies can release datasets linked to a particular issue and launch competitions to challenge the public to find ways to create savings for the federal government related to the issue.**

**RECOMMENDATION 22**

**The Government of Canada should establish performance measures in consultation with stakeholder groups to evaluate the success of its open data initiative.**

# CHAPTER SEVEN: CONCLUSION

The Committee believes that open data is an important initiative, and the ability to harness open government data can generate value for Canadians. Recognizing that open data is a resource, a raw material for the digital age, the Committee urges the federal government to continue to pursue its open data commitments as the volume of government data continues to expand.

The Committee recognizes that the federal government's open data initiative will require a culture shift within the federal government. The G8 Open Data Charter principles – Open Data by Default; Quantity and Quality; Useable by All; Releasing Data for Improved Governance; and Releasing Data for Innovation – should guide this change.

In the opinion of many witnesses, Canada is among the leaders in open data. The Committee encourages the federal government to continue to innovate and develop its vision for open data in Canada. As a next step, increased collaboration and harmonization with other levels of government, including international governments and with non-governmental organizations, is critical to unlocking the value of open data. The Committee also believes that supporting open dialogue and broadly engaging citizens should be part of the open data movement in Canada.

# LIST OF RECOMMENDATIONS

# APPENDIX A
# LIST OF WITNESSES

| Organizations and Individuals | Date | Meeting |
|---|---|---|
| **Treasury Board Secretariat** | 2014/03/04 | 13 |
| Corinne Charette, Chief Information Officer of the Government of Canada | | |
| Sylvain Latour, Director, Open Government Secretariat | | |
| Stephen Walker, Senior Director, Information Management Strategies, Chief Information Officer Branch | | |
| **Google Inc.** | 2014/04/01 | 17 |
| Colin McKay, Head, Public Policy and Government Relations | | |
| **XMG Studio Inc.** | | |
| Ray Sharma, Founder | | |
| **As an individual** | 2014/04/03 | 18 |
| David Eaves, Open Data Consultant | | |
| **Microsoft Canada Inc.** | | |
| Mark Gayler, Technology Strategist, Western Canada Public Sector | | |
| **University of Toronto** | | |
| Renée J. Miller, Professor, Department of Computer Science | | |
| **University of Waterloo** | | |
| Ginny Dybenko, Executive Director, Stratford Campus | | |
| **Canadian Federation of Independent Business** | 2014/04/08 | 19 |
| Ted Mallett, Vice-President and Chief Economist | | |
| **Canadian Institute of Forestry** | | |
| John Pineau, Chief Executive Officer | | |
| **Open Data Institute** | 2014/04/10 | 20 |
| Richard Stirling, International Director | | |
| **Organisation for Economic Co-operation and Development** | | |
| Barbara-Chiara Ubaldi, E-Government Project Manager, Reform of the Public Sector Division, Public Governance and Territorial Development Directorate | | |
| **Université de Montréal** | | |
| Lyne Da Sylva, Associate Professor, School of Library and Information Science | | |

| Organizations and Individuals | Date | Meeting |
|---|---|---|
| **University of Sheffield** | 2014/04/10 | 20 |
| Joanne Bates, Lecturer in Information Politics and Policy, Information School | | |
| **As an individual** | 2014/04/29 | 21 |
| Don Lenihan, Senior Associate, Public Policy Forum | | |
| **City of Ottawa** | | |
| Robert Giggey, Program Manager, Content Design and Development, Service Ottawa | | |
| **City of Toronto** | | |
| Harvey Low, Manager, Social Research Unit, Toronto Social Development, Finance and Administration Division | | |
| **Government of Ontario** | | |
| Marc Foulon, Head, Open Government, Ministry of Government Services | | |
| Ron McKerlie, Deputy Minister, Open Government, Ministry of Government Services | | |
| **Chicago Open Data Institute** | 2014/05/01 | 22 |
| Paul Baker, Chief Executive Officer | | |
| **McKinsey and Company** | | |
| Michael Chui, Partner, McKinsey Global Institute | | |
| **Treasury Board Secretariat** | 2014/05/05 | 23 |
| Hon. Tony Clement, President of the Treasury Board | | |
| Dave Adamson, Deputy Chief Information Officer | | |
| Corinne Charette, Chief Information Officer of the Government of Canada | | |
| Sylvain Latour, Director, Open Government Secretariat | | |
| Stephen Walker, Senior Director, Information Management Strategies, Chief Information Officer Branch | | |
| **Government of British Columbia** | 2014/05/08 | 24 |
| David Hume, Executive Director, Citizen Engagement, Government Communications and Public Engagement | | |
| **Government of New Brunswick** | | |
| Diane Nadeau, Chief Information Strategist, Office of the Chief Information Officer | | |
| **As individuals** | 2014/05/13 | 25 |
| Denis Deslauriers, Director of the Information Technology and Telecommunications Service, City of Quebec | | |
| Mary Francoli, Assistant Professor, School of Journalism and Communication, Carleton University | | |

| Organizations and Individuals | Date | Meeting |
|---|---|---|
| **City of Montreal** | 2014/05/13 | 25 |
| Harout Chitilian, Vice-chair of the executive committee, responsible for administrative reform, youth, smart city initiatives and information technology | | |
| Jean-Pierre Fortin, IT Strategy and Planning Advisor, Information Technology Service | | |
| **Government of Newfoundland and Labrador** | | |
| Alton Hollett, Assistant Deputy Minister, Economics and Statistics Branch, Department of Finance | | |
| **Canadian Institute for Health Information** | 2014/05/15 | 26 |
| Brent Diverty, Vice President, Programs | | |
| Michael Hunt, Director, Health Spending and Strategic Initiatives | | |
| **Department of Citizenship and Immigration Canada** | | |
| Ümit Kiziltan, Director General, Research and Evaluation | | |
| **Department of Health** | | |
| Guylaine Montplaisir, Chief Information Officer, Corporate Services | | |
| **Department of Natural Resources** | | |
| Pierre Ferland, Chief Information Officer, Chief Information Office and Security Branch | | |
| Prashant Shukle, Director General, Canadian Centre for Remote Sensing – Geomatics Canada, Earth Sciences Sector | | |
| **Department of Transport** | | |
| Kash Ram, Director General, Road Safety and Motor Vehicle Regulation | | |
| Richard Thivierge, Director General, Business and Systems Architecture and Deputy Chief Information Officer | | |
| **Statistics Canada** | | |
| Yves Béland, Director General, Operations Branch | | |
| Bill Joyce, Director, Operations Branch | | |

# APPENDIX B
# LIST OF BRIEFS

| Organizations and Individuals |
| --- |
| Université de Montréal |
| University of Sheffield |

# REQUEST FOR GOVERNMENT RESPONSE

Pursuant to Standing Order 109, the Committee requests that the government table a comprehensive response to this report.

A copy of the relevant *Minutes of Proceedings* (Meetings Nos. 13, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 31 and 32) is tabled.

Respectfully submitted,

Pierre-Luc Dusseault
Chair