

Treasury Board Secretariat of Canada Regulatory Reviews

Request for Information

This document contains a number of sections: the project backgrounder, a draft Statement of Work, Resources for Industry, Questions and Answers, agendas for the Industry Days, and a primer on Government of Canada regulations. Please take into account the contents of all sections when considering the following questions.

Given the information in the backgrounder, what methodologies could be considered?

Given the project timing, is there enough time to produce a reasonable product?

Given the data sources provided in the "Project Resources for Industry" document, are there any additional data sources that could also be exploited?

Given that participants will retain the intellectual property rights and the showcase to allow the bidder to present the product, would you consider a \$1 "prize" to be appropriate? If no, what would you consider appropriate remuneration?

Treasury Board Secretariat of Canada Regulatory Reviews: Artificial Intelligence Industry Day Backgrounder

Budget 2018 committed the Government of Canada to pursue an ambitious regulatory reform agenda focused on supporting innovation and business investment. The goal is to make the Canadian regulatory system more agile, transparent and responsive, so that businesses across the country can explore and act on new opportunities, resulting in benefits for all Canadians.

As part of the process, the Treasury Board of Canada Secretariat (TBS) is undertaking a review of the current stock of over 2,600 federal regulations. In order to gain new insights, TBS is looking for industry partners and academic researchers to help apply artificial intelligence methods such as advanced data analytics (ADA) and machine learning (ML) to regulations of varying type, scope and complexity. Beyond supporting the Government of Canada's regulatory reform agenda, industry partners and academic researchers will retain all intellectual property rights and can market the resulting products and tools to other regulators or regulated parties.

An advanced analytics and machine learning showcase is planned for September 2018 where prizes will be awarded for top products. A call for proposals (i.e. Request for Proposal) will be conducted in June with the final product expected by the end of August.

TBS will be holding information events for interested firms and researchers (Industry Days) to support the Request for Information. An Industry Day will be held in Toronto on May 28, 2018 in partnership with SOSCIP ("Smart Computing for Innovation"), and in Montreal on May 29, 2018, in partnership with IVADO (L'institut de Valorization des Données). These events are designed to engage interested firms, data scientists and specialists on:

- data and resources that will be made available to showcase participants on federal regulations, and any additional sources that they would recommend;
- methodological approaches to be considered in the process; and
- the September showcase and the proposed process, including options for awarding of a prize.

Treasury Board Secretariat of Canada Regulatory Reviews: Artificial Intelligence Industry Day

Draft Statement of Work Regulatory Insights x Advanced Analytics

PURPOSE:

The Treasury Board of Canada Secretariat (TBS) is engaging organizations that employ artificial intelligence methods, including advanced data analytics (ADA) and machine learning (ML) approaches, to offer new insight and analysis on federal regulation to ensure that they support innovation, growth and competitiveness while protecting the health, safety, and well-being of Canadians, and the environment.

To this end, the purpose of this work is to use these new methods and approaches to examining the large and diverse stock of over 2,600 federal regulations. This work could, for example, contribute to the following themes:

- carrying out a linguistic analysis of regulations,
- providing insight on clustering and patterns,
- linking characteristics of regulations to outcomes, litigation/case law, and,
- comparative analysis of Canadian and other countries' approaches to regulation.

The resulting analysis products would be publicly available, and inform advice provided by the Treasury Board of Canada Secretariat leading up to Federal Budget 2019.

CONTEXT

As described in the [Cabinet Directive on Regulatory Management](#), regulation is a key policy instrument used by government to enable economic activity and to protect the health, safety, security, and environment of Canadians.

Regulation is a form of law with binding effect made by the Executive Branch of the Government of Canada. Often referred to as "delegated," "secondary," or "subordinate legislation," regulations are made by persons to whom or bodies to which Parliament has delegated authority, such as Cabinet (as the Governor in Council), a Minister, or an administrative agency. Authority to make regulations must be expressly delegated through enabling legislation.

At the federal level, there are over 2600 regulations (see Consolidated Regulations at <http://laws-lois.justice.gc.ca/eng/regulations/>) that are enabled by 800 acts of legislation (see Consolidated Acts at <http://laws-lois.justice.gc.ca/eng/acts/>). Regulations cover areas ranging from food safety, to airport zoning, to migratory birds, to radio-spectrum allocation.

SCOPE:

This statement of work is purposefully broad in scope to allow for new analytical approaches to achieve the stated objectives. Such analysis could involve a range of analytical approaches using many and varied data and information sources. For example:

Linguistic Analysis of Regulations

- Legislation and regulations themselves may be an impediment for innovation. Are there indicators in the language of regulations that would imply barriers to innovation? Conversely, are there indicators that support a more agile, transparent and responsive regulatory system?
- For example, the prescriptivity of regulations (potentially indicated by words like *shall* and *must* rather than *may*) or reference to particular measures/measurements or very specific or detailed requirements, rather than the outcomes to be achieved.
- For example, there may be inconsistent use of language in some regulations, and even in regulations of the same regulator. For example, some regulations often use different verbs to describe similar actions such as “surveillance” and “monitoring”. Can inconsistent use of language be identified? Alternatively, can linguistic or semantic analysis be conducted to identify where other language could be used to facilitate compliance?
- How has the language of regulations evolved over time? Does newer or amended regulation exhibit different features than older regulations?
- Can natural language analysis combined with internet searching produce an accurate list of documents incorporated by reference (and, further, the cost if any of purchasing them, and whether they are available in English and French)?

Providing Insight on Clustering and Patterns

- Can cluster analysis suggest ways to group regulations together or areas where regulators should coordinate?
- Can a mapping be created that establishes the links between regulations and businesses/sectors that are regulated? (for example using North American Industry Classification System codes)
- Is there a way to visually depict groupings of regulations to simplify understanding and decision-making? For example, showing clusters of regulations, or plotting them on a multivariable graph or heatmap. How has this evolved over time?
- Some regulations have characteristics unique to a particular sector or industry (i.e., terminology, reference to specific technologies, standards or requirements). Can AI identify patterns of potential overlap or duplication as well as variations in regulations?

Linking Characteristics to Outcomes, Litigation/Case Law

- Are there methodologies or proofs of concept that could, with additional data and information, link regulatory textual information to the private sector performance of

regulated parties? For example, can the form, language or spirit that a regulation takes be linked directly to the performance of a certain sector in the economy?

- Some regulations attract a considerable amount of legal attention (case law, legal opinions, etc). Are there specific characteristics (such as wording or prescriptivity) that are associated with such legal attention?
- Can these characteristics be identified at the consultation stage (*Canada Gazette I*)?

Comparative Analysis of Canadian and Other Countries' Approaches to Regulation

- Can AI provide a systematic analysis of comparative regulations between Canada and the US and/or the EU? For example, is there a way to see how similar subject matter is regulated in the US and EU?
- Can AI provide insight on overlapping or related aspects of federal and provincial regulations?

TIMING

Following feedback sessions with the artificial intelligence community and industry in May 2018, it is expected that work would begin in June 2018, for completion in August 2018. The showcase event for the first deliverable would take place in September 2018, with the prize being awarded at that time.

ROLE AND RESPONSIBILITIES

The external contractors or winning organizations will be responsible for scoping out and proposing an analytical process to support an analytical output that would provide insights on the federal regulatory stock.

TBS would be responsible for organizing at least one monthly meeting to convene a set of regulatory experts to answer questions from prospective external collaborators. TBS would also work to set up meetings to respond to project-specific questions.

DELIVERABLES

Participants would provide TBS with the following deliverables no later than August 31, 2018:

1. **Analysis Report:** As drawn from the advanced analytics method selected by the collaborating organization, an Analysis Report as the first deliverable will summarize insights on trends, relationships and other characteristics of the federal regulatory stock.

This first deliverable should be digital, and provide written and visualized analysis that is easy to understand and can be readily used to inform advice leading up to Federal Budget 2019. Required sections for this report include: an executive summary, high-level methodology, summary of insights (findings), and recommendations for further analysis. This first deliverable could also include access to an interactive online tool for demonstration and exploration purposes. This first deliverable would be made public online to showcase the work and share the insights openly, particularly at the September showcase event.

2. Methodology of Analytics: A second deliverable would include information on the methodology (e.g. weighting for types of words; data sources used), so that TBS can assess the applicable use of these insights, and the validity and reliability of the analysis. Given the complexity and challenge to understand the results of advanced analytics, TBS has a responsibility to verify the soundness of such analysis to its best ability to then provide evidence-based advice.

NUMBER OF WINNERS

Due to the nature of the work, it is possible that there may be multiple winners. While the winners will be chosen during the showcase event in September, all bidders that meet the minimum requirements in the RFP will be given the opportunity to showcase their submission at the showcase event.

Resources for Participants

The following data sources are the main focus of the project:

The present list of Acts and Regulations

The Justice Canada FTP server (<ftp://205.193.86.89/>) contains a file that is updated on an ongoing basis called data.zip (<ftp://205.193.86.89/data.zip>) that contains the Acts and Regulations as of the date of archiving. This archive contains Regulations that are marked up in XML format. The data dictionary in English: (<http://laws-lois.justice.gc.ca/eng/XML/index.html>) and French (<http://laws-lois.justice.gc.ca/fra/XML/index.html>). It should be noted that the archive also includes Statutory Instruments (filenames that start with SI) that are not considered Regulations for this project. The archive also contains repealed regulations. The <Repealed></Repealed> tag may apply to only parts of the regulation, but may apply to the regulation as a whole.

Point-in-time archive of Acts and Regulations

On the same FTP, there is a directory for point-in-time archives: (<ftp://205.193.86.89/PITXML/>). There are ZIP archives as well as an uncompressed file structure. The structure differs slightly from the above in order to accommodate previous dates.

The following are other data sources that may provide additional insight:

Additional links of interest

General resources on regulation

Administrative Burden Baseline Counts (<http://bit.ly/2Hf0QmM>)
 Canada Gazette I and II (<http://www.gazette.gc.ca/rp-pr/publications-eng.html#a1>)
 Canada Gazette I and II, in an archive of PDF and HTML:
 (<http://bit.ly/2r3e1Bi> and <http://bit.ly/2KgeTKV>)
 Survey of innovation and business strategy, obstacles to innovation confronted
 (<http://bit.ly/2HaoFMH>)
 gitlawca repository for Canadian legislation: (<https://github.com/JasonMWhite/gitlawca>)

Other jurisdictions

Federal/Provincial/Territorial regulations API (<http://developer.canlii.org/docs/Legislations>)
 RegData (US Regulatory data) (<https://quantgov.org/regdata/>)
 Code of Federal Regulations (US) (<https://www.archives.gov/open/dataset-cfr.html>)
 EU legislation API (<http://api.epdb.eu/>)
 EU legislation currently in force
 (<https://data.europa.eu/euodp/data/dataset/eu-legislation-in-force>)
 EU legislation basic acts (<https://data.europa.eu/euodp/data/dataset/eu-legislation-basic-acts>)

Examples and other supporting information

Example of outcome-based regulations (proposed Safe Foods for Canadians Regulations as published in *Canada Gazette I*) (<http://bit.ly/2lI297x>)

NAICS Canada 2017 in HTML, CSV and PDF format:

(<https://www.statcan.gc.ca/eng/subjects/standard/naics/2017/index>)

Canadian Importers Database (2016): CSV format

(<https://open.canada.ca/data/en/dataset/9d81bb46-de89-41be-b7a4-b76c08f96cff>)

Canadian International Merchandise Trade Database: CSV format

(<https://open.canada.ca/data/en/dataset/b1126a07-fd85-4d56-8395-143aba1747a4>)

Canada Business Network information on regulation:

(<https://canadabusiness.ca/government/regulations/>)

Questions and Answers

What is the context for this regulatory Review?

- Regulation plays an important role in protecting health and safety, setting marketplace norms, and other public policy objectives. However, regulation is often cited as a barrier to innovation, and sometimes as an incentive to innovation. Most recently, in December 2017 Report to the Minister of Finance, the Advisory Council on Economic Growth identified the need for the Government of Canada to develop a regulatory approach that is able to “evolve to better fit an economy where innovation and change are the norm.”
- In the 2018 Budget, the Government of Canada committed to pursuing a regulatory reform agenda focused on supporting innovation and business investment through increased regulatory agility, transparency and responsiveness.
- To this end, TBS is conducting a Review to examine ways to modernize regulatory policy and management across regulatory domains, including in the targeted sectors of agri-food and aquaculture, health and bio-sciences and transportation and infrastructure.

How many regulations does the government have?

- There are presently over 2,600 regulations in force.
- The data file provided by Justice Canada contains the 2,600 regulations in force as well as regulations that have since been repealed and statutory instruments that are not considered regulations for the purposes of this review.

What are some of the main drivers behind the regulatory Review?

- While Canada has a strong regulatory system, there is an increased need for regulatory modernization due to socioeconomic changes, digital disruption, business growth, and growing global trade.
- Canada is seeking to create a more effective, agile, responsive and transparent system.

How does AI fit into the review?

- The engagement of the artificial intelligence community is intended to enable TBS to draw insights on federal regulations and the federal regulatory system (e.g. conflicting or overlapping rules; relationships between regulations; markers of regulatory approaches that support innovation).

How does the procurement work?

- TBS is posting this Request for Information on buyandsell.gc.ca. Based on the feedback received from industry partners at the Industry Days, TBS will then decide on an appropriate procurement mechanism.
- We anticipate that the RFP will result in:
 - a. Awarding a contract to one or more successful bidders
 - b. Establishing a pre-approved vendor list from which departments can procure goods or services for a period of time after contract award.

How does the context for this regulatory Review align with the Industry day event?

- This event is intended to build a conversation regarding advanced analytics and the data community. It would engage the advanced data analytics community both in person and by videoconference across the country and allow for feedback on how the community would want to work with TBS on such work.

What are the benefits for TBS and the AI community?

- Insights gained from the application of advanced data analytics and machine learning techniques to regulations will help push TBS' modernization agenda forward. In terms of the broader community, the application of these techniques to legal information is not new, but legislative research can always benefit from new approaches. As the companies that participate in the challenge retain the intellectual property rights, they will be able to market their product/prototype/proof-of-concept to interested parties. In addition, SMEs would benefit greatly from having access to a tool that would allow them to navigate the regulatory landscape.

How do I use the data from Justice Canada?

- The archive contains XML machine readable files. The statutory instruments that are outside the scope of the project all have SI file name prefix (English) TR (French). The repealed regulations contain <Repealed></Repealed> tags. Please note, that regulations may be repealed in part or in full.

What other data sources will be made available?

- Additional data sources are provided but participants are welcome to make use of any publicly available information. TBS is also prepared to discuss with other government data sets could be relevant.

Will there be a WebEx conference available for the Industry Days?

- Yes, details below:

Toll-free dial-in number (Canada/US):	1 877-413-4782
Local dial-in number:	613-960-7511
Conference ID:	1071873

Treasury Board of Canada Secretariat Regulatory Reviews Artificial Intelligence Industry Day

May 28, 2018
Toronto, Ontario
09:00 – 16:00 EST

- 09:00-09:15 Introduction
- 09:15-09:30 Overview of the Regulatory Reviews and Request for Information
- 09:30-10:30 Panel Discussion on Potential Applications of Artificial Intelligence such as Advanced Analytics, and Machine Learning for Regulatory Modernization
- 10:30-11:00 Discussion and Q&A
- 11:00-15:30 Working session with regulatory data and information including a Lunch to be provided by SOSICIP and UofT
- 15:30-16:00 Next steps

**Treasury Board of Canada Secretariat Regulatory Reviews
Artificial Intelligence Industry Day**

May 29, 2018
Montréal, Québec
13:00 – 18:00 EST

- 13:00-13:15 Introduction
- 13:15-13:30 Overview of the Regulatory Reviews and Request for Information
- 13:30-14:45 Panel Discussion on Potential Applications of Artificial Intelligence such as Advanced Analytics, and Machine Learning for Regulatory Modernization
- 14:45-15:45 Discussion and Q&A
- 15:45-16:00 Next steps

PRIMER ON GOVERNMENT OF CANADA REGULATIONS

Regulations are made by every level of government in Canada, in accordance with responsibilities set out in the Constitution. A high level understanding of the concept of regulations and how they are presented to Canadians through key Government of Canada on-line portals, such as the Canada Gazette, are useful for users of regulatory data and information.

This primer provides a plain language high-level overview of the use and purpose of Government of Canada regulations.

What is a regulation and how does it differ from an act or statute?

In Canada, an Act (e.g., *Access to Information Act*, *Fish Inspection Act*, *Motor Vehicle Safety Act*) is a means by which laws are made by the Parliament of Canada. Acts set out overarching requirements that businesses and individuals and others must adhere to. Regulations (e.g., *Access to Information Regulations*, *Fish Inspection Regulations*, *Motor Vehicle Safety Regulations*) are essentially the rules used to carry out the intent of the corresponding Acts enacted by Parliament. Through Acts, Parliament creates the authority for the Government to issue regulations.

For this reason a regulation is sometimes referred to as "delegated legislation" or "subordinate legislation", and can be viewed as the operational part of a law, commonly dealing with matters such as:

- clarifying what is meant by certain terms used in an act;
- detailing the procedures and processes that must be followed or standards that must be met in order to comply with an act; and
- defining licensing requirements, performance specifications, exemptions, forms and other details.

Federal regulations deal with areas of federal jurisdiction, such as patent rules, vehicle emissions standards, and drug licensing. Provincial regulations deal with areas of provincial jurisdiction such as vehicle licensing, hunting permits, and non-renewable resources. Municipal by-laws, another form of regulation, deal with issues of local interest, such as parking enforcement, animal control, and yard maintenance.

Most of the Acts administered by federal departments and agencies have their own accompanying regulations. Regulations are instruments of legislative power and have the force of law.

Who makes regulations?

At the federal level, regulations are not made by Parliament, but rather by someone to whom Parliament has delegated the authority to make them. They can be made by the Governor in Council, or by a Minister or head of an agency, as delegated by Parliament in the enabling legislation. Often, a Government of Canada department or agency may have the authority under an act of Parliament to make regulations, with the approval of the Governor in Council, for matters related to its mandate.

Typically, departments and agencies develop regulatory proposals based on the authorities established in legislation and are bound by specific directives (i.e., *Cabinet Directive on Regulatory Management*).

The Treasury Board Secretariat (TBS) plays a role in this process, working with departments and agencies to develop and challenge analysis in regulatory proposals.

Public transparency is a major feature of the regulation-making process, including the requirement to share proposed regulations and regulatory text with interested stakeholders to seek their input and comments. Regulations are published in the Government of Canada's official notice to Canadians, the *Canada Gazette*, including all proposed and final acts and regulations.

A committee of Cabinet comprised of federal ministers, known as Treasury Board, approves proposed regulations. This includes approval for draft regulations in *Canada Gazette*, Part I (pre-publication). After a regulation has been approved by the Treasury Board, the regulation is published in the *Canada Gazette* Part II. All regulations become law once published in the *Canada Gazette* Part II.

Why is it important to analyse and review regulations?

Regulations are often necessary for the protection of health, safety, and security of Canadians and the environment, as well as supporting commerce within Canada and abroad. However, regulations need to be monitored and adjusted as appropriate to ensure that they are effective in addressing new and emerging trends in good regulatory practices that respond to changes in the regulatory environment, including, for example:

- new socio-economic realities and challenges;
- technological changes (e.g. the move to digital and e-services and less reliance on paper-based reporting); and
- new industry practices, processes or scientific advancements that may not fit long-standing prescriptive and detailed requirements.

Budget 2018 committed the Government of Canada to pursue a regulatory reform agenda focused on supporting innovation and business investment. The goal is to make the Canadian regulatory system more agile, transparent and responsive, so that businesses across the country can explore and act on new opportunities, without diminishing health or safety.

The Review is comprised of a horizontal component and targeted reviews that will examine regulatory requirements and practices that are impeding innovation and economic growth. The initial focus of targeted reviews are agri-food and aquaculture, health/biosciences and transportation.

As part of the horizontal aspect of the Review, the Treasury Board of Canada Secretariat (TBS) is examining the broad stock of Government of Canada regulations (over 2,600) with their varying subject matter, scope, and complexity. In order to gain insight, TBS is looking to apply innovative approaches such as advanced data analytics and machine learning to inform the Review process.

Where can I find out more?

For more information on Canada's regulatory system and list of acts and regulations by federal departments and agencies, please visit <http://laws-lois.justice.gc.ca/eng/regulations/>.