



Government
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INNOVATIVE
SOLUTIONS
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ANNUAL REPORT
2018 - 2019

Canada

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Program Overview

Introduction

Announced in Budget 2017, Innovative Solutions Canada (ISC) is an innovation procurement program modelled after the United States' highly successful Small Business Innovation Research (SBIR) Program.

ISC responds to calls from small businesses to support their scale-up and growth by leveraging federal procurement. The Challenge Stream of the program has 20 participating departments and agencies, which have committed to spending \$113.8M annually by 2019-20. These departments issue challenges to small businesses based on desired outcomes rather than known product or process specifications. The Challenge Stream is open to businesses with fewer than 500 employees.

The Challenge Stream has five objectives:

1. Fuel the development and adoption of technological innovation in Canada.
2. Grow Canadian companies through direct funding to support early-stage, pre-commercial research and development, late-stage prototypes, and to accelerate commercialization.
3. Encourage procurement from companies led by under-represented groups, such as women, Indigenous, youth, disabled individuals, LGBTQ+ and others.
4. Foster greater industry-research collaboration through the release of challenges for solutions that address key Government of Canada priorities.
5. Provide federal departments and agencies with opportunities to develop new capabilities to meet their research and development needs and advance government priorities.

The Challenge Stream has three phases. In Phase One (Proof of Concept), businesses may receive up to \$150,000 for up to six months to prove the scientific and technical feasibility of a novel solution to address a given challenge. In Phase Two (Prototype Development), businesses that have successfully completed Phase One may receive up to \$1M for up to two years to develop a working prototype for their solution. In Phase Three (Pathway to Commercialization), based on the success of the prototype developed in Phase Two, the federal department or agency that supported the R&D may opt to procure the solution and serve as the first reference sale of it. Should the prototype require additional testing, the sponsoring department can use the Testing Stream of the program (formerly the Build in Canada Innovation Program (BCIP)).

The program's secretariat, which oversees its day-to-day operations, falls under Innovation, Science and Economic Development Canada (ISED). Officials at the National Research Council (NRC) and Public Services and Procurement Canada (PSPC) support ISED in the implementation and delivery of ISC. Industrial Technology Advisors (ITAs) from NRC's Industrial Research Assistance Program (IRAP) review draft challenges to ensure that there are no existing solutions in the marketplace that meet the outcomes the department is looking for. ITAs also evaluate proposals in tandem with officials from the challenge sponsoring department. PSPC supports the program as the Government's procurement authority, helping departments navigate the rules and procedures associated with R&D procurement.

Participating Departments

Twenty federal departments and agencies are mandated to participate in ISC, committing one percent of their combined procurement and intramural research and development (R&D) expenditures*. This includes:

- Agriculture and Agri-Food Canada (AAFC) - \$3.9M

- Canada Border Services Agency (CBSA) - \$1.4M
- Canadian Food Inspection Agency (CFIA) - \$1.3M
- Canadian Space Agency (CSA) - \$1.3M
- Correctional Service of Canada (CSC) - \$1.4M
- Department of National Defence (DND) - \$65M
- Employment and Social Development Canada (ESDC) - \$2.2M
- Environment and Climate Change Canada (ECCC) - \$1.6M
- Fisheries and Oceans Canada (DFO) - \$1.5M
- Global Affairs Canada (GAC) - \$1.3M
- Health Canada (HC) - \$1.4M
- Indigenous and Northern Affairs Canada (INAC) (now Indigenous Services Canada and Crown-Indigenous Relations and Northern Affairs Canada) - \$1.3M
- Innovation, Science and Economic Development Canada (ISED) - \$1.3M
- National Research Council of Canada (NRC) - \$5.5M
- Natural Resources Canada (NRCan) - \$2.6M
- Public Health Agency of Canada (PHAC) - \$1.3M
- Public Services and Procurement Canada (PSPC) - \$8.8M
- Royal Canadian Mounted Police (RCMP) - \$1.8M
- Shared Services Canada (SSC) - \$7.6M
- Transport Canada (TC) - \$1.3M

* Note that dollar figures are annual commitments by year three of the program (2019-20).

The program is designed to be scalable, in that federal departments and agencies beyond the original 20, Crown corporations, and provinces and territories can participate over time. Over the past year, the ISC Secretariat has met with officials in departments outside of the 20 initial participants interested in learning more about the program and potentially releasing their own challenges.

Recent Developments

Following the Government's horizontal innovation review, Budget 2018 announced that ISC would be consolidated with PSPC's Build in Canada Innovation Program. BCIP matches innovations submitted by Canadian businesses with Government departments and agencies interested in testing them, ultimately providing businesses with a first reference sale and feedback on their products.

From the program's launch in 2010 to October 2018, BCIP qualified a total of 589 innovations from 516 Canadian businesses and awarded 324 contracts valued in excess of \$150M. Roughly 97 percent of these were awarded to small- and medium-sized enterprises (SMEs).

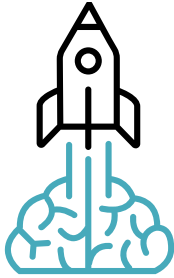
The two programs were officially consolidated on April 1, 2019, becoming two streams of the new Innovative Solutions Canada. The new Challenge Stream will retain all of the features of the former ISC, supporting early-stage R&D. The Testing Stream will retain the features of BCIP to support late-stage R&D, with some improvements to reduce processing times and respond to the program's recent oversubscription issues.

In the coming months, ISED will continue to work to fully integrate the two streams, including developing streamlined eligibility into the Testing Stream for businesses that successfully complete the Challenge Stream. Future ISC annual reports will feature both streams of the program.

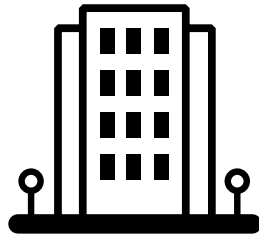
Results

The results listed below represent results from December 14th, 2017, up to March 31st. 2019.

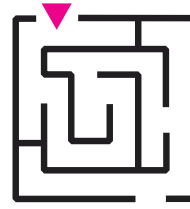
Overview



Program launched
Dec **14, 2017**



14 departments and agencies
published Challenges



42 challenges have
been released



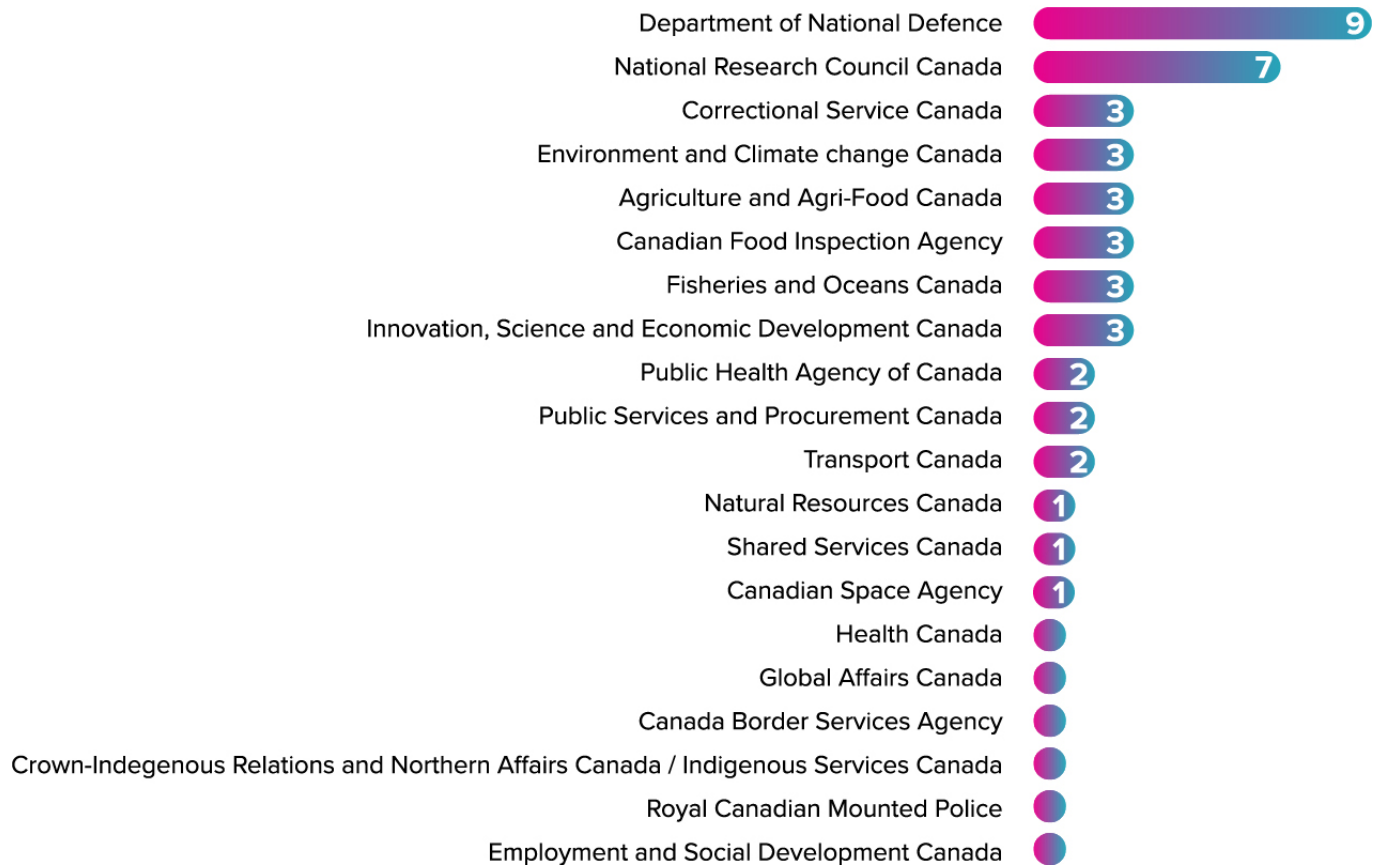
719 proposals submitted
by small businesses

36 x Phase 1 awards – worth **a total of \$5.1M**

1 x Phase 2 award – worth **a total of \$995K**

*Departments issued an average of 2.4 Phase One awards, at an average amount of \$142,766 per project.

Challenges released by department:



*Note that AAFC and NRCan released a joint challenge, hence the total number of challenges in the table being 43 instead of 42 (the joint challenge is included in both AAFC's total and NRCan's total in the graphic above).

*The Secretariat is working with Health Canada, Global Affairs Canada, Canada Border Services Agency, Crown-Indigenous Relations and Northern Affairs Canada/Indigenous Services Canada, the Royal Canadian Mounted Police, and Employment and Social Development Canada to release challenges in 2019-20.

Diversity Outcomes

Geographic distribution

Since program launch, ISED officials have organized and attended engagement events (e.g. conferences, presentations, etc.) in each of the 10 provinces, Yukon, and the Northwest Territories.

Proposals were submitted by businesses across the country. See table below:

Location of business	Number of applications	Percentage of total applications
AB	63	8.8%
BC	115	16.0%
MB	15	2.1%
NB	9	1.3%

NL	16	2.2%
NS	37	5.2%
NU	0	0%
NWT	0	0%
ON	287	40.0%
PE	1	0.1%
QC	152	21.2%
SK	8	1.1%
YK	0	0%
Other*	14	2.0%
Total	717	100%

* These are proposals that were not able to be assigned to the appropriate province (earlier versions of the ISC platform did not have business rules to remove these errors)

Geographic Distribution of Awards

36 Phase One awards and one Phase Two award have been granted to businesses in six provinces to date.

SUCCESS STORIES



CEMWORKS

Located in: Winnipeg, MB
Full-time Employees: 3



- 1** CEMWORKS IS DEVELOPING PHYSICS-BASED SIMULATION TOOLS FOR MODELLING WIRELESS COMMUNICATION BETWEEN CONNECTED VEHICLES AND INFRA STRUCTURE IN SMART CITIES. THESE TOOLS WILL ENABLE ENGINEERS AND CITY PLANNERS TO CREATE DESIGNS IN A VIRTUAL ENVIRONMENT THAT ENSURE COMPLIANCE WITH SAFETY REQUIREMENTS, LOWER PROJECT COSTS, AND SHORTEN THE TIME-TO-MARKET. ADDITIONALLY, THE SOLUTION WILL PROMOTE THE USE OF FREQUENCY SELECTIVE ENGINEERED SURFACES (FSES) IN THE DESIGNS OF NEXT-GENERATION CONNECTED VEHICLES AS WELL AS FSES-ENHANCED BUILDING MATERIALS FOR SMART CITIES.
- 2** THE COMPANY IS CURRENTLY CONDUCTING EXTENSIVE R&D INTO NEW ALGORITHMS FOR PREDICTING THE BEHAVIOUR OF FSES AND SMART CITIES. SUCH ALGORITHMS WOULD ENABLE LARGE-SCALE ACCURATE SIMULATIONS IN THE CLOUD ENVIRONMENT PROVIDING ENGINEERS WITH A NECESSARY TOOLSET TO DESIGN A BLOCK OF THE SMART CITY.
- 3** PARTICIPATION IN THE ISC PROGRAM SIGNIFICANTLY HELPED CEMWORKS TO IMPROVE THE POSITION IN THE COMPETITIVE FIELD OF COMPUTER-AIDED ENGINEERING (CAE) TOOLS. THE PROGRAM EMPOWERED THE COMPANY TO SIMULTANEOUSLY INVEST IN ADVANCED R&D AS WELL AS IN THE CREATION OF THE UNIFIED CLOUD-BASED PLATFORM THAT IS SCALABLE AND EASY TO USE. MOREOVER, ISC HELPED, AND WILL CONTINUE TO HELP, CEMWORKS TO HIRE HIGHLY-EDUCATED AND SKILLED PROFESSIONALS.

Diversity

ISC aims to encourage Government procurement from companies led by underrepresented groups, including women, youth, Indigenous peoples, and disabled individuals.

Of businesses that have applied to the program:

- 41% had visible minorities in ownership (23% were majority-owned by visible minorities);
- 42% had women in ownership (7% were majority-owned by women);
- 30% had youth in ownership (12% were majority owned by youth);
- 5% had Indigenous peoples in ownership (1% were majority-owned by Indigenous peoples); and,
- 6% had persons with disabilities in ownership (1% were majority-owned by persons with disabilities).

Of businesses that have received funding through the program:

- 50% had visible minorities in ownership (25% were majority-owned by visible minorities);
- 44% had women in ownership (3% were majority-owned by women);
- 33% had youth in ownership (11% were majority-owned by youth);
- 6% had Indigenous peoples in ownership (0% were majority-owned by Indigenous peoples); and,
- 6% had persons with disabilities in ownership (0% were majority-owned by persons with disabilities).

Businesses that applied to the program had an average of 21 employees, while those that received awards had 23 employees on average.

Outreach

ISC has been actively engaging Canadian innovators across Canada. Below are key Outreach figures since the program launched on December 14th, 2017, up to March 31st 2019.

209 outreach activities:

11 focused on women-owned businesses

1 focused on LGBTQ2-owned businesses

4 focused on Indigenous-owned businesses

2 targeted youth in business

Outreach efforts have been critical to raising awareness about both the program and specific challenges.

The program had 3,759 subscribers to its mailing list as of March 31, 2019, which provides subscribers with information on newly released challenges and upcoming outreach events. A number of the subscribers are umbrella organizations that further distribute the newsletters to their members.

The ISC website has received 141,422 unique visits to date, with challenges receiving an average of 1,621 visits. Through the ISC website, members of the public (including businesses and academics) can submit ideas for challenges. To date, over 250 ideas have been submitted. The ISC Secretariat shares these ideas with relevant departments and agencies, helping to feed their challenge pipeline.

Lessons Learned

1. Building capacity for challenge development:

Developing challenges is a new way of thinking for public servants. Over the past year, ISED worked with experts from Xprize and Communitech to organize workshops on challenge development. The events have been tremendously helpful in spurring challenge development at departments. More will be organized in 2019-20.

2. Leadership from the top matters:

Senior executive engagement is critical to catalyze culture change and encourage public servants to think differently about using challenges to advance a department's mission and mandate. An example is the Government-wide commitment to reduce plastic consumption and waste. This top-driven priority led to eight plastics challenges being released by five participating departments. For many of these departments, their plastics challenge was the first challenge they released through ISC, getting the ball rolling for them to release additional challenges afterwards.

3. Learning from other jurisdictions:

The program will continue to look to the US and UK equivalent programs for lessons learned on implementation to help improve ISC's tools and processes. For instance, as ISC works towards implementing service standards, it will look to its US and UK counterparts to determine what their typical processing times are and whether they could be applied here. The secretariat is also exploring offering a suite of services and training to businesses that participate in the program, as is done in the American program.

4. Leveraging digital tools:

The program is expanding the functionality of the ISC web platform (which already supports application intake). By summer 2019, the platform will support proposal evaluation (i.e. evaluators will be able to complete the entirety of their evaluations through the platform instead of over emails, Word documents, and Excel sheets), which will considerably save time for departments to process proposals and meet the program's service standards.

5. Focusing on user experience:

ISED has sought feedback from departments and businesses on ways to enhance the user experience. This has resulted in modifications to the program's suite of tools (e.g., the ISC application form, evaluation criteria, and the ISC website) with the goal of encouraging repeat business. In the spring of 2019, ISC officials will organize focus groups with each of the departments that have completed the evaluation phase for one or more challenges to collect their feedback on the program's supports and processes.

6. Targeted outreach to small businesses and other stakeholders:

Between January 2018 and March 31, 2019, ISED promoted the program to individual SMEs, business associations, accelerators and incubators, universities and colleges, and provincial governments. The program has reached out to businesses led by women, youth and Indigenous peoples to encourage their participation. The program had 3,759 subscribers to its mailing list as of March 31, 2019, many of which are organizations with large memberships. Moving forward ISED will begin leveraging social media to increase its reach to small business.

Next Steps and Upcoming Priorities

In 2019-20, ISC will continue to move forward on the consolidation with BCIP, including working with departments to ensure that they spend their full ISC commitment.

In the context of consolidation, ISED will work with PSPC to ensure that businesses that go through the Challenge Stream have a streamlined path into the Testing Stream of the program. This will include asking businesses to supply relevant information in the final Phase Two report that can be used to assess their eligibility for the Testing Stream, ensuring that businesses do not have to submit a full application form.

In 2019-20, ISED will work to design the annual survey that will be sent to businesses that go through the Challenge Stream. This survey will help the program track and report on its results and client satisfaction. The first survey will likely be sent in January 2020.

Furthermore, ISED continues to make updates to the ISC platform. In 2019-20, departments will be able to complete their evaluations of proposals and the ISC Secretariat will be able to send debrief letters from within the platform. Not only will this simplify processes for both ISED and the other participating

departments, but it will also allow the Secretariat to track and improve service standards, as each activity will create a time stamp. ISED will report on service standards in its next annual report.

Lastly, ISED will explore collaboration with provinces and territories and Crown corporations in both streams of the program.

Beginning with the next report, ISED will produce annual reports based on fiscal year and incorporate both streams of the program.

Annex A: Detailed Results by Challenge

The following section outlines results for each of the challenges that were released from December 14, 2017 to March 31, 2019. The “compliance rate” is defined as the percentage of proposals that passed evaluations, while the “success rate” is defined as the percentage of proposals selected for funding. A list of recipients can be found on our [website](#).

Agriculture and Agri-Food Canada (AAFC)

Efficient Soil Sampling Techniques

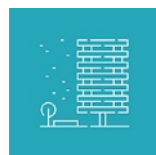


Agriculture and Agri-food Canada (AAFC) is seeking a solution that allows for greater homogeneity of soil samples through their efficient and consistent collection, leading to greater reliability and accuracy of test results.

Number of applications: 6
Compliance rate: 33% (2/6)

Success rate: No awards announced by October 31, 2019

Scaling Down Precision Agriculture



Precision agriculture technology is tailored to farms above 500 acres in size, so with farms below that acreage, or with an annual income below \$75,000, the rate of adoption of these technologies declines significantly.

Number of applications: 28

Compliance rate: 43% (12/28)

Success rate: 7% (2/28)

Improving Composability of Bioplastics (joint AAFC and NRCan challenge)



There is a need for greater compatibility of bioplastics (i.e. plastics derived from agricultural OR wood-based biomass) with home and municipal composting.

Number of applications: 20
Compliance rate: 35% (7/20)

Success rate: 10% (2/20)

Canadian Food Inspection Agency (CFIA)

Innovative Attractants to Wood Boring Insects



The Canadian Food Inspection Agency (CFIA) is seeking the development of a chemical compound that would attract a wide variety of wood boring insects attacking standing hardwood tree species.

Number of applications: 0
Compliance rate: N/A

Success rate: N/A

Innovative Device for Plant Pest Surveillance



The Canadian Food Inspection Agency (CFIA) is seeking an innovative device that could be used to detect volatile organic compounds associated with the presence of targeted invasive alien plant pests across Canada.

Number of applications: 3

Compliance rate: 0%

Success rate: N/A

Marine Biotoxin Detection Devices for Shellfish



The Canadian Food Inspection Agency (CFIA) is seeking to develop innovative devices for detecting marine biotoxins encountered in Canadian waters with increasing frequency.

Number of applications: 8

Compliance rate: 25% (2/8)

Success rate: No awards announced by October 31, 2019

Canadian Space Agency (CSA)

Artificial Intelligence and Big Data Analytics for Advanced Autonomous Space Systems



The challenge is to apply artificial intelligence and big data analytics to bring tangible advancements in the operation and utilization of space assets in support of government operations, public safety, public health and discovery.

Number of applications: 51

Compliance rate: 63% (32/51)

Success rate: 10% (5/51)

Correctional Services Canada (CSC)

Life Sign Monitoring System



Correctional Services Canada (CSC) is seeking a solution to monitor the life signs of inmates and identify critical conditions that would typically lead to death in custody and provide prompt notification of such situation thereby reducing the time for staff to respond to the situation.

Number of applications: 23

Compliance rate: 35% (8/23)

Success rate: 9% (2/23)

Detection System for Wireless Communication



Correctional Services Canada (CSC) is seeking a technological solution to manage/prevent unauthorized use of wireless communication devices thereby preventing inmates from conducting illegal activities using such devices.

Number of applications: 13

Compliance rate: 31% (4/13)

Success rate: 15% (2/13)

Preventing Contraband Delivery via Air and Ground



Correctional Services Canada (CSC) is seeking an innovative and cost-effective technology solution to detect, track and prevent contraband items from entering the perimeter via Unmanned Aerial Vehicle (UAV), commonly known as drones, and fence throw-over.

Number of applications: 29

Compliance rate: 10% (3/29)

Success rate: No awards announced by October 31, 2019

Department of National Defence (DND)

Robust “Beyond Line of Sight” (BLOS) Communications in Satellite-Denied Environments



To provide robust approaches to over-the-horizon/BLOS communications in satellite-denied environments.

Number of applications: 14

Compliance rate: 50% (7/14)

Success rate: 21% (3/14)

Advanced Coatings and Materials for Personal Protective Ensembles



To identify and develop innovative solutions and technologies for materials and coatings to enhance Individual Protective Ensembles to counter Chemical/Biological/Radiological threats.

Number of applications: 12

Compliance rate: 67% (8/12)

Success rate: 46% (5/12)

Additive Manufacturing for High Performance Systems



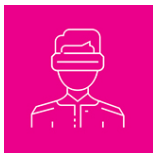
The Department of National Defence (DND) is seeking new solutions to advance the field of additive manufacturing technologies for the fields of defense and security.

Number of applications: 17

Compliance rate: 65% (11/17)

Success rate: No awards announced by October 31, 2019

Night Vision Ergonomics Enhancement



The Department of National Defence (DND) is seeking an innovative solution for enabling enhancement of Canadian Armed Forces (CAF) operators' vision such as night vision goggles (NVGs) and counterbalance.

Number of applications: 18

Compliance rate: 61% (11/18)

Success rate: No awards announced by October 31, 2019

High Energy Lasers



The Department of National Defence (DND) requires the capability to detect and defeat non-cooperative objects by means of compact, efficient and robust laser sources.

Number of applications: 6
Compliance rate: 33% (2/6)

Success rate: 0%

Platform Corrosion Detection and Prevention



The Department of National Defence (DND) requires new methods/processes to identify/detect corrosion and the development of proactive corrosion control measures.

Number of applications: 25
Compliance rate: 76% (19/25)

Success rate: 8% (2/25)

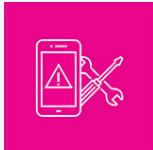
Head Up Hands Free Fire Fighting



The Department of National Defence (DND) is seeking a solution that will provide innovative devices, applications, personal protective equipment technology supports to help position Canadian firefighters to work in a more Head Up Hands Free (HF/HF) mode of operation on the fire ground.

Number of applications: 16
Compliance rate: 50% (8/16)
Success rate: 25% (4/16)

Logistics and Resource Management of Emergency Response Assets



The Department of National Defence (DND) is seeking a solution that will provide innovative, advanced real-time decision support solutions for civilian, municipal, provincial, and federal (Royal Canadian Mounted Police and DND) first responder command personnel (police, fire and paramedic) during critical incidents, where multiple jurisdictions and agencies work together. Although there may be a number of components involved in critical incidents, the focus for this challenge is on the creation of new tools and technologies to identify, acquire, track and distribute available resources (defined as equipment, supplies and personnel).

Number of applications: 25
Compliance rate: 52% (13/25)
Success rate: No awards announced by October 31, 2019

Advanced Decision Support for First Responder Command and Control



The Department of National Defence (DND) is seeking a solution that will provide innovative, advanced real-time decision support solutions for civilian municipal, provincial, and federal (Royal Canadian Mounted Police and DND) first responder command personnel (police, fire and paramedic) during critical incidents such as: active shooters, rural-urban wildfires, infrastructure collapse, natural disasters and large public order events

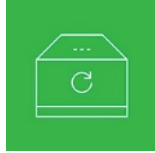
where multiple jurisdictions and agencies work together. While there are many components and sub-occupational groups involved in critical incidents, the emphasis for this challenge is on developing promising tools related to the cognitive-behavioral aspects of the command function. The solutions should improve the probability of making good decisions during high risk events, while reducing the cognitive load of incident command personnel.

Number of applications: 40
Compliance rate: 40% (16/40)

Success rate: No awards announced by October 31, 2019

Environment and Climate Change Canada (ECCC)

Food Packaging



Improve the design of film food packaging to reduce the generation and disposal of plastic waste.

Number of applications: 16
Compliance rate: 25% (4/16)

Success rate: 13% (2/16)

Separation of Mixed Plastics



Effective solutions are needed to improve the separation, sorting, and processing of mixed plastics to produce high-quality recycled feedstocks and create opportunities for new markets.

Number of applications: 26

Compliance rate: 54% (14/26)
Success rate: 8% (2/26)

Construction Waste



Innovative solutions are needed to increase the recovery, reuse and recycle of plastic wastes generated from construction activities.

Number of applications: 21
Compliance rate: 48% (10/21)

Success rate: 10% (2/21)

Fisheries and Oceans Canada (DFO)

Remove and Manage Ghost Fishing Gear and Marine Debris



Seeking a viable and economically feasible solution to remove plastic ghost fishing gear and other marine litter from aquatic environments through a technological innovation that can be deployed on existing vessels and infrastructure.

Number of applications: 12

Compliance rate: 50% (6/12)
Success rate: 8% (1/12)

Sustainable Fishing and Aquaculture Gear



This challenge seeks economically and technically viable innovations in fishing and aquaculture gear or gear-related technologies to reduce or eliminate ghost fishing and aquatic plastic pollution caused by Canadian fisheries and aquaculture industries.

Number of applications: 11

Compliance rate: 55% (6/11)
Success rate: 36% (4/11)

Kinetic Energy Harvesting on Marine Vessels



Coast Guard seeks solutions for harnessing kinetic energy from the roll, pitch and yaw of marine vessels with the goal of reducing energy consumption and reliance on externally-sourced and stored energy.

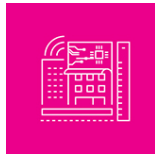
Number of applications: 41

Compliance rate: Evaluations not completed by October 31, 2019

Success rate: No awards announced by October 31, 2019

Innovation, Science and Economic Development (ISED)

Engineered Surfaces Challenge



This challenge seeks novel solutions that incorporate the use of Frequency Selective Engineered Surfaces (FSES) in the research and development of new building materials, construction products and design tools using FSES tuned to operate in the below 6GHz (potentially addressing the WiFi interference issue) and above 24GHz range (potentially addressing the issues of radio frequency propagation).

Number of applications: 5

Compliance rate: 100% (5/5)

Success rate: 20% (2/5)

Connected Vehicle and Engineered Surfaces Challenge



This challenge seeks novel solutions that incorporate Frequency Selected Engineered Surfaces (FSES) technology into connected vehicle designs as a means to move towards wireless connectivity within vehicles, and as a tool to manage interference emanating from vehicles into other vehicles, and into the overall urban environment.

Number of applications: 5

Compliance rate: 40% (2/5)

Success rate (Phase One): 20% (2/5)

Success rate (Phase Two): 10% (1/5)

Tracing the Steel Industry Supply Chain



The challenge seeks to create a novel application of a digital tracing system enabled by blockchain and artificial intelligence for the Canadian and possibly North American steel supply chain for business users and government.

Number of applications: 39

Compliance rate: 56% (22/39)

Success rate: 5% (2/39)

National Research Council (NRC)

3D Printing and Additive Manufacturing: Metal Powder Bed Density Test Equipment



Seeks new solutions to enable the testing of metal powder bed density in additive manufacturing processes.

Number of applications: 6

Compliance rate: 100% (6/6)

Success rate: 50% (3/6)

Measurement of Cold Spray



This challenge seeks to measure in-flight metal particle temperature in a coldspray process.

Number of applications: 1
Compliance rate: 100% (1/1)

Success rate: 100% (1/1)

Electroencephalography (EEG) and Vital Signs Integrated Existing Virtual and Augmented Reality (VR/AR) sets



This challenge seeks the development of a user-friendly and robust device for monitoring electroencephalography (EEG) and multiple vital signs integrated into existing extended reality sets.

Number of applications: 23

Compliance rate: 43% (10/23)

Success rate: 9% (2/23)

Haptic System

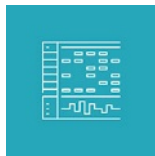


This challenge is seeking an affordable, robust and good resolution bimanual haptic feedback stylus system that interacts, via Wi-Fi/Bluetooth mode, with mobile platforms.

Number of applications: 11
Compliance rate: 45% (5/11)

Success rate: 27% (3/11)

Composite Material Manufacturing Simulation Software



This challenge is seeking an advanced simulation tool, capable of accurately predicting the ply by ply movement, deformation and defect generation/distribution in a composite laminate undergoing forming process at any stage in the process.

Number of applications: 4

Compliance rate: 50% (2/4)

Success rate: 25% (1/4)

Moulding of High Performance Composites Materials



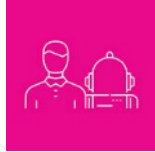
The aim of the challenge is to develop a technology for moulding Ultra-high molecular weight polyethylene (UHMWPE) composite materials into complex geometry parts featuring double curvatures.

Number of applications: 4

Compliance rate: 25% (1/4)

Success rate: 25% (1/4)

Improving Robot-Environment Interaction



This challenge seeks innovations that will improve robot interactions with either humans or changing environments.

Number of applications: 8
Compliance rate: 38% (3/8)

Success rate: 13% (1/8)

Natural Resources Canada (NRCan)

Improving Compostability of Bioplastics (joint AAFC and NRCan challenge)



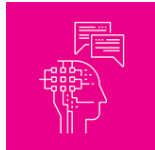
There is a need for greater compatibility of bioplastics (i.e. plastics derived from agricultural OR wood-based biomass) with home and municipal composting.

Number of applications: 20
Compliance rate: 35% (7/20)

Success rate: NRCan 10% (2/20)

Public Health Agency of Canada (PHAC)

Innovative Platform to Facilitate Evidence-Informed Decision-Making



The Public Health Agency of Canada (PHAC) is seeking an innovative platform/platforms that will provide Canadians with immediate access to relevant, trustworthy, public health information adapted to their specific questions and needs, based on core content from PHAC in areas such as but not limited to immunization and travel health.

Number of applications: 44
Compliance rate: 52% (23/44)
Success rate: 9% (4/44)

Earth Observation Images Processing and Management System



The Public Health Agency of Canada (PHAC) is seeking an automated system outside of PHAC infrastructure that would enable the pre-processing of large sets of Earth Observation (EO) data and the storage and overlaying of user defined ground truth data (GT) on pre-processed EO images to help address a wide range of public health needs.

Number of applications: 22
Compliance rate: 41% (9/22)
Success rate: 9% (2/22)

Public Services and Procurement Canada (PSPC)

Audio Quality Enhancements for Remote Interpretation Services



This challenge is seeking innovative solutions to provide superior sound quality for remote interpretation (RI) as current devices do not provide sufficient voice frequency (VF) range for interpretation and can cause workplace injuries and interruptions of service. The Bureau is seeking a solution that meets ISO standards.

Number of applications: 8
Compliance rate: 0% (0/8)
Success rate: 0% (0/8)

Coal Mine Tailings Pond



The challenge is to develop a cost effective & innovative method of stabilizing the coal mine tailings currently under sub-aqueous containment behind the Victoria Junction Tailings Dam so that the Dam can be decommissioned.

Number of applications: 16

Compliance rate: 19% (3/16)

Success rate: 19% (3/16)

Shared Services Canada (SSC)

Improving the Internet Connectivity of Users in Remote Locations



Shared Services Canada is seeking solutions that would enable low-cost high-speed Internet access to Government of Canada employees and Canadian citizens who work or live in remote areas around the world.

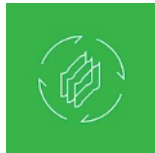
Number of applications: 11

Compliance rate: 45% (5/11)

Success rate: No awards announced by October 31, 2019

Transport Canada (TC)

Plastics Challenge – Recycling of Glass Fiber-Reinforced Plastic



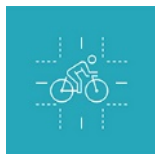
This challenge seeks novel, economically viable, and ecologically sustainable solutions for recycling or reusing glass fiber-reinforced plastic in a manner that is energy efficient and recovers as much material as possible (diverting from landfill).

Number of applications: 11

Compliance rate: 55% (6/11)

Success rate: 27% (3/11)

Enhancing Pedestrian and Cyclist Road Safety



Save lives — and reduce injuries — by accelerating the adoption of effective, low-cost technologies that improve pedestrian and bicyclists' safety around commercial vehicles.

Number of applications: 29

Compliance rate: 34% (10/29)

Success rate: 7% (2/29)

Annex B: Addendum: Updates from April 1, 2019 to October 31, 2019

ISED and the other 19 participating departments and agencies in ISC have continued to build on the momentum since program launch. From the start of fiscal year 2019-20 to October 31, 2019, a further 225 proposals were submitted by Canadian businesses, bringing the total to 944 (up from the previous total of 719 at the end of March, 2019). The average size of business applicants now stands at 84.6 employees, indicating an upswing in the size of businesses applying to the program since the end of last fiscal year. The same period saw an uptick in the number of applicants indicating that they had underrepresented groups in ownership*. 43.1% had visible minorities in ownership (36.3% were majority-owned by visible minorities), 51.1% had women in ownership (22.1% were majority-owned by women), 34.6% had youth in ownership (15.3% were majority-owned by youth), 5.5% had Indigenous peoples in ownership (1.31% were majority-owned by Indigenous peoples), and 8.34% had persons with disabilities in ownership (2.61% were majority-owned by persons with disabilities).

During the same time frame, the secretariat hosted focus groups with the participating departments and agencies, hearing good ideas on how to improve the program and its processes. The program's online platform now facilitates the evaluation process, making it simpler for both sponsoring departments and members of the secretariat. In addition, the secretariat has drafted its survey, which will be sent to the first recipient in January 2020.

A total of 54 challenges have now been released, including from first-time departments such as Canada Border Services Agency (CBSA) and Health Canada. CBSA's most recent challenge received a record 58 applications. The new challenges that were released between April 1 and October 31 are summarized below:

Canada Border Services Agency:

- Postal Small Packet and Packet Inspection (11 proposals)
- Portable Package Auto Sampler (11 proposals)
- Automated Redaction of Video Recordings for the Purposes of Access to Information Requests (58 proposals)

Canadian Food Inspection Agency:

- Foot-and-Mouth Disease Vaccine Matching (8 proposals)

Health Canada:

- Point of Care Diagnostics to Combat Antimicrobial Resistance (21 proposals)
- Machine Learning to Improve Organ Donation Rates and Make Better Matches (29 proposals)
- Identification of Microbial Mixtures (5 proposals)

National Research Council:

- Stable Liposomes as Drug Carriers (7 proposals)
- Hybrid Ceramic Powder Processing System (4 proposals)

Natural Resources Canada:

- Development of Next Generation Bio-Based Foam Insulation (11 proposals)

Shared Services Canada:

- Data Centre Discovery Tool with Options Analysis (21 proposals)

Shared Services Canada / Treasury Board of Canada Secretariat:

- User-Centric Verifiable Digital Credentials (43 proposals)

*Note that these percentages are derived only from the applicants who responded to this question in the application form.

