

Deadline Extended: Canadian Safety and Security Program Challenges

Sponsor

Defence Research and Development Canada (DRDC) and Public Safety Canada (PSC)

Program

Canadian Safety and Security Program

Description

The Canadian Safety and Security Program's (CSSP) mission is to strengthen Canada's ability to anticipate, prevent, mitigate, prepare for, respond to, and recover from natural disasters, serious accidents, crime and terrorism through the convergence of science and technology (S&T) with policy, operations, and intelligence.

The Canadian Safety and Security Program's (CSSP's) 6th call for proposals has launched in support of Canada's resilience! The call is looking to mitigate the effects of future, high-impact low-frequency events such as pandemics, natural disasters, or other man-made or natural disruptive forces. Understanding the impacts and possible preparedness and mitigations of these large scale events will help Canada's resilience in a post-pandemic world. Reducing societal and economic impacts through innovations that bolster the security of critical supply chains, and develops confidence in automation and virtual operations will also support our resiliency.

[S&T Challenges – 2021](#) [1]

- [Expecting the Unexpected: Understanding High-Impact, Low-Frequency Events](#) [2]
- [Tech ready and enabled for Disasters: Specific Technology innovations to deal with HILF Events](#) [3]
- [Protecting and connecting in a Virtual world: Innovating Contactless, Virtual and Automated Operations](#) [4]
- [The Weakest Link: Bolstering supply chain resilience](#) [5]

Overall Theme: Resilience in a Post-Pandemic world

Many issues challenging societal safety and security have a Science and Technology (S&T) nexus, emerge from a complex risk landscape, and lie at the intersection of public safety, public

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security and defence. The distinction between natural and human-induced hazards is blurring and the inherent vulnerabilities associated with our modern society transcend this perceived dichotomy. The COVID-19 pandemic has had a global impact in shaping perceptions of risk and has highlighted the severe effect that such an event can have on the social and economic well-being of a nation. At the same time, ongoing global trends are creating complex social, technological, economic, political and ecological interdependencies which exacerbate vulnerability.

The intent of the 2021 Request for Proposal (RFP) S&T Challenge set is to address high priority issues confronting Canadian governments and public safety and security partners in a post-pandemic world. Strengthening societal resilience necessitates understanding the risk landscape for other events of potentially similar scope and impact to COVID-19. Additionally, governments are looking to adapt how they function with a virtual workforce and how they offer services in a contactless environment. Key enduring challenges involve the need to adapt to and mitigate the impacts of climate change, to protect supply chains, and to mitigate the impacts of, or capitalize on, highly disruptive technological innovations. Within the strategic framework for this RFP, proposals are expected for Research and Development aimed at achieving tangible and specific solutions and generating knowledge that address the identified requirements and gaps.

Theme A: High-Impact, Low-Frequency (HILF) Events

The global COVID-19 pandemic is a reminder of the broad societal repercussions of High-Impact, Low-Frequency events. These are discrete events, both human-induced and natural, that are assumed to occur infrequently, but will create significant and long-lasting impacts when they do occur. At the forefront of possible HILF events are pandemics, major natural (e.g. Tsunamis; mega thrust earthquakes) or industrial disasters (Fukushima), large-scale terrorist attacks, but also abrupt society shifts driven by technology adoption. Due to their infrequency, mitigations for HILF events tend not to receive a proportionate share of public attention, as well as the associated public safety and security resources, and there is evidence that governments and businesses remain unprepared for such events. In frequency, HILF events lie in between more common events such as seasonal floods, seasonal influenza and wildfires, and more remote, perhaps highly improbable risks such as asteroid impacts. A better understanding of possible HILF events will enable public safety and security partners at all levels of government to eliminate or reduce the risks to Canadians (i.e., prevention and mitigation); be ready to respond when such events occur and better manage their consequences through measures prior to and following the event (i.e., preparedness and response); and be better able to quickly restore conditions to an acceptable level following such an event (i.e., recovery).

S&T Challenge 1: Expecting the Unexpected: Understanding High-Impact, Low-Frequency Events

Proposals are sought for innovative research, quantitative and qualitative analyses and studies related to Canada's ability to prevent, mitigate, prepare, respond and recover from HILF events. Proposals are sought that involve, but are not limited to

- Contributions to the understanding of the fragility and vulnerabilities that lie within social, technological, economic, political and ecological interdependent systems;

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- Contributions to the understanding of the complex, multifaceted and cascading impact of HILF events across elements of human security including energy security, food security, water security, public health, economic security and environmental security;
- Contributions to the understanding of the future evolution and operational impact of future S&T solutions on prevention, preparedness, response, or recovery of HILF events.
- Contributions to the understanding of the interplay between (i) traditional government time horizons for investment and planning, (ii) the increasing pace of change in society and technology, and (iii) the building of national resilience against HILF events.
- ?Contributions to the understanding of how to educate and communicate with the public regarding risks associated with HILF events, and government planning of mitigations and response.

S&T Challenge 2: Tech ready and enabled for Disasters: Specific Technology innovations to deal with HILF Events

Proposals are sought that develop, demonstrate or pilot specific technologies from across the physical, social and information sciences to mitigate vulnerabilities and contribute to concrete preparedness for specific or categories of HILF events. Proposals are sought that involve, but are not limited to,

- Enhancing emergency preparedness within Canada for future biological risks, including and the use of technologies to detect, identify, respond and/or counter biological risks resulting from climate and anthropogenic changes;
- Enhancing preparedness and prevention capability within Canada against potential future high-impact CBRNE threats;
- Mitigating the impact on infrastructure and society from intentional or accidental disruptive technology events, for example in cyber systems and social media;
- Development of systems-level solutions that attenuate the criticality of cascading events across broad interdependent parts of society and infrastructure.

Theme B - Innovating Contactless, Virtual and Automated Operations

Governments are increasingly turning to automated processes to enable or enhance their public safety and security operations. The COVID-19 pandemic has also precipitated an increase in contactless and virtual services across public safety and security partners. Canadian governments are responsible for a broad range of operations and services impacted by the pandemic, including screening and processing operations (e.g. screening goods and people at borders or in transportation systems and public events), public safety services (e.g. policing, paramedicine, firefighting, and health care) and security operations. At the same time, governments and industry are also all facing the need to now manage and optimize the efforts of a virtual workforce. These shifts provide an opportunity to leverage the capabilities of emerging technologies and analytics to support existing operating processes or create new capabilities.

S&T Challenge 3: Protecting and connecting in a Virtual world: Innovating Contactless, Virtual and Automated Operations

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Innovative S&T solutions are sought that enable or enhance government contactless, virtual or automated operations in the public safety and security sphere while preserving privacy and security. Proposals are sought that involve, but are not limited to:

- Enhancing virtual government operations centres with integrated technology solutions that support enhanced situational awareness, and timely collaboration and coordination of resources and plans;
- Enhancing operations through machine-learning, predictive algorithms, and autonomous operations;
- Contactless screening and processing operations, including for government identity documents, registration services, clearances, and screening of people and goods;
- Automated and/or anonymized database queries that enable focussing of resources and prevention while preserving privacy; and,
- Enhancing the effectiveness of a virtual workforce in the safety and security sector and exploring the next generation of virtual teamwork and training.

Theme C - Supply Chain Resilience

The COVID-19 pandemic has exposed the fragility of supply chains and how their disruption, no matter the cause, can imperil safety and security. Supply chains are complex interconnected systems that incorporate an array of components including manufacturing, resource extraction, transportation, and processing and are subject to an array of influences including global economic and workforce pressures, resource depletion, and geo-politics. Their complexity means that supply chain operations are often not fully visible or tractable, and it is difficult for governments to identify and mitigate potential risks.

S&T Challenge 4: The Weakest Link: Bolstering supply chain resilience

Proposals are sought that enhance the understanding of supply chain complexity, interdependency and vulnerability and provide innovative S&T solutions that mitigate risks to supply chains and improve resiliency. Proposals are sought that involve, but are not limited to:

- Stress testing of specific fragilities within sector-specific supply chains;
- Technologies that simplify processing of commercial goods across international borders;
- Applications of emerging technology solutions in cyber security, distributed ledgers, homomorphic encryption, additive manufacturing, and modeling and simulation; and
- Technologies that enable transparency of data between nodes of supply chains, build trust among suppliers, and enhance the efficacy of analytical tools for detection of counterfeit, fraudulent or suspect items.

Indirect Costs

40% unless stated otherwise in the applicable RFP.

Special Notes

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Please note that research activities carried out in the context of COVID-19 need to adhere to the University of Guelph COVID-19 research principles, policies, guidelines and processes as they may be updated from time to time and communicated on the [Office of Research web-page](#) [6].

If you are considering applying, please contact [Angela Vuk](#) [7] as soon as possible to assist with application requirements.

Deadlines

If College-level review is required, your College will communicate its earlier internal deadlines.

Type	Date	Notes
External Deadline	Tuesday, May 11, 2021 - 2:00pm	Deadline is 14:00 Eastern Daylight Time (EDT)
Internal Deadline	Monday, May 3, 2021 - 8:30am	

How to Apply

Please review the specific Request for Proposals (RFP) documentation for the Challenge of Interest. RFP's for each challenge can be found at the following links:

- S&T [Challenge 1](#): [8] Expecting the Unexpected: Understanding High-Impact, Low-Frequency Events
- S&T [Challenge 2](#): [8] Tech ready and enabled for Disasters: Specific Technology innovations to deal with HILF Events and social media;
- S&T [Challenge 3](#): [8] Protecting and connecting in a Virtual world: Innovating Contactless, Virtual and Automated Operations
- ?S&T [Challenge 4](#): [8] The Weakest Link: Bolstering supply chain resilience

For Questions, please contact

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Office of Research

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Source

URL: <https://www.uoguelph.ca/research/alerts/content/deadline-extended-canadian-safety-and-security-program-challenges>

Links

[1] http://science.gc.ca/eic/site/063.nsf/eng/h_98225.html

[2] http://science.gc.ca/eic/site/063.nsf/eng/h_98225.html#1

[3] http://science.gc.ca/eic/site/063.nsf/eng/h_98225.html#2

[4] http://science.gc.ca/eic/site/063.nsf/eng/h_98225.html#3

[5] http://science.gc.ca/eic/site/063.nsf/eng/h_98225.html#4

[6] <https://www.uoguelph.ca/research/>

[7] <mailto:avuk@uoguelph.ca>

[8] <https://buyandsell.gc.ca/procurement-data/tender-notice/PW-21-00946865>