



## **Proof of Concept Seed-Funding Application Form**

### **Overview**

This funding opportunity is targeted to astroparticle physics researchers working in Canada, who are interested in repurposing technology pertinent to their core research for the sake of solving a practical problem that is not directly driven by that research (e.g., adapting a valve controller to provide a low-cost medical gas flow device). The fund is available to any applicant who is focused on particle astrophysics research and either controls a Tri-Council eligible research account at a Canadian academic institution, or is supervised by an eligible Tri-Council grant holder. Awarded funds of up to \$20,000 CAN may be used to reimburse a wide range of expenses incurred to develop, re-develop and/or demonstrate technology innovations enabling the solution of a practical problem.

It is not a requirement of the seed fund program that a defined practical problem is successfully addressed by the applicant's technology development and demonstration project. The program requires tangible data-driven progress towards proving the relevant technology's potential to successfully resolve the identified problem (e.g., successful demonstration of critical components required to address the problem; virtual prototype performance analyses; demonstration of dual-use of a technology in an application adjacent to problem definition, etc.).

Please refer to the attached Program Guidelines document for a full description of eligibility criteria, submission processes and adjudication standards.

Please visit the [Funding Opportunities webpage](#) for details on all available funding.



**Applicant Details:**

Applicant Name	
Eligible Awardee (if different from Applicant)	
Title/Position	
Institution	
Website	
Email address	
Phone Number	
<u>Institutional Finance Contact Name</u>	
<u>Institutional Finance Contact email</u>	

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## **Detailed Proposal**

*(please observe word-length limits, provided section headers, labelled diagrams or photos with descriptive captions are welcome)*

1. **PROBLEM (max 300 wds):** Define the problem that your proposed technology innovation addresses. Quantify the value of the problem. Be sure to narrow down the scope of the problem to match the scope of your proof-of-concept (e.g., if the goal is to demonstrate a component improvement in a complex device, the problem should concern proposed improvements to the component and not only describe the potential uses of the overall device).
2. **SOLUTION (max 500 wds):** Describe the technology solution you expect to develop, adapt or demonstrate as your proof-of-concept. Note that this program does not require you to invent new devices, but allows you to deploy existing devices, or even "adjacent" technology solutions in lieu of an anticipated invention, if doing so directly addresses the core problem. You must provide a quantifiable estimate of the differential value your solution could create, compared to the next best alternative, as any combination of cost-improvements, time savings and quality/performance gains (e.g., a novel sensor with half the cost, three-times the signal throughput and 75% accuracy of next-best alternative infers total value multiplier of  $2 \times 3 \times 0.75 = 4.5$  value multiple). Identify up to three key members of your team and their relevant expertise and/or experience useful for solving the identified problem with the proposed solution
3. **END-USER (max 200 wds):** Describe (or identify) one or more early adopters of the proposed proof-of-concept. An early adopter means someone who is willing to use your solution to address their problem at some level of cost to themselves (time, money). How are your early adopters currently trying to solve their problems? Why will they adopt your solution instead of an existing solution, or its next-best option?
4. **WORKPLAN:** Please complete the following table. Your application must include at least three milestones/deliverables. The target dates should not span a time period of more than 12 months.

<b>MILESTONE/DELIVERABLE</b>	<b>TARGET DATE</b>	<b>LEAD PERSON</b>	<b>SUCCESS/FAIL CRITERION</b>
<i>Example: First meeting to discuss proposed new servo motor resolver (sensor)</i>	<i>02/03/21</i>	<i>Applicant</i>	<i>S: Team approves design F: Design is flawed</i>



<i>Example: Procure off-the-shelf servo based on design criteria</i>	<i>Etc.</i>	<i>Etc.</i>	<i>Etc.</i>
<i>Example: Fabrication of new digital sensor based on design criteria</i>	<i>Etc.</i>	<i>Etc.</i>	<i>Etc.</i>
<i>Example: Develop new LabView controller and testing program for new servo motor sensor</i>	<i>Etc.</i>	<i>Etc.</i>	<i>Etc.</i>
<i>Example: Disassembly of off-the-shelf servo motor sensor and installation of custom resolver</i>	<i>Etc.</i>	<i>Etc.</i>	<i>Etc.</i>
<i>Example: Calibration of Instron motor-testing rig</i>	<i>Etc.</i>	<i>Etc.</i>	<i>Etc.</i>
<i>Example: Installation of servo motor and custom resolver in testing rig.</i>	<i>Etc.</i>	<i>Etc.</i>	<i>Etc.</i>
<i>Example: New servo motor performance reliability test</i>	<i>Etc.</i>	<i>Etc.</i>	<i>S: 10,000 sequential controlled 0.10 ± 0.02 Nm torque outputs with 1.0 ± 0.5 ms response. F: Below 10,000 within torque and time lag tolerances</i>

5. **RISK (max 250 wds):** Identify the most likely failure risks in your work plan and outline the contingency plan in the event of failure.
  
6. **EQUITY THINKING (max 250 wds):** Answer the following two questions:
  - For whom, among problem owners, would the proposed technology solution work? For whom, among problem owners, might it not work and who will you engage in order to find out what realistic steps could mitigate such a gap?
  - While solving the identified problem using technology, what other things are likely to happen (relationships altered, materials altered, knowledge altered) in the process?
  
7. **BUDGET:** Please complete the applicable areas of the budget breakdown below (all amounts in CDN currency).



Category	Budget Item	Total Cost	Total to be Reimbursed by McDonald Institute
LABOUR			
MATERIALS			
CONTRACTED SERVICES			
TRAVEL & ACCOMMODATIONS			
OPERATING LICENSES			
KNOWLEDGE DISSEMINATION (*intellectual property costs are not eligible)			
INCLUSIVITY AND ACCESSIBILITY COSTS			



OTHER (SPECIFY)			

<b>Total Funds Requested from the McDonald Institute:</b>	
<b>Total Funds Provided by Other Partners:</b>	
<b>TOTAL COSTS</b>	

## **Proof-of-Concept Funding Scoring Matrix**

CRITERION	DESCRIPTION	SCORE
Problem, Solution & Problem Owner Definition (2 pages max.)	<p><i>Application clearly defines the nature of the problem, its apparent value (time, money and quality), the proposed technology solution, and the nature of persons who would use the proposed solution to address this problem instead of an existing solution, or next-best alternative (problem owners).</i></p> <p><i>The problem should be scaled to the outcomes of the proposed proof-of-concept project (e.g., if the demonstration is a high-reliability servo motor that would make a medical ventilator's proportional valve more economically efficient, define the component performance as the problem rather than the COVID-19 pandemic that drives ventilator demand). The applicant is encouraged to reference any relevant out-of-scope problems, but they must identify the specific problem that is actually solved by the project.</i></p> <p><i>The problem owner should be an early adopter (someone who is already actively trying to solve the problem in question, but could potentially get better results by employing your solution).</i></p>	/40
Workplan & Success/Failure Criteria (table)	<p><i>Defines the starting state and the desired end state of the project with particular care to the performance metrics of the technology demonstration. Outline intermediate deliverables, or milestones (must have a minimum of 3 milestones). Define the target performance criteria for each deliverable (e.g., deadline, cost, performance target).</i></p>	/20
Risk Identification (250 words max.)	<p><i>Identifies the workplan steps with the highest risk of failure and indicates project adjustments that will be taken to resolve such failures (i.e., modifications to workplan).</i></p>	/5
Equity Thinking (250 words max.)	<p><i>Identifies more than one barrier potentially affecting the distribution of benefits from the proposed innovation (cost, time, quality, physical access, social pressure, etc.)</i></p> <p><i>Identifies more than one indirect consequence of effecting the proposed solution.</i></p>	/10
Feasibility (see table and 1-page	<p><i>In your budget and workplan, take special care to explain why you expect to either A) succeed as planned, or B) have access to resources that will allow you to adjust in the event of a failure.</i></p>	/15



budget)		
Alignment with Institute Mission	<i>The narrow goal of this program is to develop methods for a frontier research enterprise (astroparticle physics) to drive innovation impact without unduly disrupting core research progress. Briefly discuss how the proposed project balances the demands of research with the opportunity to support technology innovation.</i>	/10



## Written-Application Criteria

0% of total - did not address the criteria

40% of total - provided adequate information, but the case being made was weak.

90% of total - provided adequate information and the case being made is strong

100% of total - provided adequate information and the case being made is excellent.

## Budget Criteria

The budget requested follows eligibility guidelines and aligns with current market values: (yes/no)