

Innovation for Defence Excellence and Security (IDEaS): Innovation Networks

Application Guide for Micro-nets

First Call for Proposals for Micro-nets (CFPMN 1.0)

Topic area: Advanced Materials

Publication date: May 28, 2018

Application deadline for Letter of Intent: 12:00 PM (Noon) EDT, July 13, 2018

Application deadline for Full Proposal: 12:00 PM (Noon) EDT, October 12, 2018

Summary of Key Information

- **Funding mechanism: Non-repayable contribution**
- **Total funding available: \$9,000,000**
- **Maximum amount per proposal: \$1,500,000**
- **Duration of contribution: Up to 36 months from award**
- **Eligible proposals must include multidisciplinary teams of investigators from at least three separate institutions and/or organizations, one of which must be a Canadian university**
- **Contribution funds must be administered by a Canadian university**

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Definitions

Authorized Official: An appointed official (e.g. chief executive officer, vice president, chief financial officer, general partner, board chair, director, or direct owner) to whom the Initial Recipient has granted the legal authority to create financial obligations on its behalf.

Co-Investigator: An independent investigator and recognized expert, who may lead a research laboratory or group and who is responsible for a subset of a Micro-net's research activities. The Co-Investigator provides expert support to the overall scientific direction of the Micro-net.

Collaborator: Independent investigators who can provide specific expertise to the Micro-net research activities on a collaborative basis, which will enhance the output or potential for success of the research. Collaborators are generally not involved in the direct scientific management of the Micro-net and are not eligible to receive funding under this Call.

Contribution Agreement: The legally binding agreement between the DND and the Initial Recipient embodying the terms and conditions governing the contribution program.

Full Proposal: The application form representing the second stage of the application process for this Call For Proposals for Micro-nets (CFPMN), which includes the detailed research proposal and budget. Only applicants who have successfully passed the Letter of Intent stage of the process will be invited to submit a Full Proposal.

Initial Recipient: The Canadian university assuming the administrative and financial responsibility on behalf of the Micro-net. Responsibilities include the management of funds from the IDEaS Program received under the Contribution Agreement, submitting claims, progress reports, and receiving and distributing the government contribution to the Ultimate Recipient(s) and reporting on results.

In-Kind Contribution: Cash equivalent goods or services provided by an organization to a Micro-net that represent an incremental expense that would have to be paid for by the Micro-net if not provided.

Innovation Challenge: A statement defining the research area to be addressed under this Call.

Innovation Network: A self-organized multidisciplinary group of researchers from academic, governmental, for-profit, and/or not-for-profit institutions and organizations, who work on the advancement of knowledge in a specific domain of common interest.

Lead Applicant: A Principal Investigator, whose primary affiliation is a Canadian university, and who serves as the primary scientific point of contact for the Micro-net throughout the application process and during the tenure of the contribution funding period. In cases where

there is more than one eligible Principal Investigator in a single Micro-net, the members of the Micro-net will designate one of these to serve as the Lead Applicant. The Lead Applicant's university must agree to serve as the Initial Recipient.

Letter of Intent: The form representing the first stage of the application process for this CFPMN. The Letter of Intent (LoI) contains the names and affiliations of the Micro-net members, a summary of the proposed research and a budget outline. The LoI will be reviewed by the IDEaS Program Office for eligibility and alignment of the proposed research.

Micro-net: A self-organized multidisciplinary team of at least five investigators who carry out interdisciplinary research on a specific aspect(s) of an Innovation Challenge of common interest.

Principal Investigator: An established scientific investigator from any sector who heads a research laboratory and/or leads a research group. The Principal Investigator is responsible for the scientific direction and management of all or part of the Micro-net's research activities.

Solution Readiness Level: A scale from 1 to 9 used to define the level of maturity of a given research program. Used as a broader-scope alternative to Technology Readiness Level, the SRL encompasses the full spectrum of innovation and science progression. The SRLs are defined as follows:

- SRL1. Identification – basic principles and/or properties are observed.
- SRL2. Definition – practical applications and/or concepts are formulated.
- SRL3. Observation and Analysis – analytical and/or laboratory research and/or experiments are undertaken.
- SRL4. Proof of Concept – basic integration of applications and/or concepts to demonstrate viability.
- SRL5. Validation – refined integration of applications and/or concepts to confirm validity.
- SRL6. Simulated Demonstration – near-end state solution is demonstrated and tested in a simulated environment.
- SRL7. Real-World Demonstration – near-end state solution is demonstrated and tested in an appropriate real-world environment.
- SRL8. Qualified Solution – end state solution is completed and refined through testing.
- SRL9. Proven Solution – final solution is implemented and proven successful.

Ultimate Recipient: An eligible organization/institution that has entered into an agreement with an Initial Recipient to carry out the objectives of the IDEaS Contribution Agreement.

1. Context

As part of *Strong, Secure, Engaged: Canada's Defence Policy*¹, the Department of National Defence (DND) has launched the Innovation for Defence Excellence and Security (IDEaS) Program. The IDEaS Program supports, increases and sustains science and technology (S&T) community capacity external to DND that can generate new ideas and formulate solutions to Canada's current and future defence and security Innovation Challenges. The IDEaS Program supports innovative technology, knowledge, and problem solving which are critical for Canada and its allies to mitigate new threats and stay ahead of potential adversaries, while generating knowledge and economic benefits for Canada. Innovators willing to develop solutions to emerging problems from their own unique perspectives are encouraged to participate in the IDEaS Program.

The IDEaS Program supports the establishment of new Innovation Networks and, where appropriate, existing networks, to stimulate collaboration and the free flow of ideas critical to innovation. Academics, industry and other partners are encouraged to come together to form collaborative Innovation Networks. Areas for support of advanced research and development (R&D) will vary over time depending on Canada's current and future defence and security Innovation Challenges.

Recognizing that successful sustainable research networks take time to build, this first Call for Proposals is to support the creation of smaller networks, or *Micro-nets*, that perform research on one or more aspects of an Innovation Challenge. It is envisioned that future Calls for Proposals would encourage the coalescence of successful Micro-nets (and where appropriate other networks/participants) to form larger sustainable national Innovation Networks dedicated to further research on a particular Innovation Challenge.

By supporting Micro-nets and eventually Innovation Networks, the IDEaS Program fosters the development of a critical mass of researchers, highly qualified personnel and expertise within the Canadian innovation community and supports basic and applied research (solution readiness levels, SRLs, 1 through 6).

This Call for Proposals for Micro-nets (CFPMN) will focus on the following Innovation Challenge:

- Advanced Materials

The full Innovation Challenge statement is provided in **Annex A – Innovation Challenge**.

Successful applicants will be required to enter into a Contribution Agreement with DND.

¹ <http://dgpapp.forces.gc.ca/en/canada-defence-policy/index.asp>

2. Objectives of this Call

The objectives of this CFPMN are to:

- Encourage, enhance, sustain and support interdisciplinary research collaborations between academia, the for-profit and not-for-profit sectors, and other levels of government (excluding federal government departments/agencies), to build a critical mass of expertise and knowledge applicable to the defence and security of Canada;
- Support basic and applied research, analysis, technology development and knowledge transfer leading to innovative solutions to key Innovation Challenges for defence and security identified by DND and/or its safety and security partners; and
- Enable researchers from varied disciplines and areas of expertise to work together to demonstrate an added value that each researcher, if funded individually, would not have been able to reach alone.

To promote these objectives, the IDEaS Program anticipates organizing annual symposia on the Innovation Challenge area. Funded Micro-nets will be required to participate to present recent developments in their research, and exchange information with other scientists working in related areas.

3. Eligibility

3.1. Eligible Organizations/Institutions

This call is open exclusively to multidisciplinary teams of researchers. The primary affiliation of the investigators must be from at least three separate institutions and/or organizations. Eligible institutions or organizations are:

- Canadian universities and educational institutions chartered in Canada;
- Incorporated Canadian for-profit organizations;
- Incorporated Canadian not-for-profit organizations;
- Provincial/territorial and municipal government organizations; and
- International universities and educational institutions.

Each Micro-net can be composed of investigators from any combination of institutions and organizations from the list above, however, at least one Canadian university must be included. For example, Micro-net members from two universities and one for-profit organization would be deemed eligible.

Individuals from the institutions and organizations listed above and who are members of existing networks, associations, groups, consortia, etc. may participate.

Federal government departments/agencies, and federal and provincial Crown Corporations are not eligible for funding under the contribution program.

All organizations/institutions must possess the legal status necessary to enter into a funding agreement.

While the participation of international partners in Micro-nets is encouraged, the IDEaS Program Office reserves the right to reject, at its sole discretion, proposals which include participants affiliated with non-Canadian universities and educational institutions. Applicants potentially affected by this should consult with the IDEaS Program Office (IDEaS-IN.IDEeS-RI@forces.gc.ca) prior to submitting their proposals.

The primary affiliation of at least one of the Principal Investigators (see Section 3.2 below) must be a Canadian university. This person will be designated the *Lead Applicant*, and their university will be designated the *Initial Recipient*.

The Lead Applicant will represent the Micro-net for the purposes of the application process. The Initial Recipient must be the signatory to the Contribution Agreement on behalf of the Micro-net. The Initial Recipient will receive, manage and distribute payment(s) to the Micro-net members' institutions or organizations (hereinafter referred to as the *Ultimate Recipients*) for eligible activities and costs.

See Annex B – Roles and Responsibilities of the Initial Recipient for more details.

3.2. Team Composition

The teams forming the Micro-nets under this CFPMN must be multidisciplinary and composed of:

- One to three Principal Investigator(s), who will assume the scientific and internal management of the Micro-net.
- A minimum of four Co-Investigators.
- Any number of Collaborators.

Each member of the Micro-net must contribute to the objectives of the proposed research program.

Principal Investigators and Co-Investigators must:

- Justify, by means of a detailed budget linked to specific activities, that they require a financial contribution in order to achieve the proposal's objectives.

- Demonstrate they will be adequately involved in the Micro-net’s activities to increase the probability of success of the proposed research.

Individual researchers may submit a maximum of one proposal to this CFPMN as a Principal Investigator, and two as a Co-Investigator.

Post-doctoral fellows are not eligible to act as Principal Investigators or Co-Investigators.

3.3. Eligible Micro-net Activities

Applications must include proposed R&D activities to be carried out by the Micro-net, to address one or more specific aspect(s) of the defence and security Innovation Challenge identified in this CFPMN. The R&D activities include conceptual design, requirements analysis, proof of concept, systems development, validation and integration, testing and prototyping, generally representative of, but not limited to, SRLs 1-6.

Other eligible activities include participation in scientific conferences, and public outreach.

4. Funding

4.1. Available Funding and Duration

The total funding available under the CFPMN is expected to be \$9 million.

The maximum contribution per Micro-net is \$1.5 million over three years. Contributions are non-repayable.

The maximum duration for the provision of funding to any Micro-net is 36 months.

To determine the amount of funding to be allocated, consideration will be given to the availability of IDEaS funds, the total amount requested and the other confirmed sources of funds provided by other stakeholders and the applicant.

Although this CFPMN does not require matching funds, Micro-nets are encouraged to demonstrate relevance and collaboration with their stakeholders by leveraging resources from non-Micro-net sources. Both cash and In-Kind Contributions to the Micro-net, over and above the amount requested in response to this CFPMN, are recognized as important to the Network’s success both in completion and translation of research. The Micro-net’s ability to leverage resources will be considered in the selection and ongoing evaluation of Micro-nets.

DND reserves the right to not accept proposals or to reduce the amount of the available funding at its entire discretion.

4.2. Stacking Provisions and Other Government Assistance

Approved Micro-net proposals will be eligible for a total government (federal, provincial/territorial and municipal) assistance of up to a maximum of 100% of total eligible costs. As detailed in Section 4.3, any Micro-net member(s) from for-profit organizations will be required to contribute up to 50% of their eligible costs, depending on the size of their organization.

Applicants must identify all sources of funding in their proposals and confirm this information in a Contribution Agreement if the proposal is selected for funding. Upon completion of a funded proposal, the recipient must also disclose all sources of funding received.

4.3. Eligible Costs

Eligible costs are those that are approved and incurred by the Initial Recipient and the Ultimate Recipients in respect of eligible projects and which, in the opinion of the DND, are reasonable and necessary to carry out the eligible Micro-net activities to which they relate. Eligible costs will be limited to the Initial and Ultimate Recipients' non-recurring and incremental costs.

DND shall not reimburse any claim for costs that are not fully substantiated and approved in advance as required by DND through this CFPMN.

Eligible costs are direct costs that are associated with the delivery of the approved proposal and that are required to achieve the expected results. Generally, eligible costs may only be considered for reimbursement if incurred following the execution of a contribution agreement.

Eligible costs are limited to the following categories:

- stipends, salaries and benefits for students, postdoctoral fellows, research assistants and technical staff;
- acquisitions (not to exceed \$5,000 per acquisition) or rental of equipment (cost category not to exceed 20% of the total approved eligible costs);
- consultant services (provided by third parties not affiliated with the Micro-net);

- laboratory analysis services (provided by third parties not affiliated with the Micro-net);
- materials and supplies;
- overhead (administrative) costs (not to exceed 15% of the total approved eligible costs);
- publication, outreach and communication costs; and
- travel in accordance with the National Joint Council's *Travel Directive* (not to exceed 5% of total eligible costs)

Remuneration of Principal Investigator(s), Co-Investigators and Collaborators is not eligible. In-Kind Contributions (see Section 4.4) cannot be claimed as eligible costs.

For eligible costs being claimed on behalf of participants affiliated with for-profit organizations, expenses will be reimbursed according to the following schedule:

- For organizations of 1 to 9 employees: 100% of eligible costs
- For organizations of 10 to 49 employees: 75% of eligible costs
- For organizations of 50 employees or more: 50% of eligible costs

Generally, eligible costs are to be incurred in Canada. However, the IDEaS Program may support eligible activities and associated costs incurred outside of Canada when necessary to ensure project success. In no case can more than 50% of eligible costs can be incurred outside of Canada.

More details on eligible and ineligible costs are included in Annex C – Eligible and Ineligible Costs of this application guide.

4.3.1. Reimbursement of Eligible Costs on an Exceptional Basis

The IDEaS Program Office will consider reimbursement of eligible costs from the date specified in the conditional acceptance letter that will be sent to the Initial Recipient once a final funding decision has been made at Stage 3 of the Evaluation Process (See Section 6.1- Evaluation Process). This is to allow flexibility for proponents to begin their project on or following the date of conditional acceptance, in recognition of the additional time required to execute a Contribution Agreement that may delay the start date of a project.

Eligible costs reimbursed on an exceptional basis will not exceed 15% of the total eligible costs of the project. Under no circumstance shall DND reimburse a proponent for any

eligible costs incurred (including those incurred on an exceptional basis) until a Contribution Agreement has been executed between the Crown and the Initial Recipient.

4.4. Additional Cash and In-Kind Contributions

Although not mandatory, the IDEaS Program Office will take into consideration both cash and In-Kind Contributions to the Micro-net during the final selection process. Cash contributions provide the Micro-net with the flexibility to increase their research allocations, cover expenses outside of the eligible costs of this CFPMN, and generally expand the scope of the Micro-net. Likewise, In-Kind Contributions, such as specialized access to data or resources, to intellectual property (IP), hospitality costs, salaries, software, and travel costs can provide invaluable support to Micro-nets. These In-Kind Contributions should be directed to the Micro-net and managed by the Initial Recipient in accordance with agreements signed by the Micro-net members.

Both cash and In-Kind Contributions to the Micro-net are expected to evolve over the lifetime of the project and increase with the progress of the research, networking and knowledge translation activities.

For In-Kind Contributions, the value and appropriateness shall be vetted by the IDEaS Program Office. All In-Kind Contributions are to be considered in calculating the total project costs, but are ineligible costs for reimbursement under this CFPMN.

4.5. Advance Payments

DND will consider contributions to Initial Recipients in the form of an advance payment upon request. Any advance payment will be limited to the cash-flow requirements of the Micro-net and payments will be in accordance with the [Treasury Board Directive on Transfer Payments](#). The Initial Recipient shall use the advance payment only for payment of eligible costs (see Annex C – Eligible and Ineligible Costs).

5. Application Process

Applications to this CFPMN will proceed via a two-stage process; submission of a Letter of Intent (LoI), followed by an invitation to submit a Full Proposal. Only applicants who have submitted fully completed and eligible LoIs may be invited to submit Full Proposals.

5.1. Stage 1: Letter of Intent

The LoI must be submitted via the [Application Portal](#) by the Lead Applicant, no later than **12:00 PM (noon) EDT, July 13, 2018**. No LoI proposals will be accepted after this deadline.

The Lol package must include a completed project Lol Form signed by the Lead Applicant and, if applicable, the other Principal Investigators.

5.1.1. Consolidation of Proposals

For Lol applicants invited to submit Full Proposals, the names and affiliations of the Principal Investigators, and their project titles and keywords will be posted publicly on the [Application Portal](#). In the event of multiple Lols on similar aspects of the Innovation Challenge, applicants may wish to consider consolidation of teams to reduce the number of Full Proposals to be submitted.

Adding or removing names to the list of Co-Investigators identified in the Lol is permitted, however the Lead Applicant, and the Initial Recipient, must remain the same in the Full Proposal submission as those indicated in the Lol.

In the event of proposal consolidation following the Lol stage:

A Co-Investigator of a project will not be allowed to become the Principal Investigator of the consolidated team. However, a Principal Investigator may participate in the consolidated project as a Principal Investigator or a Co-Investigator. A maximum of three Principal Investigators will be permitted in the consolidated team. The aspects of the Innovation Challenge to be addressed by a consolidated project must be the same as those identified in the Lols prior to consolidation.

The research team composition and the scientific themes of any consolidated project must be validated by the IDEaS Program Office before submitting the Full Proposal to ensure that the consolidated project remains eligible.

5.2. Stage 2: Full Proposal

Successful applicants at the Lol stage will be invited to submit a Full Proposal. Full Proposals must be submitted via the [Application Portal](#) by the Lead Applicant by **12:00 PM (noon) EDT, October 12, 2018**. Late submissions or modifications to submissions will not be accepted after the prescribed deadline.

The Full Proposal package must contain:

- A completed application form, which includes:
 - A description of the proposed R&D activities; (assessment criteria provided in Section 6.2)

- An itemized budget for the project, indicating projected expenditures, and cash flow requirements, as well as confirmed and potential revenues and other sources of funds;
- The names, affiliations and contact details of Principal Investigator(s) and Co-Investigators, and point of contact for the Initial Recipient; and
- The identification of all sources of funding relevant to the proposal.
- Signatures of delegated authorities of Initial and Ultimate Recipients
- Canadian Common CVs for all Principal Investigators and Co-Investigators, including a summary of significant contributions of the Principal Investigator(s) and Co-Investigators over the past six (6) years. (Applicants will be required to register and generate an IDEaS-CFPMN Common CV with Canadian Common CV (<https://ccv-cvc.ca/>);
- Letters of support from Collaborators (if applicable)
- Letters from other funding contributors confirming their cash and/or In-Kind Contributions, if applicable;
- The Declaration of Confidentiality, *Access to Information Act* and *Privacy Act* form signed by the duly authorized representative (refer to the Applicant Declaration on Confidentiality, *Access to Information Act* and *Privacy Act* section included in the application form).

The Act Respecting the Ministère du Conseil Exécutif (M-30) may apply to an applicant from the province of Québec. Applicants will be required to complete an additional information form and, if they are subject to the requirements of the Act, to obtain written authorization and approval from the Government of Québec prior to execution of any contribution funding agreement.

It is the applicant's responsibility to ensure that the application complies with all relevant federal, provincial and territorial legislation and municipal bylaws.

5.3. Service Standards

Applicants will be notified of decisions regarding their application. Notifications will include acknowledgement of receipt, invitation to submit a full application or notification of rejection following the receipt of a Lol, funding decisions, and payment of claims.

The IDEaS Program Office will aim to adhere to the following service standards:

Service Standard 1	Acknowledging the receipt of a funding request (Lol and full proposal). Performance result: 100% of all Lols/full
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	proposals acknowledged within 7 calendar days.
Service Standard 2	<p>Invitation or rejection notification provided to applicants following the submission of a Lol.</p> <p>Performance result: 100% of all proponents who submitted a Lol received invitation/rejection notification within 14 calendar days.</p>
Service Standard 3	<p>Communication of funding decision after receipt of a full proposal.</p> <p>Performance result: 100% of all funding decisions communicated within 90 calendar days.</p>
Service Standard 4	<p>Issue of payment following receipt of all required documentation.</p> <p>Performance result: 100% of all payments sent within 45 calendar days.</p>

All funded projects will be announced on the [IDEaS Program website](#).

6. Evaluations

6.1. Evaluation Process

Applications for funding under this CFPMN will be evaluated in three stages:

6.1.1. Stage 1: Letter of Intent (Lol)

Applicants must submit a Lol Form by the stated deadline.

The Lol is reviewed by the IDEaS Program Office and selected specialists to:

- Confirm the eligibility of the applicants and proposed activities;
- Confirm the alignment of the proposal to the CFPMN Innovation Challenge; and
- Identify suitable reviewers in the event of an invitation to submit a Full Proposal.

6.1.2. Stage 2: Full Proposal

Applicants deemed eligible at the Lol stage will be invited to submit a Full Proposal.

Full Proposals will be reviewed by a review board committee composed of subject matter experts from the national and/or international scientific communities, as selected by the IDEaS Program Office.

Full Proposals will be peer-reviewed by a minimum of two independent reviewers according to the criteria listed in Section 6.2.2. Reviewers shall be experts in the field relevant to each proposal and may include representatives of other Canadian government departments as well as external consultants. Only proposals that have passed the eligibility requirements and assessment criteria will be considered compliant and will be placed in a pool of pre-qualified proposals for final consideration by the IDEaS Decision Board.

6.1.3. Stage 3: Final Funding Decision

All pre-qualified proposals will be considered for funding by the IDEaS Senior Management Funding Oversight Committee, comprised of the DND Assistant Deputy Minister of S&T, the Director General responsible for the IDEaS program, and the Directors General responsible for the DND and/or Canadian Armed Forces organization(s) associated with the S&T Innovation Challenge.

This Committee consider the evaluation results of the pre-qualified proposals and examine strategic considerations across multiple parameters, such as:

- Budget constraints;
- Distribution of investment;
- Operational relevance;
- Strategic relevance
- Extent of leveraging other partners through cash and In-Kind Contributions;
- Similar S&T initiatives being funded by DND's partners and allies;
- Industrial and social benefits to Canada; and
- Changes to Government of Canada priorities.

Contribution Agreements will be offered to applicant(s) recommended and approved by the Committee.

Before a final decision is made, the DND Investment Manager responsible for this CFPMN may seek input and advice from other organizations, including, but not limited to, federal, provincial, territorial and municipal government agencies and organizations.

The amount of support will be determined according to the total eligible funding requested, as well as the other sources of funds invested by other stakeholders and the applicant.

Funding decisions made by the IDEaS Senior Management Funding Oversight Committee are final. There is no appeal process.

See Annex E –Application and Evaluation Process for a visual depiction of the Application and Evaluation Process.

6.2. Assessment Criteria

6.2.1. Letter of Intent

The LoI will be evaluated based on a single mandatory evaluation criterion:

Defence and Security Alignment (Pass/Fail): The degree to which the proposal responds to the specific defence and security S&T Innovation Challenge expressed in the CFPMN. Alignment of the research activities with the Innovation Challenge statement is a mandatory criterion for the LoI.

Pass: The proposal defines which aspect(s) of the Innovation Challenge statement will be addressed and clearly outlines how the proposed research activities will address that aspect(s).

Fail: The proposal does not demonstrate sufficient relevance to the Innovation Challenge statement, or fails to describe how the planned research activities will address questions of relevance to the Innovation Challenge statement.

6.2.2. Full Proposal

Proposals will be evaluated using six point-rated criteria (Innovation, Scientific Quality, Management, Scientific Capabilities, Collaboration, and Benefits to Canada). Each assessment statement under each criterion will be scored using a 5-point scale corresponding to one of the following benchmark statements:

Insufficient:	0 points
Poor:	1 points
Average:	2 points
Good:	3 points
Excellent:	4 points

The scores for each assessment statement will be averaged and expressed as a percentage. To be considered for funding, a minimum threshold of 50% for each assessment criterion must be obtained. The score for each criterion will be weighted as

indicated below, to provide a total score, expressed as a percentage, for each proposal. Proposals meeting a threshold total score of 70% will be placed into a pre-qualified pool.

Reviewers will be asked to score the following assessment statements listed under each criterion:

Innovation (20% of total score):

Assessment statements:

- The research proposal seeks to shift current research paradigms by using novel theoretical concepts, approaches or methodologies, or instrumentation;
- Novel interdisciplinary approach(es) are key to the proposed research;
- The expected outcomes have the potential to be transformative and have a lasting impact in this field, as opposed to providing incremental solutions; and
- The expected outcomes will advance the state-of-the-art over existing technologies in this field.

Scientific Quality (25% of total score):

Assessment statements:

- The proposed research is based on a strong scientific premise;
- The research questions and goals are clearly described;
- Proposed strategy, methodology and analyses are appropriate to accomplish the stated goals;
- Rationale for the proposed approach is clear;
- Measures for success of the project goals are appropriate and detailed; and
- Anticipated scientific/technological risks/barriers are clearly identified with appropriate mitigation strategies.

Management (10% of total score):

Assessment statements:

- The work plan is clear, with key milestones and anticipated activities, as appropriate;
- The proposed approach is feasible in terms of timelines and available resources;
- The Principal Investigator(s) will provide an appropriate level of effort to effectively lead the project, manage resources and coordinate the Micro-net's activities; and
- Financial, project management, and human resources risks/barriers are clearly identified with appropriate mitigation strategies.

Scientific Capabilities (10% of total score):

Assessment statements:

- The investigators and Collaborators in the Micro-net are well suited to the proposed project:

- Established investigators have demonstrable track records of significant and ongoing contributions to the advancement of their fields
- New or early-career investigators have appropriate experience and training;
- Scientific resources, technical expertise, facilities and infrastructure required to conduct the proposed research have been clearly identified, and are suitable and available; and
- The research environment proposed will contribute to the probability of success.

Collaboration (15% of total score):

Assessment statements:

- The expected project benefit(s) to be gained from the multidisciplinary membership is/are clear;
- Potential trans-disciplinary communication opportunities will be fostered.
- The proposed leadership, governance structure, and roles and responsibilities are both appropriate for the project and favour collaboration between Micro-net members; and
- The integration of the diverse areas of expertise within the Micro-net has been appropriately planned to achieve an interdisciplinary advantage.

Benefits to Canada (20% of total score):

Assessment statements:

- The proposal addresses an important problem or a critical barrier to progress in the field, which has relevance to Canada;
- The plan to disseminate the information generated during the project is adequate and appropriate;
- The knowledge acquired will be of benefit to Canada's defence and security sector;
- The activities of the Micro-net will strengthen Canadian capabilities in the field of study;
- The proposed research will provide a strong training opportunity for students and post-doctoral fellows;
- The proposed activities have the potential to stimulate the creation of highly skilled jobs in Canada; and
- The expected outcomes of the research have the potential for significant and lasting socioeconomic impact on Canadians.

7. Contribution Agreement

Following proposal approval, a Contribution Agreement will be prepared for signature by the Initial Recipient and the Crown which will identify the conditions of the contribution, the obligations of both parties and the conditions under which payments will be made.

Contribution Agreement provisions will address the requirements of the Treasury Board Policy on Transfer Payments and the Terms and Conditions of the program. These Terms and Conditions must also be reflected in the agreements signed between the Initial Recipient and the Ultimate Recipients.

8. Performance Measurement

DND will request the Initial Recipient to report on the following at regular intervals:

- Number of research projects initiated and/or completed;
- Number of completed projects suitable for further development by the defence & security community;
- Number of peer-reviewed publications and/or patent applications;
- Number and type of presentations at scientific conferences, and other outreach activities;
- Number and type of new partnerships and/or collaborations created or sustained;
- Amount of additional funding obtained through leveraging of contribution funds; and
- Number of highly qualified personnel supported.

DND may request other project performance measurement metrics be provided.

9. Questions and Answers

It is the responsibility of the applicants to obtain clarification of the requirements contained herein, before submitting an application, if necessary.

For any questions related to this CFPMN, applicants can use the following email address: IDEaS-IN.IDEaS-RI@forces.gc.ca.

Questions and answers related to this CFPMN will be posted on the [Application Portal](#), in the “Questions and Answers” section for this CFPMN (<https://ideas-in.fluidreview.com/res/p/faq/>).

The IDEaS Program Office will aim to respond to questions received within five business days of receipt. However, it is the responsibility of the applicants to ensure that questions regarding the LoI and Full Proposal are received by the following deadlines to ensure responses are obtained well in advance of the application deadlines:

LoI: The IDEaS Program Office will respond to questions received before **12:00 noon EDT by June 22, 2018**.

Full Proposal: The IDEaS Program Office will respond to questions received before **12:00 noon EDT by September 14, 2018**.

At any point, applicants are welcome to share their comments or suggestions regarding the CFPMN, the program or the process, with DND using the above email address.

10. Communication Activities

To promote the objectives of this CFPMN, the IDEaS Program anticipates organizing annual symposia on each of the Innovation Challenge areas. Funded Micro-nets will be required to participate to present recent developments in their research, and exchange information with other scientists working in related areas.

The Micro-net's activities, results and accomplishments should be conveyed to external audiences, including potential participants from all sectors, public policy makers, the media and the public. Micro-nets are encouraged to publish their web sites and other materials in both official languages where possible and as appropriate for their audiences. They are also encouraged to strive to communicate with stakeholders in their preferred official language.

As a courtesy, DND would like to receive a copy of publications arising from the Micro-net's work, and to be informed in advance of significant press releases or media interest resulting from the work.

For the duration of the Contribution Agreement, the Initial Recipient's communications activities and messages must acknowledge the contribution of the federal government by mentioning the Micro-net is made possible through the IDEaS Program, in conjunction with the Canada wordmark.

11. Intellectual Property

All IP rights that arise as a result of this Program shall vest in the recipient. The Crown may, at its sole discretion, include a provision in the Contribution Agreement requiring that the recipient grant the Crown, in perpetuity, a non-exclusive, irrevocable, royalty-free and world-wide licence, to use or have used, the intellectual property for government purposes. This licence allows the Crown to do anything that it would be able to do if it were the owner of the IP, other than exploit it commercially, or transfer or assign ownership of it.

The Initial Recipient shall ensure that all agreements with Ultimate Recipients or contractors are consistent with the rights granted above.

Consistent with the [Tri-Agency Open Access Policy on Publications](#), funding recipients must ensure that any peer-reviewed journal publication arising from this federally-funded Micro-net research is freely accessible within twelve months of publication through either online repositories or journals that offer open access.

12. Privacy Notice Statement

DND will comply with the federal *Access to Information Act* and *Privacy Act* with respect to proposals received. By submitting personal information, an applicant is consenting to its collection, use and disclosure in accordance with the following Privacy Notice Statement, which explains how the applicant's information will be managed.

Necessary measures have been taken to protect the confidentiality of the information provided by applicants. This information is collected under the authority of DND's terms and conditions for the IDEaS Transfer Payment Program.

Personal information included in all proposals will be kept along with the proposal results as Information Records of Business Value and retained. These data are protected under the *Access to Information* and *Privacy Acts*. According to the *Privacy Act*, data linked to an individual and included in the proposal being evaluated can be accessed by the specific concerned individual who has rights with respect to this information. This individual may, upon request, (1) be given access to his/her data by making an official privacy request through DND for the attention of the Director, Access to Information and Privacy (DAIP) and (2) have incorrect information corrected or have a notation attached.

The *Access to Information Act* governs the protection and disclosure of information, confidential or otherwise, supplied to a federal government institution.

Paragraph 20(1) (b) of the Act states that:

a government institution [such as DND] shall refuse to disclose any record requested under the Act that contains financial, commercial, scientific or technical information that is confidential information supplied to a government institution by a third party and is treated consistently in a confidential manner by the third party.

Paragraph 20(1) (b) of the Act sets out two mandatory criteria in order to protect applicants' confidential information supplied to DND from disclosure. First, the applicants' documents supplied to DND must contain financial, commercial, scientific or technical information. Second, the applicant must consistently treat such information in a confidential manner. In other words, DND will protect the applicant's confidential information in its possession as much as the applicant protects said confidential information in their own establishment.

Any Privacy or Access to Information request made under their respective Act and completed, will be retained by DAIP for a duration of two (2) years following after the date the request was responded to. After the retention period of two (2) years, the Privacy or Access to Information request file will be destroyed.

For additional information on privacy matters prior to submitting a proposal, please contact:

Director, Access to Information and Privacy (DAIP)
Department of National Defence (DND)
Telephone: direct: 613-992-0996 or toll free: 1-888-272-8207
Email: ATIP-AIPRP@forces.gc.ca

Applicants shall note that key information related to all contribution agreements (e.g., amount, name of the recipient and project location) will be made available to the public on DND's website.

Annex A – Innovation Challenge

Advanced Materials for Defence & Security: Seeking Innovation in Detection Avoidance and Physical Protection

The Challenge

In response to the recognized need to increase Canadian knowledge capacity, DND is seeking to stimulate the development of revolutionary advances in materials science for defence & security applications, with a focus on emerging and advanced materials, including advanced manufacturing methods. As a first step to creating a national Innovation Network, we are calling on the innovation community to form multidisciplinary teams, or *Micro-nets*, of five or more investigators. These investigators must be from at least three distinct organizations, each of which will propose a research project which addresses one or several aspects of the two priority areas identified below. These areas have deliberately been left broad to encourage a wide range of proposals covering as many aspects of the domain as possible. Full details of the application and evaluation process are contained in this Applicant Guide.

Background and Context

Injury or damage to personnel and military platforms (e.g., penetration, overpressure and impulsive loading, and blunt impact) is a persistent challenge for the Canadian Armed Forces and Canada's Public Security sector. Future challenges will arise from emerging battlefield technologies such as high-energy lasers and other directed energy weapons. Thus, there is an ongoing need to understand and exploit advances in materials science, specifically to increase protection against current and future threats, reduce protection system weight, and improve mission effectiveness.

When considering the potential beneficial applications of research on advanced materials, two broad areas are of critical importance in the defence and security context: *Detection Avoidance* and *Physical Protection*.

Detection Avoidance: signature management for personnel and platforms.

Advanced materials which would enable personnel and military platforms (aircraft, land vehicles, and naval vessels) to be hidden or concealed in their respective background of operation, are of great interest. By managing, or reducing the contrast between the signature of the personnel or platforms and the background, detection and hence targeting can be more difficult. The signatures to be managed cover a wide range of the electromagnetic (EM) spectrum including the electro-optic, ultraviolet, visible, and infra-red regions. We are particularly interested in developments in signature management via advanced and emerging materials which function for wide-bandwidths, function across multiple discrete bands of the EM spectrum simultaneously, or can be adaptable for different bands of the EM spectrum.

Physical Protection: personnel and platform protection against kinetic and non-kinetic threats.

With the increasing lethality of both kinetic (e.g. ballistics, energetic materials, and blasts) and non-kinetic (e.g. electromagnetic, and directed energy) threats, has come increased weight and bulk of armour both for personnel and platforms. This increase in weight comes at the cost of mobility, maneuverability, and endurance. By exploring emerging and existing advanced materials with superior mechanical properties as compared to their traditional counter-parts, there is an expectation of considerable weight savings and increased protection performance. Other areas of interest include improved flexibility, durability, and thermal and moisture management, for a given level of protection.

Formation of Innovation Networks

IDeAS seeks to foster the development of Canada's innovation talent and capacity in the academic, for-profit and not-for-profit sectors by creating national Innovation Networks. As a first step, we are calling for the creation of Micro-nets to address challenges related to the study and development of advanced materials for Detection Avoidance and Physical Protection in the defence and security context.

We are seeking proposals from Micro-nets to develop and/or study emerging and advanced materials, relevant to future defence and security applications of signature management in the EM spectrum, and/or physical protection against kinetic and non-kinetic threats.

Example areas of development and/or study may include, but are not limited to:

- Metamaterials;
- Nanomaterials;
- Reactive materials;
- Multifunctional materials;
- Adaptive materials;
- Auxetic materials;
- Advanced composites;
- Advanced coatings;
- Printed electronics/periodic elements;
- Novel applications of existing advanced materials; and
- Advanced manufacturing methods.

Proposed research is expected to be focused at solution readiness levels (SRLs) typically ranging from 1 (Identification – observation of basic principles and/or properties) to 6 (Simulated Demonstration – demonstration and testing of near-end state solutions in a simulated environment). Definitions of the full SRL scale can be found in the Definitions Section of this Applicant Guide.

Expected outputs

The research activities of the Micro-nets are expected to demonstrate an interdisciplinary advantage with the following outputs:

- Advancement of knowledge within the fields of advanced and emerging materials;
- Development and training of highly qualified personnel within the field of materials science;

- Publication of peer-reviewed literature; and
- Participation in relevant scientific conferences, including an annual workshop to be organized by the IDEaS Program Office.

Annex B – Roles and Responsibilities of the Initial Recipient

Initial Recipients are expected to fulfill the following roles and responsibilities:

- Signatory to the Contribution Agreement with DND on behalf of the Micro-net;
- ensure that all costs submitted to DND are eligible project costs;
- distribute allocated Micro-net funds to Ultimate Recipients in support of eligible activities;
- establish and manage agreements with Ultimate Recipients and, as required, Micro-net members on collaboration, intellectual property, and funding;
- monitor and report to DND on activities and achieved results per the Contribution Agreement requirements.

Redistribution of Funds

Approval by DND is required prior to the redistribution of funding by a contribution recipient to one or more individuals or entities.

Contribution Agreement provisions will address the requirements of the Treasury Board Policy on Transfer Payments and the Terms and Conditions of the program. These Terms and Conditions must also be reflected in the agreements signed between the Initial Recipient and the Ultimate Recipients.

If an Initial Recipient redistributes funding to one or more Ultimate Recipients:

- the Initial Recipient has independence in the choice of Ultimate Recipients, with minimal guidance from DND, and will not be acting as an agent of the government in making distributions;
- the Initial Recipient funding agreement will address the provisions set out in Appendix G (27 to 34) of the [Directive on Transfer Payments](#); and
- Ultimate Recipients receiving redistributed funding must be eligible recipients and must utilize funding for the type and nature of eligible costs as defined in Section 4.3 - Eligible Costs.

Additional overhead expenses

In recognition of the additional administrative responsibilities required to manage the Micro-Net, Initial Recipients may claim up to 3% of the total eligible costs incurred by all Micro-net members. This is in addition to the 15% overhead costs allowance for eligible costs incurred by the Initial Recipient.

Annex C – Eligible and Ineligible Costs

Eligible costs are limited to the following categories:

Cost Category	Cap
1. Stipends, salaries and benefits for students, postdoctoral fellows, research assistants and technical staff	Benefits: 20% of salaries
2. Acquisitions or rental of equipment	20% of eligible costs (\$5,000 per acquisition)
3. Consultant services (provided by third parties not affiliated with the Micro-net)	N/A
4. Laboratory analysis services (provided by third parties not affiliated with the Micro-net)	N/A
5. Materials and supplies	N/A
6. Overhead (administrative) costs	15% of eligible costs
7. Publication, outreach and communication costs	N/A
8. Travel in accordance with the National Joint Council's <i>Travel Directive</i>	5% of eligible costs

1. Stipends, salaries and benefits for students, postdoctoral fellows, research assistants and technical staff

Salaries and benefits are eligible as long as they are directly related to project activities, including project management, and reflect the exact costs associated with the employees.

Benefits are defined as employment costs paid by the employer and may include the following:

- Employer's portion of CPP/QPP
- Employer's portion of Employment Insurance (EI)

- Employer's portion of group insurance
- Employer's Pension contributions

Benefits will not usually exceed 20% of an individual's salary

Maximum remuneration

Contributions from the Micro-net funds towards the total annual remuneration (fixed or variable) of each Micro-net member must not exceed \$120,000 per full-time equivalent (excluding benefits). This maximum applies to all positions (including employment contracts) and shall be pro-rated on the basis of the proportion of time worked relative to the full-time equivalent.

2. Acquisitions or rental of equipment

Equipment is defined as any item (or interrelated collection of items comprising a system) which is used wholly or in part for the research proposed and meets all three of the following conditions: 1) non-expendable tangible property; 2) having a useful life of more than one year; and, 3) a cost of \$2,000 or more.

The equipment category also includes research infrastructure such as scientific collections and information databases used wholly or in part for the research proposed.

Equipment purchases will be reimbursed at a rate to equal the percentage of the length of the project to the estimated value of the equipment purchased. For example, if a project has a time frame of 3 years, and the Recipient buys a piece of lab equipment with life expectancy of 5 years, DND would recognize an eligible expenditure of 3/5 times the fair value or actual cost of the lab equipment. The reimbursable amount could be given as a lump sum or equal amounts over the life of the project.

The Recipient will be responsible for obtaining the fair value of capital assets at the time of purchase.

3. Consultant services (provided by third parties not affiliated with the Micro-net)

Upon request, recipients are to send DND a copy of service contracts for research under the Project prior to signing the contract with the service provider.

The Micro-net Contribution Agreement should not be used or replicated for contracting with other parties. A recipient's own contract should detail the milestones to be achieved under that contract, the costs, and deliverables.

It is the responsibility of the Initial Recipient to ensure that all costs from service providers providing contracted services are eligible project costs.

4. Laboratory analysis services (provided by third parties not affiliated with the Micro-net)

Examples include physical, chemical or biological property analysis of samples, standardized testing laboratory services, and calibration services from fee-for-service laboratories.

5. Materials and supplies

Material and supplies: includes items that meet at least one of the following conditions: 1) expendable tangible property; or, 2) useful life of 1 year or less; or, 3) a cost of less than \$2,000. As an example, a laptop computer that costs less than \$2,000 would be considered a consumable even though it is a non-expendable tangible item with a useful life of more than one year.

- For consumables commonly utilized in most laboratories, a general rate per FTE will be accepted, provided that the rate is appropriately justified in the supporting documentation.
- The consumables category also includes items such as equipment maintenance contracts and general maintenance of research infrastructure and travel that is directly related to the conduct of the project.

6. Overhead (administrative) costs

Overhead costs are indirect expenditures incurred by Initial and Ultimate Recipients, which are required for the research activities, but cannot be specifically identified as project costs. These costs relate to the use of the organization's resources, which may include, but are not limited to:

- Administrative support (e.g. accounting, payroll administration, meetings);
- IT (Information Technology) support;
- Internet, telephone, excluding long-distance charges;
- Use of photocopiers, fax machines, and other office equipment;
- Use of existing workstations, including furnishings and equipment (e.g. computers, scanners);
- Normal office software (not including software specifically required for the project);
- Memberships and subscriptions;
- Staff recruitment and training;
- Routine laboratory and field equipment maintenance (e.g. oil changes);

- Building occupancy and operating costs (i.e. use of space);
- Facilities maintenance.

Overhead cannot exceed 15% of the total eligible costs.

7. Publication, outreach and communication costs

This cost category includes web support, newsletters, brochures, translation costs, printing and mailing costs, public relations associated expenses, and the costs of publishing in open access journals.

8. Travel in accordance with the National Joint Council's *Travel Directive*

Consult website at <https://www.njc-cnm.gc.ca/directive/d10/> for further details.

Ineligible Costs

Ineligible costs include, but are not limited to, the following:

- Remuneration of Principal Investigator(s), Co-Investigators and Collaborators;
- In-Kind Contributions;
- Staff awards and recognition;
- Professional training or development, such as computer or language courses;
- The purchase of land or buildings;
- Costs of moving a lab;
- The purchase or lease of private/personal vehicles;
- Assets and capital items not specifically required for the execution of the project;
- Normal costs of establishing a commercial operation;
- Costs for activities that are deemed to be part of normal business practice for any Recipient, such as:
 - Review engagements and audits, unless required in the agreement
 - Board of Directors' meetings
 - Insurance
- Depreciation;
- Interest and overdraft charges;
- Credit card charges;
- Refundable portion of the GST/HST, value-added taxes, or other items for which a refund or rebate is receivable;
- Hospitality;
- Alcohol, entertainment, honorariums, gifts (e.g., gifts for speakers or facilitators);
- Travel insurance (e.g., medical, accident, cancellation);

- Non-essential options for rental vehicles, for example GPS and roadside assistance (collision damage waiver (CDW) insurance may be eligible);
- Gasoline purchased for private or company-owned vehicles (vehicle costs must be based on applicable NJC kilometric rate), and vehicle maintenance costs;
- Monthly parking fees for vehicles, unless specifically required for field work;
- Costs of regular clothing;
- “Rental” charges for company-owned vehicles;
- Travel and accommodation expenditures for federal government employees;
- Internet charges outside headquarters (e.g. in hotels, taxis), unless specifically required for the project;
- Membership fees, unless specifically required for the project and a person does not already have it;
- Discretionary employee benefits (e.g., parking at employer’s location);
- Relocation costs for employees hired for the project;
- Patent fees;
- Costs for activities intended to directly influence/lobby governments;
- Direct marketing, business promotion or one-on-one extension types of activities;
- Costs associated with the review of graduate and Ph.D. thesis;
- Supplementary employment insurance benefits for maternity/paternity leave;
- Other costs not specifically required for the Project.

Annex D – Micro-net Team Composition



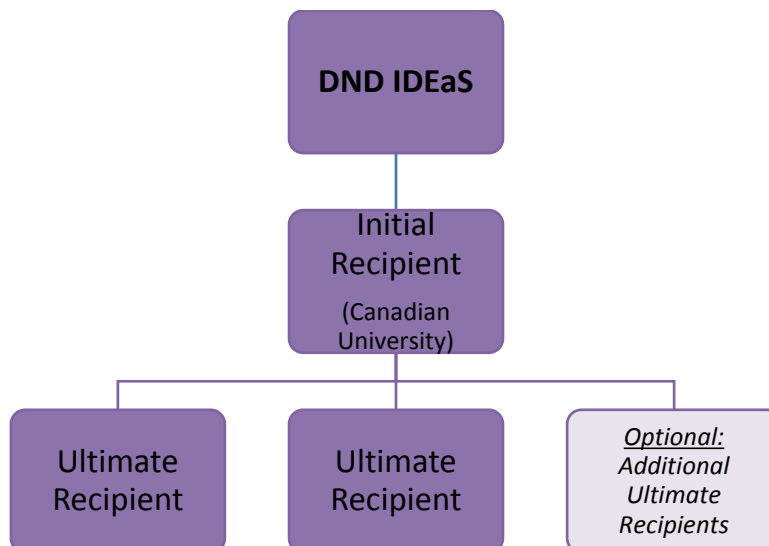
Minimum Micro-net Composition:

- 1 Lead Applicant/Principal Investigator;
- 4 Co-Investigators

Maximum Micro-net composition:

- 1 Lead Applicant/Principal Investigator;
- 2 Additional Principal Investigators;
- 10 Co-Investigators; and
- Any number of Collaborators

Micro-net Administration



Annex E –Application and Evaluation Process

Applicant Action

IDEaS Action

