

# CONSULTATION DOCUMENT

## 2008 Leading Edge and New Initiative Funds Competition

### DRAFT CALL FOR PROPOSALS

Published December 5, 2007

#### Key Features

##### Overview

Reflecting the key role outlined for the Canada Foundation for Innovation (CFI) in the Government of Canada's Science and Technology Strategy, the 2008 Leading Edge (LEF) and New Initiative Funds (NIF) competition seeks innovative and transformative infrastructure projects covering the full spectrum of research and development activities and all disciplines, that will lead to breakthroughs and to advantages for Canadians.

##### Objectives

To enhance Canada's capacity for, and strengthen highly competitive research and technology development in areas of institutional priority, in either:

- *New Initiative Fund (NIF)*: Promising directions in research and technology development in a field of research in **which the CFI has not invested in the past at the institution**;
- *Leading Edge Fund (LEF)*: Leading edge activities that **build on past investments** that the CFI has made at the applicant institution.

##### Budget

There is a single budget of up to \$400 million (plus an associated \$120 million offered through the Infrastructure Operating Fund). There is no predetermined distribution between the two streams - NIF and LEF to allow for maximum flexibility in ensuring the best use of available resources on the basis of the quality of the proposals received.

##### Timelines

Date	Activity (both LEF and NIF)
December 2007	Draft Call for Proposals published for consultation
January 2008	Final Call for Proposals published
April 18, 2008	Notice of intent to apply (NOI) submitted
April 2008	Posting of NOI lists on CFI website
May 9, 2008	Institutional letters regarding national and regional projects submitted to the CFI
October 3, 2008	Applications submitted
October 10, 2008	Institutional Strategic Research Plan Summary

	finalized
October 2008 – February 2009	Expert Committees Meetings
February 25, 2009	Provincial input to the CFI
March 2009	MAC meetings
May 2009	SMAC meeting
June 2009	CFI Board decisions

## 1. Context and Challenge

Canada's prosperity in the 21<sup>st</sup> century will depend increasingly on our ability to innovate—to generate knowledge and ideas from which are derived new products, services, and policies that create economic wealth, enhance social foundations, sustain the environment, and improve quality of life.

These concepts are central to the Government of Canada's S&T Strategy—*Mobilizing Science and Technology to Canada's Advantage*. Building an S&T advantage for Canada will depend on three key elements: a leading-edge research and development enterprise (Knowledge Advantage); a highly educated and skilled workforce (People Advantage); and a business, regulatory, and social environment that facilitates entrepreneurship and creativity (Entrepreneurial Advantage).

Over the last 10 years, there have been profound changes in Canada's research landscape. Key to this transformation has been the provision of instruments and resources that enable the country's knowledge-generating institutions to plan and develop their research priorities and to attract the best and the brightest faculty and students.

The CFI assists institutions in capitalizing on their areas of research strength by investing in research infrastructure projects targeting those priority areas, and enabling them to develop critical mass and an internationally competitive research capacity.

Recognizing that state-of-the-art infrastructure empowers institutions and their researchers to compete with the best institutions in the world, the CFI's 2008 Leading Edge and New Initiative Funds Competition will invest in world-class research projects that both sustain and enhance areas of activity in which major investments have already been made, and explore new research directions.

These projects will entail innovative advances on previous research, as well as extend and modify existing scientific paradigms, understandings, and technologies. This competition will enable revolutionary research projects that are critically dependent on access to new and powerful research resources— breakthrough projects that open new fields of investigation, overturn existing understandings, or create disruptive technologies. Such revolutionary projects, often involve researchers working across disciplines as they address the most profound challenges and issues of our time. Awards under this competition will integrate complementary and radically different research perspectives.

Previous investments by the CFI have enabled the development of important clusters that bring people and resources together across institutions, disciplines, sectors, regions, and countries. Multi-disciplinary approaches and increased collaborations will continue to drive advances in science and technology development, including the

four priority areas identified in the Government of Canada's Science and Technology Strategy - environment, natural resources and energy, health and related life sciences, and information and communication technologies.;

## **2. Description**

### **2.1. Proposal characteristics**

This competition seeks innovative and transformative infrastructure projects covering the full spectrum of research and development activities that will lead to breakthroughs and advantages for Canadians.

All projects submitted in this competition must demonstrate world-class excellence. Beyond this requirement, projects should have the following characteristics to a level appropriate to the magnitude and complexity of the particular proposal :

- **World-Class Excellence:**
  - World-class research or technology development that is currently beyond the means of Canadian institutions, and that is linked to new concepts as well as to different and better ways of performing research or technology development;
  - Research that capitalizes on significant past CFI investments in areas of strategic importance and institutional strength, where the research has been recognized as world class;
  - Transformative research that involves new ways of approaching research questions that have the potential to challenge existing perspectives, create new fields of activity, and lead to new technologies;.
  - Projects that attract and retain the best researchers, and provide a stimulating and innovative training environment.
- **Fostering Partnerships**
  - Synergies among research infrastructure investments and disciplines;
  - Collaborations among institutions and with external partners;
  - Enhancement of existing networks and new regional, national, and international networks and partnerships.
- **Focus on Priorities**
  - Evidence of substantial institutional support and commitment;
  - Research and development opportunities that draw on local, national, and international intellectual capital.
- **Impacts :**
  - Improvements to society and quality of life, as well as the development of new public policies.
  - Socio-economic benefits for Canada through the development and improvement of products and services;
  - Facilitation of the development of new technologies (e.g., proof of concept, prototyping) and the commercialization of research results.

In selecting proposals for the 2008 Leading Edge and New Initiative Funds competition, institutions should take into consideration what capabilities exist currently in the country. Institutions will be expected to address the availability and accessibility of similar infrastructure within their institution, region, and the country as well as issues of complementarity, duplication, and sharing. Institutions will be required to clearly demonstrate the unique nature and value-added of the proposed

research infrastructure project from a local, regional, national, or international perspective.

## 2.2. Determining under which funding stream to apply (NIF or LEF)

Institutions may submit research infrastructure proposals under two streams of the competition:

- *New Initiative Fund (NIF)* : Promising directions in research and technology development in **areas that are new for the applicant institution**.
- *Leading Edge Fund (LEF)* : Leading edge activities that **build on past investments** that the CFI has made at the applicant institution.

NIF proposals will be in areas of institutional strategic priority that have not received previous support from the CFI and that are aligned with the institution's strategic research plan.

LEF proposals will build on past CFI investment(s) funded through the Innovation Fund, the Research Development Fund or the International Joint Ventures Fund. They should strengthen particularly successful and productive activities in areas of strategic priority. The institution should have a competitive advantage and a proven track record in research outputs and innovation that are linked with the prior CFI investments. See interpretation document for more information (to be published).

A potential LEF proposal that builds on a CFI investment that already gave rise to a successful LEF project in the 2006 LEF/NIF competition is not eligible for consideration in the current competition.

Another key difference between the LEF and NIF applications is the required inclusion in LEF proposals of a report on performance from the previous CFI investments. This report must provide evidence of the research or technology development outcomes and outputs facilitated by that infrastructure, and must explain how any new investment will support innovative new activities beyond that enabled by the existing resources.

Examples of appropriate LEF proposals include requests for infrastructure designed for:

- *Upgrading facilities* : ensuring that infrastructure acquired through previous investments continues to be state-of-the-art;
- *Building on established strength*: building on leading-edge research or technology development opportunities resulting from important scientific or technological advances;
- *Extending established research leadership*: pursuing additional or unforeseen research or technology development avenues now possible as a result of previous CFI investment(s);
- *Extending research collaborations*: providing wider access, and extending or building new partnerships that enable the exploration of new research avenues ;
- *Moving from research through development to demonstration*: assisting with technology development through prototyping or pilot-scale demonstration.

LEF projects will have been operational for sufficient time to show concrete results that are directly attributable to the previously CFI-funded infrastructure.

The CFI reserves the right to make the final decision on classification of a proposal under the LEF or NIF, and will consult, if necessary, with an expert Infrastructure Advisory Group.

### 2.3. Exclusions—National platforms

National platforms refer to generic research infrastructure, resources, services, and facilities that serve the needs of many researchers and disciplines. To date, the CFI has supported three major national platforms:

- High performance computing
- Knowledge management infrastructure in the Social Sciences and the Humanities (Synergies)
- Digital content infrastructure in the Social Sciences and the Humanities (Canadian Research Knowledge Network)

New proposals that seek research infrastructure, resources, services, and facilities covered by the activities of these three platforms are not normally eligible under this competition. Consequently, applicants requesting infrastructure related to the above facilities will be required to demonstrate satisfactorily that their needs cannot be met through one of these three platforms.

### 2.4. Funds available

There is a single budget of up to \$400 million (plus an associated \$120M offered through the Infrastructure Operating Fund) for all projects in the 2008 LEF – NIF competition. There is no predetermined distribution between the two streams. This will allow for maximum flexibility in ensuring the best use of available resources on the basis of the requests received and the quality of proposals under each fund.

The CFI will provide funding for up to 40 percent of the eligible costs of a funded proposal.

### 2.5. Operating and maintenance (O&M) costs

The CFI will contribute to the operating and maintenance costs of approved proposals through its Infrastructure Operating Fund (IOF). The IOF allocation will be equivalent to 30 percent of the CFI funding awarded to an institution for proposals approved under the LEF or NIF.

Institutions must demonstrate that sufficient operating and maintenance resources are and will continue to be available to capitalize on the full potential of the infrastructure. This requirement to meet O&M needs of the infrastructure projects is an integral part of the review process and can influence recommendations of the Multidisciplinary Assessment Committees (MAC).

## 3. ***Eligibility***

### 3.1. Eligible institutions

Canadian universities, colleges and polytechnics, research hospitals, and non-profit research institutions that have been recognized as eligible by the CFI can apply,

provided they have filed the summary of their strategic research plan with the CFI, as well as the signed institutional agreement.

### 3.2. Eligible infrastructure

Eligible infrastructure includes equipment, specimens, scientific collections, computer software, information databases, communication linkages, and other intangible properties, used or to be used primarily for carrying on research, including housing and installations essential for the use and servicing of the above infrastructure. An eligible infrastructure project involves the modernization, acquisition, or development of research infrastructure. When completed, such a project represents a new capital asset and provides a new or improved research capability, research tool, or research facility.

In-kind contributions from external partners and cash expenditures by the institution must have taken place on or after January 1, 2006. Expenditures are considered incurred when goods are received, services have been rendered, or work has been performed.

### 3.3. Eligible infrastructure location

The infrastructure will normally be located at an eligible institution. Infrastructure may be located outside an eligible institution when it can be shown that this is the most effective way to proceed, providing the eligible institution retains majority interest and exercises de facto control over the use of the infrastructure. Construction/renovation costs at another location may also be considered eligible in exceptional circumstances.

### 3.4. Institutional envelopes

Institutions are expected to comply with the institutional envelopes for this competition ([see Annex 1](#)). These envelopes limit the total amount of CFI support that an institution can request in this competition for both LEF/NIF combined. There is no pre-set allocation between the two streams, in order to allow institutions maximum flexibility.

A single institution may opt out of its envelope if it submits only up to two projects in the competition (LEF and/or NIF).

Initiatives that fall within the class of national or regional projects will not be included in the institutional envelope, subject to CFI approval. Approval will be given only after the submission of the Notice of Intent and following review by an Infrastructure Advisory Group (see section 6 below).

*For more information on Eligibility, see the [CFI Program and Policy Guide](#).*

## **4. Institutional priorities and commitment**

Institutions must make choices and set priorities that build on their distinct advantages. The CFI expects that institutions will submit only proposals of exceptional quality that are consistent with their strategic research plans and reflect their institutional priorities. Institutions will identify the ways in which they have and will continue to support these proposals (e.g. institutional resources committed to

capitalize on the proposed infrastructure, the provision of space and other resources, the creation of new research positions or research chairs in these areas, etc.).

Innovative research often requires the integration of ideas and knowledge from many disciplines and fields of study. Research initiatives in the social sciences and humanities are fully eligible and encouraged.

## **5. *Commitment to partnerships***

The development of partnerships and cooperative arrangements between institutions and other public or private organizations will help to nurture clusters of excellence and to foster synergies that allow for more ambitious research or technology development activities. The CFI strongly encourages institutions, where appropriate, to come together in local, regional, or national collaborations, and to plan cooperatively to acquire or develop infrastructure.

## **6. *National and regional project designation***

A national project that meets the following requirements will be exempted from institutional envelopes. The project will:

- involve a partnership amongst at least 10 eligible institutions from across the country (with at least one institution from each geographical region);\*
- be consistent with each partner institution's strategic research plan and priorities;
- involve a commitment by each institution to help raise, or contribute to, the required partner funding, as well as to the operating and maintenance costs of the project.

A regional project that meets the following requirements will be exempted from institutional envelopes. The project will:

- propose the creation of a research infrastructure platform serving a community of users at participating institutions.
- involve a partnership among at least five eligible institutions in one or more neighbouring provinces;
- be consistent with each partner institution's strategic research plan and priorities;
- build on tangible and demonstrated past collaborative activities in the area of the project;
- involve a commitment by each institution to help raise, or contribute to, the required partner funding, as well as to the operating and maintenance costs of the project.

For each national and regional project, the lead applicant institution must submit a letter to the CFI by May 9, 2008 requesting national or regional project designation and outlining how the project meets the eligibility criteria. The submission should also include letters of commitment from the partner institutions across the country or region (at least 10 for national projects; at least five for regional projects) signed by the President or CEO (or their designate as specified in the Institutional Agreement with the CFI).

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\* The regions are: West (BC, Alberta, Saskatchewan, Manitoba); Ontario; Québec; East (New Brunswick, PEI, Nova Scotia, Newfoundland and Labrador)

Following a review by an Infrastructure Advisory Group, the CFI will advise the lead applicant institution by June 30, 2008 whether a proposal meets these national or regional project requirements. If a proposal is deemed not to be a national nor a regional project, it may still be submitted, but it must be counted within institutional envelopes.

## **7. Review and decision-making**

### **7.1. Criteria**

The CFI evaluates proposals on the basis of the three broad criteria (below) that reflect its mandate. To be funded, a proposal must satisfy all three criteria to a degree appropriate to the size and complexity of the proposal. A LEF submission will be expected to demonstrate satisfactory progress on previously funded CFI projects according to these same criteria. The application form provides details on the information required to assess the results and outcomes expected.

#### **1. Quality of research and need for the infrastructure**

- Quality, innovation and transformative potential of the research or technology development;
- Ability of the principal user(s) to capitalize on the proposed research or technology development opportunities;
- Appropriateness of the infrastructure in meeting the proposed research or technology development activities, and its complementarity to other existing infrastructure, where appropriate;
- Effective ongoing management, operation, and maintenance of the infrastructure.

#### **2. Contribution to strengthening the capacity for innovation**

- Enhance the institutional capacity in its strategic research priority areas;
- Create a sustainable regional or national capacity for innovation that is internationally competitive;
- Attract and retain the best researchers or those with the highest potential;
- Create a stimulating and enriched environment for training highly qualified personnel for research and other careers;
- Strengthen multidisciplinary approaches and collaborations among researchers, as well as partnerships with different institutions and sectors.

#### **3. Potential benefits to Canada**

- Lead to benefits to society, health, the environment, quality of life, or public policy;
- Contribute to economic activities through new products and services, greater resource efficiency and productivity, and sustainable job creation in strong or emerging areas of the Canadian economy.

### **7.2. Assessment process**

The CFI will initially assess proposals for eligibility and completeness, and may request additional material to ensure that all essential information is available for review. The

assessment of each proposal will be tailored to the nature and complexity of the proposal and will normally comprise three stages.

### *Expert Reviews*

The Expert Review process is designed to assess the strengths and weaknesses of the proposals in relation to the first two criteria (Quality of research and need for the infrastructure; Contribution to strengthening the capacity for innovation). Expert reviewers are not required to assess the Benefits to Canada criterion, but will review the performance reports for all LEF proposals.

Wherever possible, expert committees will review small groups of similar or related proposals. Proposals requesting \$7 million or more from the CFI will involve face-to-face meetings of representatives of the applicant institution with expert committees. Written external reviews will be used where expert committee review is not possible or where supplementary insights are required.

### *Multidisciplinary Assessment Committees (MAC)*

The second stage of review entails the assessment of a large group of proposals by one of several MACs. The specific number of MACs will be determined by the number of submissions. The MACs receive the input from the expert review process and are responsible for:

- 1) assessing the outputs and outcomes from previous CFI awards in the area (LEF only);
- 2) assessing how each proposal satisfies the third criterion (Benefits to Canada);
- 3) assessing each proposal against all evaluation factors relative to other competing requests.

Each MAC will review proposals in one of the following four categories:

- Category A: Proposals requesting less than \$2 million from the CFI (both LEF/NIF streams);
- Category B: Proposals requesting between \$2 million and \$7 million from the CFI (both LEF/NIF streams) ;
- Category C: Proposals requesting more than \$7 million from the CFI (both LEF/NIF streams); and
- Category D: All applied technology development proposals (both LEF/NIF streams) .

The boundaries between these categories of projects are subject to change to take account of the magnitude of the projects received, so as to distribute adequately the workload of the MACs.

Members of MACs are specifically chosen for their capacity to assess proposals based on the three CFI criteria, and for their breadth and understanding of the research environment, the niches of innovative excellence in all eligible institutions (larger and smaller institutions, colleges and polytechnics), and of the breadth of impacts and outcomes from research investments across the entire landscape of research activity.

In determining which proposals are worthy of funding, MACs are asked to be selective and to base their assessment on the established criteria. Performance on previous CFI awards related to an LEF proposal is an essential criterion for recommending proposals for funding.

#### *The Special MAC (S-MAC)*

The third stage of review entails review and integration of the assessments of the various MACs by a special committee—the S-MAC. As a pan-Canadian competition in which excellence is paramount, the S-MAC plays a pivotal role in identifying those initiatives that have the greatest potential to transform the research environment. The S-MAC is charged with the challenging mandate of assessing the excellence of projects with full consideration of:

- intrinsic scientific considerations, as well as the likelihood that the project (whether research or technology development) will lead to unique and seminal advances;
- extrinsic considerations: the potential value to Canada of the likely outputs, outcomes and impacts of an initiative, including the quality of research training opportunities;
- structural considerations: how the area or discipline of research or technology development would be affected by support, or lack of support, of the project in question.

The work of the S-MAC will also entail the following actions:

- Advise on and ensure consistency among the MACs;
- Ensure that the applications recommended for funding provide for a rich portfolio of investments in infrastructure of various sizes and across diverse fields of research and technology development;
- Should the MAC recommendations exceed the available resources, recommend to the CFI Board, among proposals recommended for funding, those that most effectively support the mandate of the CFI and represent the most effective portfolio of investments in infrastructure for Canada. This entails strategic consideration of the alignment with institutional, national, and provincial priorities and contributions to regional and national systems of innovation.

#### *Final Decisions*

All final decisions will be made by the CFI Board of Directors at its June 2009 meeting. For each proposal, the written reviews produced by the expert reviewers, expert committees, and the MAC will be provided to the applicant institution.

### 7.3. Coordination with federal research funding agencies

For large initiatives with substantial downstream funding requirements, the CFI will invite the federal granting agencies to attend the review of projects requesting more than \$10 million from the CFI, and will share with the appropriate agencies the outcomes of the CFI review process. This is intended to assist the granting agencies in their planning efforts.

Submission of an infrastructure request to the CFI implies the institution's consent that the CFI may share relevant application and review material with the appropriate federal funding agency.

### 7.4. Collaboration with provinces

In consultation with provinces and institutions, the CFI will coordinate the assessment processes with the relevant province(s) through:

- the sharing of information (e.g. reviewers and committee comments) between the CFI and a province throughout the process to avoid duplication of review;
- an opportunity for provinces to submit their views on proposals, within the framework of existing criteria, for which they are being asked for funding. In particular, provinces are given the opportunity to provide an explanation of why specific initiatives are particularly well aligned with their S&T priorities. This input will be provided to the MACs and the S-MAC as part of their review process.

The CFI encourages institutions to interact with provinces as a key partner at an early stage in the planning and development of proposals.

## ***8. Application procedures / How to apply***

Separate application instructions will accompany the application form to assist institutions and project leaders in completing electronic applications to the 2008 Leading Edge and New Initiative Funds Competition. Institutions must use the web-based electronic forms available on the CFI website.

## ***9. Administrative regulations and conditions of funding***

For more information administrative regulations and conditions of funding, please see the **CFI Policy and Program Guide**.

## **Annex 1—Institutional envelopes**

Institutional envelopes will place an upper limit on the total value of the funding requested from the CFI for LEF/NIF proposals by an eligible institution, given the limited resources available for this competition and the significant time and effort required by institutions to design major projects and prepare applications.

The envelopes will be calculated in the following manner:

- The overall envelope allocation will be three times the available budget of \$400 million (i.e. \$1.2 billion).
  - Each institution's envelope will be calculated using its share of research sponsored by the three federal funding agencies over the last three years, using the data base employed by the Canada Research Chairs and Indirect Costs programs.
- CFI eligible institutions will have a minimum envelope of \$1.5 million

Institutional envelopes include affiliated research hospitals.

A single institution may opt out of its envelope if it submits only up to two projects in the competition (LEF and/or NIF).

Initiatives that fall within the class of national or regional projects will not be included in the institutional envelope, subject to CFI approval. Approval will be given only after the submission of the Notice of Intent and following review by an Infrastructure Advisory Group.

Two or more institutions may enter into agreements to share project costs among institutional envelopes. Each institution must submit a letter to the CFI by May 9, 2008 indicating the dollar value of their share of any multi-institutional program. The CFI will contact the institution within a month if the case made is not accepted. For each proposal the letter should also list the other participating institutions and the value of their share.

Institutions must ensure that by the submission date of October 3, 2008, the total value of their submissions is no more than the amount listed in their allocation. If there is a formal provincial process for screening proposals, institutions must be within the envelope by the time the Multidisciplinary Assessment Committees meet.

When full proposals are submitted there will not be an online control or calculation of envelopes. Therefore, no proposal will be prevented from being submitted. Following the closing date, the CFI will undertake a series of checks and calculations to ensure that an institution is within its envelope.

<b>Institution</b>	<b>2008 LEF/NIF Envelope</b>
University of Toronto (and affiliate hospitals)	\$178,500,000
McGill University (and affiliate hospitals)	\$113,150,000
University of British Columbia (and affiliate hospitals)	\$103,850,000
Université de Montréal (and affiliate hospitals)	\$76,250,000
University of Alberta (and affiliate hospitals)	\$76,000,000
Université Laval (and affiliate hospitals)	\$56,700,000
University of Calgary (and affiliate hospitals)	\$51,950,000
McMaster University (and affiliate hospitals)	\$46,500,000
University of Western Ontario (and affiliate hospitals)	\$45,250,000
University of Ottawa (and affiliate hospitals)	\$42,700,000
Queen's University (and affiliate hospitals)	\$34,250,000
University of Manitoba (and affiliate hospitals)	\$31,700,000
University of Waterloo	\$31,600,000
Dalhousie University (and affiliate hospitals)	\$31,100,000
University of Saskatchewan (and affiliate hospitals)	\$25,600,000
Université de Sherbrooke (and affiliate hospitals)	\$21,900,000
Simon Fraser University	\$21,600,000
University of Guelph	\$20,550,000
University of Victoria	\$20,150,000
York University	\$15,400,000
École Polytechnique de Montréal	\$14,400,000
Université du Québec à Montréal	\$14,150,000
Carleton University	\$13,500,000
Concordia University	\$13,450,000
Memorial University of Newfoundland (and affiliate hospitals)	\$12,650,000
Institut national de la recherche scientifique	\$8,650,000
University of New Brunswick	\$8,600,000
University of Windsor	\$7,300,000
University of Regina	\$4,800,000
Ryerson University	\$4,000,000
Brock University	\$3,700,000
Université du Québec à Trois-Rivières	\$3,500,000
Laurentian University	\$3,350,000
University of Lethbridge	\$3,250,000
Trent University	\$2,700,000
Université du Québec à Chicoutimi	\$2,650,000
Lakehead University	\$2,650,000
Wilfrid Laurier University	\$2,600,000
University of Northern British Columbia	\$2,350,000
HEC Montréal	\$2,250,000
École de technologie supérieure	\$2,250,000
Université du Québec à Rimouski	\$2,200,000
Saint Mary's University	\$2,050,000
University of Prince Edward Island	\$2,050,000
St. Francis Xavier University	\$1,850,000
Université de Moncton	\$1,700,000

Acadia University	\$1,600,000
Royal Military College	\$1,550,000
All other CFI eligible institutions	\$1,500,000