



Canada Foundation for Innovation
Fondation canadienne pour l'innovation

2009 Leading Edge and New Initiatives Funds Competition

CALL FOR PROPOSALS
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1. Context and Challenge

Canada's prosperity in the 21st 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.

State-of-the-art infrastructure empowers institutions and their researchers to be recognized amongst the best institutions in the world. As such, the CFI's 2009 Leading Edge and New Initiatives Funds Competition will invest in world-class infrastructure 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 new 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.

To a level appropriate to its magnitude and complexity, a proposal should:

- **Demonstrate 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.

- **Foster 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.

- **Generate 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 2009 Leading Edge and New Initiatives 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:

- *Leading Edge Fund (LEF)* : Leading edge activities that build on past investments that the CFI has made at the applicant institution through the Innovation fund (IF), the International Joint Venture Fund (IJVF), the College Research Development Fund (CRDF) or the University Research Development Fund (URDF) and are dependent upon the results and outcomes of these infrastructure projects
- *New Initiatives Fund (NIF)* : Promising innovative directions in research and technology development that do not build on past CFI investments (through the IF, the IJVF, the CRDF ,the URDF, the LEF, or the NIF) at the institution and are not dependent on the results and outcomes of past infrastructure projects.

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 IF, IJVF, CRDF or URDF. They should strengthen particularly successful and productive activities in areas of institutional 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 (Annex 2) for more information.

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.

A 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.

For illustrative purposes, the following are examples of appropriate LEF proposals requesting 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 build on previously funded CFI projects that have been operational for sufficient time to show concrete results that are directly attributable to the previously CFI-funded infrastructure.

Based on the Notices of Intent (NOI), the CFI reserves the right to make the final decision on classification of a proposal under the LEF or NIF (please note that the NOI contains a section in which the institution has to provide a justification for the choice of stream). If necessary, the CFI will consult, with an expert Infrastructure Advisory Group. The CFI will advise the institution before July 31st whether a proposal should be submitted to the alternate stream.

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 ([Compute Canada](#))
- 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.

For projects requesting computing equipment in excess of \$500,000, the CFI will require a letter from the applicant institution detailing the reason(s) why the current high performance computing resources offered by Compute Canada are unable to meet the needs of the project. The CFI expects this letter to be submitted only after there have been substantial discussions between the applicant and Compute Canada. The CFI will then make a final decision regarding the need for the proposed computing equipment. The CFI may seek expert advice to assist with difficult or ambiguous cases.

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 current competition. There is no predetermined distribution between the two streams (LEF and NIF). 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 (subject to appropriation by Parliament in the year in which the Funds are to be disbursed).

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 may 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. 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.

Constructions and renovations essential for housing the infrastructure effectively are also considered eligible.

In-kind contributions from external partners and cash expenditures by the institution must have taken place on or after January 1, 2007 to be considered eligible. 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.

Should an institution submit up to two proposals to the competition, it will not be required to respect its institutional envelope.

Initiatives that fall within the class of national or regional projects will not be included in any institutional envelope, subject to CFI approval as outlined in Section 6.

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.).

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; and
- 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;

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

- align with the federal S&T strategy's four priority areas (environment, natural resources and energy, health and related life sciences, and information and communication technologies).

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;
- align with the federal S&T strategy's four priority areas (environment, natural resources and energy, health and related life sciences, and information and communication technologies) AND provincial S&T priority areas;
- involve a partnership among at least five eligible institutions ;
- be consistent with each partner institution's strategic research plan and priorities;
- build on tangible and demonstrated past collaborative activities (e.g. research networks, functional research groups, substantial co-publication records, etc.) between at least five participating institutions and their researchers in the area of the project; and
- 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. In the case of a regional project, and where provincial S&T priorities exist, the applicant will be required to include a letter from the appropriate provincial authority indicating that the project is aligned with provincial S&T priorities. The submission should also include letters from the partner institutions (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) confirming their commitment to help raise, or contribute to, partner and O&M funding.

For ambiguous cases, the Infrastructure Advisory Group will advise the CFI regarding the requested designation. The CFI will inform the lead applicant institution by June 13, 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.

[†] A platform is defined as a generic research infrastructure (resource, service, facility) serving the needs of a network of scholars from participating institutions.

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 including the four priorities stated in the federal S&T Strategy: environment, natural resources and energy, health and related life sciences, and information and communication technologies.

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. In order to help the committee to assess the performance report, the CFI will provide information about the past CFI investments associated with the LEF projects to be reviewed. In addition to general information about the project (e.g. title, project leader, etc.), we may provide additional information (e.g. about the total project

costs, major pieces of infrastructure acquired, percentage of the money spent as per the last financial report, etc) to the committees.

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 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 its relevance to the four priority areas of the federal S&T strategy or provincial S&T priorities where they exist;
- 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 priorities and federal and provincial S&T priorities in instances of projects of equivalent scientific merit.

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; and
- an opportunity for provinces to submit their views on proposals:

- Provinces are given the opportunity to provide a brief text (a maximum of 250 words per project) describing how specific initiatives align particularly well with their respective S&T priorities.
- This input will be provided to the MACs. It should be noted that the MACs will be solely responsible for rating the 'benefits to Canada' factor. criterion and that provincial input will be factored into their assessment
- The S-MAC will also use the same provincial input in its decision 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 2009 Leading Edge and New Initiatives 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.

Should an institution submit up to two proposals to the competition, it will not be required to respect its institutional envelope.

Initiatives that fall within the class of national or regional projects will not be included in the institutional envelope, subject to CFI approval (as outlined in Section 6).

Two or more institutions may enter into agreements to share project costs among institutional envelopes. Each institution must communicate to the CFI by October 3, 2008 the dollar value of their share of any multi-institutional proposal. For each proposal the letter should also list the other participating institutions and the value of their share, including the rationale for determining each participating institution's 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 of their allocation.

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.

Institution	2009 LEF/NIF Envelope
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

Annex 2 — LEF/NIF Interpretation Note

The introduction of the LEF and the NIF marked a shift in emphasis for the CFI. In addition to investing in new initiatives in areas of strategic priority for the applicant institution (NIF) with a view to building Canada's capacity for innovation, the CFI seeks to sustain the more productive and successful activities enabled by past CFI investments (LEF). Through its LEF, the CFI seeks to assist institutions and their researchers to build on and enhance the results of past activities and thereby enhance opportunities to capitalize on their comparative advantages and to contribute to economic growth and to the translation of research results into improvements in the health and quality of life of Canadians.

LEF/NIF classification

The CFI will accept proposals for the 2009 competition under two separate streams:

1. **Leading Edge Fund (LEF):** Leading edge activities that build on past investments that the CFI has made at the applicant institution through the IF, IJVF, CRDF or URDF and are dependent upon the results and outcomes of these infrastructure projects

Proposed projects that are in areas of research or technology development, in which the CFI has made past investments at the applicant institution, should be classified as LEF initiatives. Such initiatives are:

- expected to strengthen research or technology development activities that have been particularly successful and productive; AND
- in select areas of the institution's strategic priority where it has a competitive advantage and a proven track record in helping to strengthen Canada's capacity for innovation.

2. **New Initiatives Fund (NIF):** Promising innovative directions in research and technology development that do not build on past CFI investments (through the IF, the IJVF, the CRDF, the URDF, the LEF, or the NIF) at the institution and are not dependent on the results and outcomes of past infrastructure projects

Projects submitted as a NIF proposal, will be in areas of institutional strategic priority that have either:

- not previously been supported by the CFI; OR
- have not been supported through the aforementioned CFI funds, but may have received funds through the New Opportunities Fund, Canada Research Chairs Infrastructure Fund, etc.

When determining the appropriateness of the choice stream (LEF or NIF) for the proposals, the CFI will review the justification provided in the NOI vis-à-vis past CFI investments at the institution.

Which proposals should be submitted to the LEF?

The CFI will accept proposals that seek to capitalize on highly productive areas of institutional strategic priority. Projects submitted as LEF proposals will build on past CFI investment(s) made through the IF, the IJVF the URDF or the CRDF. These projects will have proven to be operational and functional for an appropriate period of time, as determined by the nature of the infrastructure and the area of research or technology development.

In particular, LEF proposals should describe how the proposal is an extension of the infrastructure project previously funded through the IF, IJVF, CRDF or URDF. Proposed LEF projects can build on either the:

- equipment and/or infrastructure that was initially acquired through the previous CFI investment; or
- results of the research activities performed using the infrastructure that was initially acquired through the previous CFI investment.

LEF proposals that build on previously funded multi-institutional project(s) are expected to remain multi-institutional. However, it is not necessary for all the original institutions to be part of the current LEF proposal. Furthermore, new institutions (i.e. not part of the original multi-institutional project(s)) may be included in the current LEF proposal. In addition, the lead institution for the current LEF proposal may be different from the lead institution on the initial project(s) (in cases where there are significant changes to the original composition of institutions, a rationale for the changes should be communicated to the CFI). Similarly, the project leader and the principal users of the initial projects can be different from the project leader and the principal users listed on the current LEF proposal.

Examples of LEF categorization

The five categories listed below outline the most common types of projects appropriate for consideration as LEF initiatives:

- Upgrading “facilities” - ensure that infrastructure acquired through previous CFI investment(s) continues to be state-of-the-art;
- Building on established strength - continue to build upon leading-edge research or technology development opportunities resulting from important scientific or technological advances;
- Extending established research leadership - pursue additional or unforeseen research or technology development avenues now possible as a result of previous CFI investment(s);
- Extending research collaborations - provide wider access, and extend or build new partnerships;
- Moving from research through development to demonstration - assist with technology development through prototyping or pilot-scale demonstration.

Examples of LEF and NIF proposals

Based on the categories outlined above, the examples below have been prepared to assist institutions in deciding which stream of the current infrastructure competition is most appropriate to submit a proposed proposal:

LEF proposals

- **Upgrading facilities**

Through funding from a previous CFI’s Innovation Fund award, an institution has acquired a 3-Tesla MRI to conduct research related to medical imaging in the context of psychiatric disorders. To continue their work in this area of research and to test new hypotheses, the institution requires a 7-Tesla MRI to enhance the spatial resolution of the images to be analyzed.

While the proposed project will support the same area of research (i.e. medical imaging in psychiatry), the proposed upgrade to the facility will allow the research team to test new hypotheses and further their understanding in the clinical specialty.

As such, this project would build on past CFI-funded infrastructure and would clearly constitute a LEF proposal.

- **Building on established strength**

A group of institutions, working on silicon-based materials for solar cell applications, had previously been awarded infrastructure support through the CFI's University Research Development Fund. The group was able to produce a material that is able to convert light, with reasonably good efficiency. They are interested in slightly altering the composition of the material. To do so, they require additional infrastructure more appropriate for the new materials.

The proposed project would build on important and successful scientific advances, resulting from prior CFI investment. Therefore, this proposal would be categorized as a LEF initiative.

- **Extending established research leadership**

A group of institutions has been using a field station in the boreal forest to monitor the population dynamics of endangered and protected species of boreal mammals and avians. Analysis of long-term data of the population dynamics of one bird species revealed that the reproductive success is closely associated with climatological fluctuations. These unexpected findings lead to the pursuit of research on the detection by, and impacts of, climate change on boreal animals.

A LEF proposal focusing on climate change may emerge from the research results of the ecology project previously funded through a CFI Infrastructure Project. The proposed new infrastructure would likely differ in nature and scope from the original project in ecology, upon which it builds.

- **Extending research collaborations**

An institution has initiated a linguistic database of Cree language through past investment by the CFI. The institution is working closely with the Cree community who are committed to preservation of their language. The research team is interested in collaborating in a similar manner with the Ojibway community to pursue the same goal. To achieve this goal, they would require additional infrastructure to successfully be able to achieve the collaborative research opportunity.

This is an example of a situation in which additional infrastructure is essential to initiate new collaborative opportunities, leading to novel research avenues. This proposal should be submitted to the LEF.

- **Moving from research through development to demonstration**

Through previous CFI investment, a nanotechnology facility has developed a novel microelectromechanical system (MEMS) that has promising applications for the automobile industry. The researchers are interested in exploring the potential

applications of these MEMS for use in this industry, a venture that will require testing and fabrication equipment.

The proposed project would require new instrumentation to enhance the existing nanotechnology facility through acquisition of appropriate testing and fabrication instrumentation. Since the proposed project will build on prior CFI supported research and technology development with a goal to demonstrate use of the prior project's outcomes (prototyping of the MEMS) in the automobile design sector, it would be considered a LEF proposal.

NIF proposals

- **A proposal in a novel area of research**

An institution has received funding, through the Innovation Fund, for an infrastructure project aimed at the development of inorganic materials for energy conversion purposes. A group of researchers now proposes a new endeavor in the area organic materials for flat-screen displays. Given the nature of the materials and the techniques to be used, the older infrastructure cannot be used for the organic materials. Moreover, the research results obtained from the earlier projects are not of relevance.

The new project does not build on past CFI investment and is in an area of research in which the CFI has not invested in the past. Therefore, although the two projects are in the broad field of material sciences, the proposal should be submitted to the NIF

How the CFI will determine LEF and NIF categorization

The CFI will establish a broadly-based Infrastructure Advisory Group (IAG) to review ambiguous cases. The group will be mandated, among other things, to advise the CFI on the correct fund (LEF or NIF) to which a project should be submitted. The IAG will base their decisions on the Notice of Intent (including a question related to this question), a list of past investment(s) at the institution, and summaries of the relevant project(s) previously funded by the CFI.

Annex 3 — Timelines

Date	Activity (both LEF and NIF)
December 2007	Draft Call for Proposals published for consultation
February 2008	Final Call for Proposals published
May 9, 2008	Institutional letters regarding national and regional projects submitted to the CFI
June 30, 2008	Notice of intent to apply (NOI) submitted
July 2008	Posting of NOI lists on CFI website
October 3, 2008	Applications submitted
October 10, 2008	Institutional Strategic Research Plan Summary submitted
November 2008 – February 2009	Expert Committees Meetings
March 27, 2009	Provincial input to the CFI
March/April 2009	MAC meetings
May 2009	SMAC meeting
June 2009	CFI Board decisions