DESCRIPTION OF INFRASTRUCTURE PROJECT

The CFI application has been structured to allow institutions/applicants to describe the infrastructure needed and to justify it on the basis of the innovative research that will be conducted with it. Keep in mind that these are requests for research infrastructure, not research projects. The following pages contain a copy of each section of the CFI “Description of Infrastructure Project” module. Following the normative statement and CFI instructions for each section (as per the online form), you will find ORS tips and suggestions on preparing the text for that section. The information provided is based on our experiences with the CFI (i.e., reviewer comments for both successful and unsuccessful applications), the experiences of other institutions and advice provided by the CFI Secretariat.

The CFI proposals should:
Demonstrate World-Class Excellence
Foster Partnerships
Focus on Priorities
Generate Impacts

General

- Stay focused when providing an answer to a question; address the question directly. Be sure to answer all parts of the question. Echo the language of the normative statement and provide information that demonstrates how the normative statement is true of your project.
- Explanations and justifications should complement and reinforce other sections of the application.
- Be quantitative and qualitative where possible. Provide benchmarks and examples. Provide context.
- Use positively oriented language. For example, use "will" instead of "would", or "expect" instead of "hope."
- Write confident prose. Use the active voice, as opposed to the passive voice.
- The web-based electronic form controls the font size and the number of pages allowed. The web form will cut off your text if it exceeds the prescribed word limits. The web form does not allow formatting of any kind (i.e., bold, italics, etc.).
- Formatting -- Avoid long, continuous text. Break up with headings, or CAPS, or numbers, and use white space extensively. Clear formatting will allow reviewers to locate information with a minimum of effort, and will also create a favourable first impression for your proposal.
- The form contains sections with many large blocks of text. It is recommended that applicants write and save text blocks offline, using a word processor, to ensure that their work is not lost due to any technical difficulties. In addition, run text through the word processor’s spelling and grammar checker before posting text online.

After the competition is over, the CFI provides the institution with feedback on proposals. Please pay special attention to issues that have arisen in past proposals. They have needed to improve in the following ways:
- There was not a recruitment plan in place to ensure that an equipment specialist was hired for the required infrastructure for the project to be successful. This is a maintenance and operation infrastructure issue.
- The scope of the collaborations was limited for a facility of the type directly proposed. The proposal was lacking in local collaborations with additional researchers who could make use of the requested infrastructure.
- Members of the research team seemed to consist of a collection of individuals pursuing their own lines of research, rather than a coherent team undertaking research into the various aspects of the same area of study.
- Equipment was not explained in terms of its contribution to the proposed research.
- There were insufficient details on space allocation for the equipment.
- The Quality of Research section did not provide enough information on the research that would be enabled by the up-graded infrastructure that the proposal was requesting.
- There were too many general statements, and the proposed means for achieving the scientific goals were not clearly outlined.
- Management plans were too vague and there were not sufficient details on how the group would coordinate its activities, or interact with internal or external collaborators.
- Proposal did not sufficiently demonstrate partnerships with industry.
- The proposed activities did not appear to have a strong potential benefit to the Canadian economy.
- The proposed facility complements a similar facility located at a nearby university. There was no attempt to integrate the proposed facilities into the substantial ongoing research conducted at that institution.
- Proposal did not demonstrate a strong institutional commitment and connection to the university's strategic research plan.

Potential applicants are encouraged to contact Steven Mataija (Manager, Government Research Initiatives Programs, Office of Research Services) and Anna Birnie-Lefcovitch (GRIPs Research Assistant) are available to provide advice and assistance in the conception of CFI applications. Steven can be contacted by telephone at extension 22507 and by e-mail at smataija@yorku.ca. Anna can be reached by telephone at extension 33554 and by e-mail at gripadm@yorku.ca.
Canada Foundation for Innovation

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<td>Descriptive Title of Infrastructure Project (no more than 200 characters):</td>
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<td>Funding program applied to: <strong>NIF</strong></td>
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### Identification

TOTAL COST OF INFRASTRUCTURE PROJECT AND AMOUNT REQUESTED FROM CFI

This is self calculating. The table is broken down into four years and records Total (per year), Partner Contributions (per year), and the amount that’s being Requested from CFI (per year). The CFI contribution should not exceed 40% of the cumulative cost per year, or in total over all four years together. The best applications will have thorough budgets that detail cost estimates for individual items so that this section is as accurate as possible.

**DESIGNATED PROJECT LEADER**

Give careful consideration to the choice of Designated Project Leader if there are multiple principal users or if submitting a joint application. The Designated Project Leader should have a strong CV and experience relevant to the operation of the infrastructure.

**KEY WORDS**

Select words that best describe your project’s area(s) of study, theory, methodology and equipment.

**SIGNATURE**

ORS will arrange for signature on the hard copy of the application.
Multi-institutional Application

This section is to be completed by EACH eligible institution that is a co-applicant on the proposed project, with the exception of the lead applicant institution, that, if approved, would house CFI infrastructure.

The following eligible institutions agree that the general conditions governing the partner contributions and the use of CFI funds, as outlined in the Institutional Agreement and in the CFI Policy and Program Guide, apply to the project outlined in this application and are hereby accepted by each institution.

List only collaborating institutions that are CFI eligible and have a financial interest (i.e., share funding). Simply having a collaborator at another institution is not enough to qualify the institution for inclusion here.

Signatures must be obtained well in advance of the submission deadline. ORS will assist.
Project Overview and Summary

In language appropriate for a multidisciplinary committee, use the space below to provide a general description of the research or technology development to be undertaken. Provide a general overview of the infrastructure being requested and briefly explain why the infrastructure is needed at this time.

**A compelling overview is critical to the success of the application.** First impressions count. Ensure that this section captures/excites the reviewer. Use language appropriate for a multidisciplinary committee (i.e., strive for a balance of technical and non-technical language).

The Leading Edge Fund aims to enable institutions to build on and enhance initiatives, which have been successful. You do not need to show that your project is new and different. Rather, you need to make a case for the infrastructure required to keep the project at the leading edge.

- Provide research context – describe what research will be enabled by the infrastructure and why this research is important. Your opening paragraph should outline the broad vision for your research and the role of the requested infrastructure in realizing that vision.
- Describe the infrastructure that will be acquired or developed and indicate where the infrastructure will be located. Identify each major piece of the infrastructure – briefly explain what it is, what it does, how it will be used, and why it is important.
- Provide context in terms of scientific need and existing facilities.
  - What is available to you now and how will you add to this?
  - Are you requesting new equipment that is not available?
  - Will you be enhancing existing equipment? If so, the "upgrade" should give you the ability to strike out in new directions that are impossible with existing resources.
- Put your request in terms of “need,” using words such as “critical” and “essential.”
- List items, or CAPITALIZE in text.
- Briefly show that the infrastructure is timely. Explain why re-investment is needed now to exploit a research opportunity.
- Briefly demonstrate how the infrastructure will strengthen a particularly successful and productive initiative. Explain how it will capitalize on past CFI investments.
- Briefly address the importance of the research for Canada. There is another section where you will be required to elaborate.
Institutional Priority and Commitment

(NOTE: This section is accessed from the institutional portal using the institutional P.I.N. and password)

The proposed section is of strategic importance to the institution. The institution has made and continues to make tangible and significant commitments in support of this area of strategic priority. These commitments are, or will be, of direct benefit to the proposed project, including the attraction and retention of the best researchers.

In the space below, address EACH of the following (N.B. failure to do so will weaken the application):

1. Describe the significant support that the institution has provided to this area of research (e.g., institutional resources committed to capitalize on the proposed infrastructure, the creation of new research positions, or research chairs in these areas, etc.).
2. Describe the significant and tangible contributions that the institution will make to the current and on-going needs of the proposed project.
3. Explain why this project is important to the fulfillment of the institution’s strategic research plan.

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.

The ORS will draft this section. Researchers will need to review the text and provide feedback.

Please refer to the following resources:
York U. CFI strategic research plan
York U. strategic research plan (2001)
York U. key thematic research areas
http://www.research.yorku.ca/securehome/about_yorkresearch/securethemes/index.html
York U. research themes
http://research.yorku.ca/publichome/researchandresearchers/publicthemes/index.html
Provincial priorities submitted by the government of Ontario
http://www.mri.gov.on.ca/english/programs/orf/ri/program.asp
Quality of the Research or Technology Development

The research opportunity is timely and has the potential to lead to breakthroughs in research or technology development. The proposed research or technology development is innovative and at the leading edge internationally.

In the space below, address EACH of the following (N.B. failure to do so will weaken the application):
1. Describe the proposed research or technology development activity and the potential transformative and innovative aspects of this endeavour.
2. Explain why it is important to pursue the proposed research or technology development activity at this time.
3. Explain how the proposed research or technology development activity complements or differs from comparable research or technology development being conducted nationally and/or internationally.

Outline the major research programs or technology developments to be enabled by the infrastructure. Explain why this research is “leading edge.”

For multifaceted and multi-institutional groups, it is critical to provide a vision to unite disparate research themes and purposes for technology development. Convey a strong long-term vision if your research group is working on multiple sites or has distinct research themes.

Explain why the infrastructure is timely. What breakthroughs are possible? What is the research opportunity?

Demonstrate how the proposed research builds on past CFI investments. Will the new infrastructure:
- Ensure previously acquired infrastructure remains state of the art?
- Provide wider access?
- Allow you to pursue additional or unforeseen research avenues now possible because of previous CFI funding?
- Build or extend partnerships?

Situate the research and/or technology development in the larger regional, national and international context and highlight the aspects of the project that make it leading edge. If the proposed research or technology development replicates those existing elsewhere and particularly in Canada it will not be seen as truly innovative. The quality of the science needs to be of the highest level. Interdisciplinary research is often seen as most innovative.
- Who else is doing this type of research? Is similar technology available elsewhere in Canada? Can you differentiate your project? (i.e., “we are currently the only research team in the world investigating…”)
- Where does what you want to do fit in to the international arena? Is Canada lacking knowledge/technology in this area? Is this research or technology needed to make Canada internationally competitive?
- With the infrastructure, what will be innovative and new? Results? Methodologies? Techniques? Applications?
Researchers

Provide up to 10 PINs for the principal users of the infrastructure.

The CVs for these principal users will be included in the proposal review.

List the project leader and any other eligible faculty (the CFI will accept up to 10 CV modules). For very large projects, the applicants should include excellent researchers from all stages of a project with the requisite knowledge to use the infrastructure as described in the application.

Does the research team encompass all expertise needed?
- An “ideal team” may include senior researchers + strong mid-career researchers + promising juniors + a good researcher/administrator
- Be selective. It is more important to be credible than to indiscriminately add researchers who will only play a very small role in the research program.
- Give careful consideration to the choice of Project Leader if there are multiple principal users or if submitting a joint application. The Project Leader should have a strong CV and experience relevant to the operation of the infrastructure.

The CV module(s) must be completed by the candidate and individual principal researchers (if multiple principal users or joint application) only.

Other users may come from any sector: other institutions, industry, public organizations. Again, be selective. Do not include CVs for other users.
Researchers (Use of Infrastructure)

The principal users of the infrastructure are experts in the relevant research or technology development domain. The research group has the expertise and experience to lead the proposed endeavour.

In the space below, address EACH of the following (N.B. failure to do so will weaken the application):

1. Demonstrate that the research group is comprised of highly accomplished researchers and may also include new researchers who have demonstrated potential for excellence and leadership in all the proposed field(s), or experts in technology development who have been recognized for their accomplishments. If any principal users are to be recruited, describe the recruitment plan.

2. Explain how each principal user will use the infrastructure to contribute to the proposed research or technology development.

3. Describe the existing or emerging collaboration and complementarity among the principal users.

4. Demonstrate that the principal users/team have the research or technical expertise to capitalize on the use of the requested infrastructure.

5. Highlight prominent research achievements, awards and professional credentials of each of the principal users.
Need for the Infrastructure

The infrastructure requested is appropriate and essential to support the proposed activities. It will establish or enhance a unique and important institutional capability in an area of leading edge research or technology development.

In the space below, address EACH of the following (N.B. failure to do so will weaken the application):

1. Explain why the requested infrastructure is appropriate for the proposed research or technology development.

2. Explain why the proposed research cannot be supported using existing infrastructure.

3. Describe the availability of similar infrastructure within the institution, the region, the country, and/or internationally and address any issues of accessibility, complementarity, duplication, and sharing.

This is an important section. **The infrastructure must be shown to be essential to the proposed technology and research.** Throughout the application you should remind reviewers that the research will be impossible to carry out without the new infrastructure).

- Discuss the appropriateness of the infrastructure project for the proposed research or technology development -- justify the proposed equipment on the basis of the innovative research that will be conducted with it.

- Discuss the availability and accessibility of similar infrastructure within the institution, region, the country, and internationally and address issues of complementarity, duplication, and sharing. Describe why this similar infrastructure, if it exists, is not suitable for your research or is not accessible.

- Describe your plans for making the infrastructure accessible to other researchers, if appropriate. Describe how the proposed infrastructure will enhance previous projects, and why the timing is right for the new technology development project or research to begin.

- Demonstrate to the CFI that the infrastructure will be used efficiently by your team as well as other researchers.
Management Plans

The management plans provide for the optimal implementation, operation, and functionality of the infrastructure. The infrastructure requested will be managed effectively and efficiently, in keeping with the size and degree of complexity of the project.

In the space below, address EACH of the following (N.B. failure to do so will weaken the application):

1. Describe the management structure to oversee the implementation, operation, functionality and sustainability of the infrastructure.

2. Explain how the institution will address issues of access and utilization, taking into account scientific and user priorities.

3. If applicable, describe any changes or modifications to existing plans as a result of the infrastructure being requested and the integration or linkage with existing infrastructure.

Include accountability, long term operational costs, staffing, user fees, user priority, access regionally, nationally, internationally, future needs?

Who will manage the infrastructure?

If collaborators and other users will be accessing the infrastructure, describe:

- How utilizations will be monitored.
- How user priorities will be established. How upgrades will be determined and implemented.
- Such things as environmental safety, adequate technical support, etc.

If you have a project with multiple sites or multiple research groups, be sure to indicate that the Project Leader has a strong role in unifying the team and making sure the overall research vision is carried out. Also indicate how the management structure will play a role in enabling collaboration by bringing together researchers in different teams or different locations.

Explain the organizational and administrative support structure you will use should you be awarded a CFI. Keep in mind that Research Accounting Office provides you with the financial services and tools you need to effectively administer your grants following your budget as well as CFI guidelines.
OPERATIONS AND MAINTENANCE PLANS

The plans for the optimal operation and maintenance of the proposed infrastructure for the first five years of operation are appropriate and realistic. They will allow for its sustainable usage as well as provide for future upgrade requirements.

(N.B. annual costs and sources of support for operations and maintenance are to be entered into the Financial Resources for Operations and Maintenance section of the Financial Information Module).

In the space below, address EACH of the following (N.B. failure to do so will weaken the application):

1. Describe the significant requirements to efficiently operate and maintain the infrastructure (e.g., personnel, utilities, supplies, upgrades, etc.).

2. Outline the sources of support for operation and maintenance costs and describe the contingency plans should any of this support be unavailable.

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).

Be clear about what is required in order to sustain your project. What types of assistance and equipment is required? How much will it cost? How adaptable is your support system and what plans will be put into place to ensure that the project can continue to move forward if plans change? Be specific about services at York as well as within your department, faculty and research group.

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.

The CFI has posted its administrative instructions for requesting release of Infrastructure Operating Funds (IOF) at the following: http://www.innovation.ca/programs/index.cfm?websiteid=59. The IOF is designed to contribute "to the incremental operating and maintenance costs associated with projects funded by the CFI to maximize the efficient utilization of research infrastructure." The IOF is intended to maximize the efficient utilization of CFI funded research infrastructure.

Admissible operating costs for the IOF are incremental operating and maintenance costs directly related to the infrastructure projects that are needed to maintain the infrastructure in a state of "readiness for research."

Examples of admissible costs include:
• Costs of technical and other operational personnel where the costs are directly associated with the operation and maintenance of the infrastructure (e.g. cost for a technician to maintain or operate the infrastructure);
• Maintenance contracts;
• Extended warranties and/or service contracts not included in the initial application for the infrastructure project, including costs for parts and professional labor;
• Services that directly support the infrastructure (e.g. hydro, security, cleaning). For common costs, only the portion attributable to the infrastructure is admissible. The institution must develop an appropriate method or formula to allocate these costs;
• Costs for supplies and research consumables that are incurred as a result of using the research infrastructure, not to exceed 10 percent of the cumulative total IOF claimed by the institution (see "What are the restrictions imposed by the CFI for the "supplies" category?").
TRAINING OF HIGHLY QUALIFIED PERSONNEL (HQP) THROUGH RESEARCH

The infrastructure requested will create or enrich a stimulating and innovative training environment that attracts high-quality trainees and imparts new high-level skills to HQP for research and other careers.

In the space below, address EACH of the following (N.B. failure to do so will weaken the application):

1. Describe the benefits of the proposed infrastructure for research training and career development.

2. Outline the extent to which the proposed infrastructure will be accessed directly by research trainees.

3. Describe the impact of the proposed infrastructure on future training of HQP as well as the impact that not having access to the proposed infrastructure would have on training. Include an estimate of the number and level of HQP (e.g., undergraduate and graduate students, postdoctoral fellows, technicians, technologists, other trainees/students) to be trained.

Describe the training to be carried out with the proposed infrastructure.

What increase in training capability will be enabled by the infrastructure?
- How many trainees currently exist? Include undergraduate and graduate students, postdoctoral fellows, technicians and other trainees.
- Future plans -- How many do you expect to hire over the next 3-5 years
- How will the infrastructure help attract students and PDFs?

It is not sufficient to argue that you “have trained HQP in the past and will continue to do so”. You must demonstrate a track record, but key considerations should be:
- How will graduate students/post-docs be better trained as a result of having access to infrastructure?
- How will the infrastructure create a stimulating training environment?
- How will your project incorporate and train graduate students/PDFs? What specific training experience (innovative skill sets) will trainees gain that will make them valuable?
- How will infrastructure make York University a more desirable destination for graduate students/PDFs?
Collaborations and Partnerships

The project will establish or enhance major collaborations and partnerships. The infrastructure requested will further strengthen multidisciplinary approaches, collaborations among researchers and users of research results, as well as partnerships with different institutions and sectors, where appropriate.

In the space below, address EACH of the following:

1. Describe the nature of the major collaborations that already exist, and that are planned, both within and external to the institution (beyond those between the principal users, as addressed in the “Researchers” section) in terms of:
   a) Ensuring that the proposed research or technology development can be pursued successfully
   b) Promoting synergies among research disciplines and sectors (public, private, NFP).

2. Describe the nature of the major partnerships that already exist, and that are planned, with users of the research results, including the extent of the engagement of these partners.

3. Outline the steps that have been taken, or that will be taken, to create or strengthen collaborations, partnerships, and/or networks.

4. Explain why the proposed infrastructure is important to these collaborations or partnerships.

How will the infrastructure:

• Enhance existing collaborations & partnerships
• Help create new collaborations & partnerships

The infrastructure should be shown to be essential to creating new collaborations, not just supporting existing ones.

• Include information from various sectors:
  
  | Academic | Departmental |
  | Public Sector | Inter-departmental |
  | Private Sector | Regional/provincial |
  |              | National |
  |              | International |

Inter-disciplinary, inter-institutional, and multi-sector partnerships will likely be rated more highly than collaborations with researchers within York University in the same field. Collaborations with industry, especially the availability of industry partner funding or industry financial support for operating/management costs is an advantage.

CFI asks applicants to outline future or proposed collaborations. CFI does not expect these collaborations to already be in place, but does expect that your plans are plausible and credible. Potential collaborations should be backed up by some form of evidence (i.e., “have had initial discussions with…”). If applicable, demonstrate that collaborations are already in place to ensure success.
• Are you reaching out to key people/groups in the area of the proposal?
• Have you “plugged in” with top people in relevant areas?
BENEFITS TO CANADA

The proposed activities have the potential to lead to: • significant improvements to society, quality of life, health, and the environment, including the development of new practices and public policies; and/or • improved economic activities through development of new products, services and/or technologies, greater resource efficiency and productivity, and job creation in strong or emerging areas of the Canadian economy.

In the space below, address EACH of the following:

1. Describe the expected benefits to Canada, including why they are significant, how they will be realized, and the timeframe over which they are expected to be realized.

2. Describe the institution’s plans to transfer the research results to potential users. Where appropriate, these should include plans for knowledge mobilization or transfer of technology and the commercialization of products, services and processes.

3. Demonstrate that the team has the skills and experience, or has identified the relevant partners, to ensure the successful transfer of the research results.

Please be reminded that one of the three criteria that the CFI will evaluate proposals on is the potential benefits of the research or technology development to Canada.

Describe expected benefits to economy, society, quality of life, health, and/or the environment, how they will be realized, and over what timeframe. “Why should Canadian taxpayers invest in this proposal?”

Economic impact can be wealth generation or cost savings (improved efficiency), as well as training of HQP. Use plausible numbers rather than making general statements when discussing economic impact.

Be concrete.

• Identify potential users of the research results.

• Industry, Health providers, Government agencies, Academia

• Identify anticipated commercialization or technology/knowledge transfer, patents, spin-off companies, where appropriate.

• Identify contributions to policies or practices -- i.e., better/more complete information for policy decision-making -- where appropriate.

The transfer of research knowledge for wider purposes is an increasingly important determinant of whether your project will receive funding. What plans do you have to make your research accessible to the wider world? Mention and highlight any success you have had working with the Knowledge Mobilization Unit at York to make your research applicable to other users.
The four priorities stated in the federal S&T Strategy are: environment, natural resources and energy, health and related life sciences, and information and communication technologies. If applicable, highlight how your project fits with the S&T Strategy. The CFI has indicated that their funding priorities are very much inline with the S&T Strategy.
SUGGESTED REVIEWERS

Identify six (6) reviewers appropriate for the application. Reviewers must not be current or recent (within the last six years) collaborators, departmental colleagues, students, or supervisors.

Provide a telephone number, fax number, current e-mail address, and the areas of expertise of potential reviewers. Suggested reviewers may be Canadian or international, and should be able to evaluate the application in the language in which it is written.

The CFI reserves the right to make its own selection of reviewers.

Suggested reviewers will not necessarily be chosen by the CFI.
For projects with a total cost over $10 million, the institution may append up to 10 additional pages to provide additional information relating to the Description of Infrastructure Project module.