



Cyberinfrastructure Initiative

Research Data Infrastructure

Guidelines for the
Multidisciplinary Assessment Committee (MAC)

May 2017

Table of contents

- MANDATE OF THE CANADA FOUNDATION FOR INNOVATION3**
- CYBERINFRASTRUCTURE INITIATIVE3**
 - Background and context3
 - The Challenge3
 - CFI funding and competition budget3
- LOGISTICAL INFORMATION4**
 - Membership and roles4
 - Online review portal4
 - Pre-meeting briefings5
 - Timeline and key activities5
- CFI ASSESSMENT SCALE5**
- THE CFI MERIT-REVIEW PROCESS6**
 - Assessment of NOIs6
 - Multidisciplinary Assessment Committee6
 - Assessment of proposals7
 - Expert Committee review7
 - Multidisciplinary Assessment Committee review8
- FUNDING DECISIONS.....8**
- OFFICIAL LANGUAGES9**
- COLLABORATION WITH PROVINCES.....9**
- APPENDIX 1 - DEFINITIONS10**
 - Research domain10
 - Scientific experts10
 - Technical experts10
- APPENDIX 2 - CONFLICT OF INTEREST POLICY11**
 - Definition11

Mandate of the Canada Foundation for Innovation

Created by the Government of Canada in 1997, the Canada Foundation for Innovation (CFI) strives to build our nation's capacity to undertake world-class research and technology development that benefits Canadians. Thanks to CFI investments in state-of-the-art infrastructure, Canadian universities, colleges, research hospitals and non-profit research institutions are attracting and retaining the world's top research talent, training the next generation of researchers, supporting private-sector innovation and creating high-quality jobs that strengthen Canada's position in today's global knowledge-based economy. Additional information is available at Innovation.ca.

Cyberinfrastructure Initiative

Background and context

Today, research across all fields of inquiry is increasingly data intensive. Data is an output of research and its analysis often forms the basis for new research hypotheses. As such, it is a powerful enabler of new scientific insights and drives both discovery and innovation. The generation of massive amounts of data by new research capabilities is giving rise to the development of tools, methods and standards necessary to organize and exploit these digital resources.

Many of the challenges facing data-intensive research arise from the difficulty of creating tailored, shared and integrated research data infrastructures. Addressing these challenges will require the development of tools, methods and standards to effectively organize, access, mine and analyze massive datasets. Its development requires partnerships within and, in some cases, across research domains so that the shared infrastructure supports a wide range of users. Such partnerships will reduce unnecessary duplication of efforts within and between disciplines.

The CFI's goal is to support research communities in their efforts to devise optimal ways to organize and use research data resources.

The Challenge

The CFI challenged institutions and researchers to come together to form consortia and propose research data infrastructure projects that create tailored, shared and integrated data resources (e.g. databases and data repositories) capable of enabling leading-edge research on significant scientific, social and economic questions. Projects submitted should **bring together a community of researchers from across the country** who share similar challenges linked to the availability of research data. Projects should **address an existing or emerging challenge for this community** through the **development of new tools and applications or novel ways of organizing and using research data** that would enhance the community's capacity to conduct leading-edge research.

The entire research data infrastructure component of the initiative is about data-sharing and providing access to any researcher who can exploit and mine the resource to advance knowledge and promote innovation. The projects must be completed within a three-year time frame. Therefore, consortia were encouraged to embrace an "adopt, adapt and develop" approach as well as to link to Canadian and international initiatives whenever appropriate. Other Canadian organizations such as CANARIE and Compute Canada are key stakeholders that could provide insights about the existing landscape and highlight potential synergies with research groups having similar data infrastructure requirements. This will promote efficiency, interoperability and rapid implementation. We also encouraged projects that proposed to expand and extend existing Canadian data initiatives.

CFI funding and competition budget

The CFI will invest approximately \$7.5 million in the 2017 Cyberinfrastructure Initiative – Challenge 1 competition and expects to fund between five and 10 proposals.

2017 Cyberinfrastructure Initiative – Research Data Infrastructure

The CFI funds up to 40 percent of a project's total eligible infrastructure costs. Institutions must secure the remaining 60 percent of the required funding, typically from provincial governments and other public, private and non-profit organizations.

The CFI will invest approximately an additional \$2.25 million to contribute to the operating and maintenance costs of projects funded in this competition through its Infrastructure Operating Fund. The support allocated is equivalent to 30 percent of the CFI contribution to the capital costs of projects funded under this initiative and operating and maintenance does not require matching funding.

Logistical information

Membership and roles

Members of the Multidisciplinary Assessment Committee (MAC) are chosen for their breadth of knowledge and experience in the design, development, use and organization of research data infrastructure tools. To ensure consistency in the review process, the MAC is responsible for the assessment of the Notices of Intent and the proposals (based on reports from expert committees). The MAC is comprised of a chair and approximately eight members, depending on the number and breadth of Notices of Intent or proposals to be reviewed. The Chair is chosen for the same qualities as the members, its knowledge of the Canadian context as well as for their ability to facilitate the committee in functioning effectively and objectively in accordance with CFI policies.

The CFI expects MAC members to maintain the highest standards of ethics in fulfilling their role. They are appointed as individuals, not as advocates or representatives of their discipline or of any organization. All MAC members must adhere to the CFI's conflict of interest and confidentiality agreement ([Appendix 2](#)). You will need to agree to adhere to this agreement the first time you log into the secured online portal. The membership of the committees will be made public (on the CFI website) shortly after the funding decisions are announced.

Online review portal

The CFI Awards Management System (CAMS) is a secure online portal that allows CFI-eligible institutions to apply for CFI funding and to manage pre- and post-award activities. CAMS is also used by researchers, institutional administrators, and reviewers assigned to assess the proposals.

You should have received an email containing the login details. The reviewer dashboard in CAMS is where all information pertaining to the review process can be found.

To access the review material and preliminary assessment form, simply click on the committee name which will bring you to the review and documentation page. On this page you will find the relevant reference materials (e.g. preliminary assessment form) as well as key information regarding the meeting (e.g. meeting agenda).

There are two tabs on this page:

1) The "Project material" tab

On this page you will find Notices of Intent (for review and discussion at the committee's June 22, 2017 meeting), proposals and Expert Committee reports (for review and discussion at the committee's February 2018 meeting). Expert Committee reports will be available in early January 2018.

2) The "Your review" tab

For each Notices of Intent assigned to you and for each competition objective you will select the rating that best reflects your assessment. While your assessment of the Notices of Intent will be done offline (with a provided spreadsheet), later this fall, you will submit your preliminary assessment of full proposals to the CFI via the [CAMS portal](#).

For more information on how to use the CFI reviewer portal please consult our [website](#).

Pre-meeting briefings

CFI staff will be in regular contact with committee members, by email or telephone, before each of the two meetings to ensure all members have the necessary information to conduct their review. CFI staff will schedule a short briefing sessions with members to go over the review process in advance of the meetings to review the Notices of Intent (June 2017) and proposals (February 2018).

Timeline and key activities

Table 1 summarizes the key activities of MAC members and the important dates for the 2017 Cyberinfrastructure Initiative – Challenge 1 competition.

TABLE 1 - TIMELINE AND KEY ACTIVITIES FOR MAC MEMBERS

Date	Activity	Description
April - May 2017	Logistics	<ul style="list-style-type: none"> Complete and return the committee member information form
May 19 to June 15, 2017	Online review portal (review Notices of Intent)	<ul style="list-style-type: none"> Activate CFI Awards Management System (CAMS) account Inform CFI of any potential conflicts of interest Review Notices of Intent and complete preliminary assessment sheet
June 19, 2017	Deadline	<ul style="list-style-type: none"> Submit preliminary assessment of Notices of Intent to the CFI via email
June 22, 2017	MAC meeting to assess Notices of Intent	<ul style="list-style-type: none"> Attend meeting in Toronto Collectively determine projects to be invited to proposal stage
November 2017 to February, 2018	Online review portal (review proposals)	<ul style="list-style-type: none"> Review proposals and complete preliminary assessment form Expert committee reports available mid-January 2018
February 9, 2018	Deadline	<ul style="list-style-type: none"> Submit preliminary assessment of proposals to the CFI in CAMS
February 2018	MAC meeting to assess proposals	<ul style="list-style-type: none"> Attend meeting in Toronto Approve consensus reports (Chair only)

CFI assessment scale

Each Notice of Intent and proposal will be assessed on the degree to which it meets the competition objectives. Each objective is assessed using the scale shown in Figure 1. Committee members must base their conclusions on the information provided within the Notice of Intent and proposal.

FIGURE 1: CFI ASSESSMENT SCALE

The proposal...

EX	Satisfies and significantly exceeds the objective
SA	Satisfies the objective
SW	Satisfies the objective with only a few minor weaknesses
PS	Partially satisfies the objective with some significant weaknesses
NS	Does not satisfy the objective due to major weaknesses

The CFI merit-review process

The CFI structured merit-review process for this competition has three stages:

1. Multidisciplinary Assessment Committee review of Notices of Intent (NOI)
2. Expert Committee review
3. Multidisciplinary Assessment Committee review of proposals

Figure 2 illustrates the process as well as the roles and responsibilities of each committee. This process ensures that proposals are reviewed in a fair, competitive, transparent and in-depth manner. It is tailored to the nature and complexity of the proposals.

FIGURE 2: MERIT-REVIEW PROCESS



Assessment of NOIs

Multidisciplinary Assessment Committee

As the first stage of review, the MAC will review the Notices of Intent and will identify those that best fit the objectives of the Cyberinfrastructure Initiative, based on the competition objectives:

1. **Scientific excellence:** The proposal relates to a field in which Canada is recognized for having significant research strengths. The research data infrastructure project addresses opportunities or gaps

2017 Cyberinfrastructure Initiative – Research Data Infrastructure

identified by the research community and will enable established and emerging leaders to remain internationally competitive;

2. **Impact and ongoing relevance:** A critical mass of Canadian scientific experts is actively involved throughout the project and use of the research data infrastructure will be maximized through optimal access mechanisms; The research enabled has the potential to lead to significant tangible benefits to society, health, the economy and/or the environment;
3. **Feasibility:** The research data infrastructure project's scope is clearly defined and the technical experts have the necessary expertise and experience to design, develop and deliver the project within 36 months.

In advance of the meeting in June, each MAC member is expected to read all of the Notices of Intent and will be assigned approximately a third of the Notices of Intent for an in-depth review. Three reviewers will be assigned to each Notice of Intent. It is likely that some Notices of Intent will be outside of the general expertise of some MAC members.

Based on the MAC members' initial assessments of the Notices of Intent, the CFI will assign each Notice of Intent to one of three categories:

- a. Notices of Intent for which there is consensus that the project meets the competition objectives and should, therefore, be invited to submit a proposal;
- b. Notices of Intent for which there is consensus that the project has failed to demonstrate that it meets one or more of the competition objectives and should, therefore, not be invited to submit a proposal; and,
- c. Notices of Intent for which different committee members have provided preliminary assessments that don't agree.

At the meeting, the first two categories Notices of Intent will be discussed briefly to ensure that all members are in agreement. If there are dissenting views, the Notice of Intent will be placed in the third category for further discussion. Subsequently, the committee will focus its discussion on Notices of Intent the third category. For each Notices of Intent, the committee will make a clear recommendation (i.e. to invite to submit a proposal or not) and justify its position in terms of the competition objectives. Ultimately, the MAC will select the NOIs that best meet the competition objectives and invite the applicants to submit a proposal. It should be noted that the MAC will be limited to inviting proposals requesting at total of, at most, approximately three times the available budget for this competition (CFI requested amount of approximately \$23M).

Assessment of proposals

Expert Committee review

The second stage of the merit-review process involves review by expert committees to assess the strengths and weaknesses of the proposals relative to the six assessment criteria for this competition.

- **Research:** Once completed, the research data infrastructure will enable research activities that are timely, innovative and at the leading edge internationally.
- **Research data infrastructure:** The research data infrastructure is necessary and appropriate to conduct the proposed research activities and builds, when appropriate, on existing national or international data resources. The scope and requirements of the project are clearly defined and it can be commissioned within 36 months.
- **Scientific expertise:** The [scientific experts](#) are established or emerging leaders in the relevant research domains and have the necessary expertise and relevant collaborations to guide the development of and/or to exploit the research data infrastructure.
- **Technical expertise:** The [technical experts](#) have the required expertise to efficiently design and build the research data infrastructure.
- **Sustainability and maintaining relevance:** A compelling plan for the long-term management of the data is in place to ensure ongoing relevance of the infrastructure. The proposal presents a credible plan addressing the long-term financial sustainability of the research data infrastructure.

2017 Cyberinfrastructure Initiative – Research Data Infrastructure

- **Benefits to Canadians:** The research activities enabled by the infrastructure have the potential to lead to significant tangible benefits for society, health, the economy and/or the environment. The use of the research data infrastructure will be maximized by adopting best practices in accessibility, interoperability and generalizability.

These committees will be tasked with recommending to the Multidisciplinary Assessment Committee (MAC) those proposals that meet the standard of research excellence for the competition and with recommending the amount that should be awarded to each proposal. Proposals not recommended by the Expert Committees will not be considered by the MAC.

Multidisciplinary Assessment Committee review

The third stage of the merit-review process involves a review and integration of the Expert Committee assessments by the MAC. The MAC will then recommend to the CFI Board of Directors the proposals that most effectively support the CFI's mandate, meet the objectives of the competition and represent the most effective portfolio of investments for Canada within the competition budget.

For each proposal, three reviewers will be designated as lead reviewers and will be required to perform an in-depth review. Each committee member will be assigned approximately 6-8 proposals in this capacity, some of which will be outside of their general area of expertise as this encourages diverse points of view. While we are aware that you will spend more time on your assigned proposals, each MAC member is expected to read all of the proposals and Expert Committee reports in order to be fully engaged in the discussion with the other members of the committee.

Every assigned proposal will be assessed on the degree to which it meets the competition objectives:

1. **Scientific excellence:** The proposal relates to a field in which Canada is recognized for having significant research strengths. The research data infrastructure project addresses opportunities or gaps identified by the research community and will enable established and emerging leaders to remain internationally competitive.
2. **Impact and ongoing relevance:** A critical mass of Canadian scientific experts is actively involved throughout the project and use of the research data infrastructure will be maximized through optimal access mechanisms. The research enabled has the potential to lead to significant tangible benefits to society, health, the economy and/or the environment.
3. **Feasibility:** The research data infrastructure project's scope is clearly defined and the technical experts have the necessary expertise and experience to design, develop and deliver the project within 36 months.

Each objective is assessed using an assessment scale ([Figure 1](#)). Committee members must base their conclusions on the information provided within the proposals and the Expert Committee reports.

During the meeting every proposal will have an assigned discussion period of approximately 20 minutes. The three MAC members assigned to the proposal being discussed will share their preliminary assessment and the rest of the committee will then have the opportunity to share their assessments. A general discussion will follow to achieve consensus on the scoring of the individual objectives and a funding recommendation.

The discussions will be focused on the competition objectives with an emphasis on any significant discrepancies among the assigned members' individual assessments. Following the discussion, the committee must reach a consensus decision on the degree to which the proposal satisfies each of the three competition objectives. They must also formulate an overall conclusion of the strengths and weaknesses of the project.

Funding decisions

The CFI Board of Directors will make the final decision on funding for each proposal at its March 2018 meeting. Following this meeting, the applicant institutions will receive the funding decisions, Expert Committee reports and MAC reports for their proposals, including committee memberships.

Official languages

The CFI offers its services in both of Canada's official languages: French and English. Committees must ensure that all proposals in either official language receive a full and detailed evaluation. The CFI should be advised if a committee member is assigned an application in an official language he or she does not understand. Typically, committee deliberations will be conducted in English.

Collaboration with provinces

To coordinate the review processes and avoid duplication of review efforts, the CFI will provide committee reports, along with the names and affiliations of committee members, to relevant provincial and territorial funding authorities. Disclosure of the list and committee reports will be made only in accordance with agreements between the CFI and provincial or territorial authorities, as permissible pursuant to the Privacy Act.

In addition, representatives of the relevant provincial or territorial authorities will be invited to participate as observers at the Expert Committee review stage.

Appendix 1 - Definitions

Research domain

For the purposes of the Cyberinfrastructure Initiative, a research domain is defined as a multi-disciplinary area of research, or a group of areas of research that face common data challenges that can be addressed by the development of tailored, shared and integrated research data infrastructures.

Scientific experts

Scientific experts are subject matter experts who will be involved from the early stage of the project in defining the research questions and the data requirements, based on gaps and opportunities identified by a broader research community. . They will both serve as advisors during the development of the research data infrastructure and be the end users once it is fully operational. Consequently, their engagement throughout the project will be critical to the success of the endeavour.

Technical experts

Technical experts are software developers, business analysts, data specialists, etc., who will be involved in the day-to-day development of the research data infrastructure. They are well aware of technical solutions and are not necessarily experts in the scientific area that will benefit from the research data infrastructure.

APPENDIX 2 - CONFLICT OF INTEREST POLICY

The Canada Foundation for Innovation (CFI) must meet the highest ethical and integrity standards in all that it does in order to continue to merit the trust and confidence of the research community, the government and the public. CFI review committee members, external reviewers and observers must meet the highest standards of ethical behaviour to maintain and enhance public confidence in CFI's ability to act in the public's best interest and for the long-term public good. Where a conflict arises between private and public interests, review committee members, external reviewers and observers will be expected to take the necessary measures to ensure that the public interest is protected.

Definition

A conflict of interest is a conflict between a person's duties and responsibilities with regard to the review process, and that person's private, professional, business or public interests. There may be a real, perceived or potential conflict of interest when the review committee member, external reviewer or observer:

- Would receive professional or personal benefit resulting from the funding opportunity or proposal being reviewed;
- Has a professional or personal relationship with a candidate or the applicant institution;
- Has a direct or indirect financial interest in a funding opportunity or proposal being reviewed.

A conflict of interest may be deemed to exist or perceived as such when review committee members, external reviewers or observers:

- Are a relative or close friend, or have a personal relationship with the candidates;
- Are in a position to gain or lose financially/materially from the funding of the proposal;
- Have had long-standing scientific or personal differences with the candidates;
- Are currently affiliated with the candidates' institutions, organizations or companies — including research hospitals and research institutes;
- Are closely professionally affiliated with the candidates, as a result of having in the last six years:
 - Frequent and regular interactions with the candidates in the course of their duties at their department, institution, organization or company;
 - Been a supervisor or a trainee of the candidates;
 - Collaborated, published or shared funding with the candidates, or have plans to do so in the immediate future;
 - Been employed by the applicant institution;
 - Feel for any reason unable to provide an impartial review of the proposal.

Note: The CFI reserves the right to resolve areas of uncertainty and to determine if a conflict exists.

