

Joint Results-based Management and Accountability Framework and Risk-Based Audit Framework

for the

**Class Grants Program for Centres of Excellence for Commercialization and Research
(CECR Program)**

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1 Introduction

1.1 Background

The class grants program for Centres of Excellence for Commercialization and Research (CECR Program) is a federal mechanism to support the operation of research and/or commercialization centres that bring together people, services, and research infrastructure to position Canada at the forefront of breakthrough innovations in priority areas.

The CECR Program is overseen by a tri-agency NCE Steering Committee made up of the Deputy Minister of Industry (or delegate), the Presidents of the three granting agencies – the Natural Sciences and Engineering Research Council (NSERC), the Social Sciences and Humanities Research Council (SSHRC), and the Canadian Institutes of Health Research (CIHR) – and the President of the Canada Foundation for Innovation (CFI) as an observer.

Day-to-day administration of the CECR Program is provided by the Networks of Centres of Excellence Secretariat (The NCE Secretariat).

The Secretariat runs periodic national competitive processes through which the Steering Committee selects successful centres on the advice of international peer review and a Private Sector Advisory Board.

1.2 Level of Integration

This integrated Results-based Management and Accountability Framework (RMAF) and Risk-Based Audit Framework (RBAF) provides results-based management and accountability information for all the CECR program's activities. It also provides an assessment of risk and mitigation strategies for managing key risk areas. The RMAF and RBAF are highly integrated. The results logic and risk assessment were coordinated to enable results and risk to be managed as one process. For example, results measurement and risk management strategies have been synchronized to draw on, where possible, common measures and review processes.

The sections included in this document are as follows:

- Section 2 – Program Profile. This section presents a detailed description of the program objectives and rationale. It also outlines the resources allocated to the CECR program and the groups that it targets through its design.
- Section 3 – Expected Results. This section presents a description of the expected results and delivery approach for the CECR program's activities.
- Section 4 – Risk Assessment and Management Summary. This section presents a description of the risk assessment and management strategies in place for the CECR program.
- Section 5 – Monitoring, Evaluation and Auditing. This section contains detailed information on the indicators that will be used to measure the success of the CECR program's activities and how they can be measured and reported upon on an ongoing

basis. It presents a strategy for evaluating program activities' relevance, success and cost-effectiveness and a risk management plan. A discussion of internal audit is also presented.

It should be noted that this RMAF/RBAF is intended to be a living document and will be revisited on an ongoing basis and revised as required to reflect, for example, changes to the program, improvements in indicators, changes in performance measurement activities, etc.

2 Program Profile

2.1 Context

Science and technology (S&T) play a key role helping Canadians to address pressing societal challenges. S&T also supports business innovation, enabling economies to improve their long-term productivity and competitiveness, and in so doing supporting a higher standard of living and quality of life. However, Canadian private sector investment in S&T and new technology, and demand for highly skilled workers is low compared to other OECD countries. This is contributing to weak productivity growth in relation to the United States, Canada's most important trading partner.

Mobilizing Science and Technology to Canada's Advantage, the Government of Canada's S&T Strategy, sets out a multi-year policy framework to improve Canada's long-term competitiveness and quality of life by fostering three inter-related S&T-based advantages. The Strategy encourages an Entrepreneurial Advantage to strengthen private-sector commitment to R&D and innovation vital to productivity and competitiveness, a Knowledge Advantage to ensure Canadian universities and colleges sustain their world-class research excellence, and a People Advantage so that Canada has access to the highly-skilled researchers and innovators it needs.

Budget 2007 announced a broad range of early actions in support of the S&T Strategy, including three new initiatives to leverage Canada's strong public sector research base to the benefit of business research and innovation. These include Centres of Excellence for Commercialization and Research (CECR), Business-led Networks of Centres of Excellence (B-NCE), and an Industrial R&D Internship program (IRDI). All three programs are intended to increase private sector investments in research in Canada, support the training of skilled researchers, and connect the resulting ideas and talent to businesses seeking to bring innovations to market.

The CECR program will support, on an open and competitive basis, the operation of research and commercialization centres that bring together people, services, and research infrastructure to position Canada at the forefront of breakthrough innovations. The program is designed to complement other sources of federal funding, such as Canada Foundation for Innovation funding for research equipment and facilities and Granting Council support for direct and indirect costs of academic research. Centres and networks will fall within the S&T Strategy's priority research areas, including natural resources and energy, environmental technologies, information technologies, and health and life sciences. The Tri-agency NCE Steering Committee (including CFI as an observer) will select individual centres and networks for support, based on: 1) peer review evaluation of the excellence of projects, 2) the involvement of provinces and other federal funding partners; and 3) Private Sector Advisory Board advice on the economic benefits of the proposed projects.

2.2 Objectives

The goal of the CECR program is to create internationally recognized centres of commercialization and research expertise in four priority areas in order to deliver economic, social, and environmental benefits to Canadians. As established in the S&T Strategy, the priority areas include:

- Environmental science and technologies;

- Natural resources and energy;
- Health and related life sciences and technologies; and
- Information and communications technologies.

2.2.1 Primary targets

Primary targets are the individuals and organizations that the deliverers (the three Granting Agencies) aim to mobilize to achieve the expected results. Academic researchers as well as public and private sector partners, are significant players to ensure achievement of the results.

2.2.2 Other stakeholders

Industries and organizations within the areas covered by centres are important stakeholders benefiting from the research results arising from the centres. In many instances, they are closely involved in commercializing new products and services. Globally, the CECR Program bears the potential for impact on the development of entirely new industrial sectors in Canada. Parliament is another stakeholder given the significant role played by the CECR Program within the Science and Technology Strategy as well as within the various activities of the Industry Canada portfolio. The Canadian public can also be considered as a stakeholder since the results are already known as having important impacts on the economy and on the quality of life of Canadians. Moreover, at the international level, one of the main results will be to brand Canada as the host of internationally recognized centres of excellence in research and/or commercialization of research results, thus affecting individuals and organizations outside Canada.

2.2.3 Key Stakeholders and Beneficiaries

Organizations eligible to receive funds are not-for-profit corporations created by universities, colleges, not-for-profit research organizations, firms, and other interested non-government parties. As a condition of eligibility, organizations applying for CECR funds shall have an established Board of Directors responsible for the approval of annual financial reports and audits.

2.3 Resources

2.3.1 Program Resources, 2007-2008 to 2011-2012

CECR total resources for five years, starting in 2007-2008 are \$285 million. For CECR grants, following each competition, the NCE Secretariat, working with the Granting Agencies, will prepare an integrated submission to the Treasury Board for approval to appropriate the funding to the Granting Agencies for the recommended centre(s). As indicated in Figure 2.1, annual funding for the Thunder Bay Molecular Medicine Research Centre has been set aside.

Figure 2.1 CECR Program Resources, 2007-2008 to 2011-2012 (\$M)

Centres of Excellence for Commercialization and Research (CECR) Total Program Budget Allocation, 2007-2008 to 2011-2012						
	07-08	08-09	09-10	10-11	11-12	Total
Budget 2007 commitment	\$165M	\$30M	\$30M	\$30M	\$30M	\$285M
Thunder Bay (FedNor)	\$0.700M	\$4.500M	\$1.500M	\$0.500M	\$0.150M	\$7.350M
Total CECR remaining	\$164.300M	\$25.500M	\$28.500M	\$29.500M	\$29.850M	\$277.650M

2.3.2 Expenditures for Monitoring, Evaluation and Auditing

The Secretariat uses NSERC's audit and evaluation functions. NSERC receives annual appropriations for the programs administered by the NCE Secretariat. The costs incurred in developing and implementing the accountability/evaluation framework and the audit framework will be found within the operating budget. The audit function covered by the NSERC Internal Audit has a budget level of \$223,740 for 2007-2008 and increase to approximately \$480,000 for future years. A specific Evaluation budget level of \$300,000 is set aside for the CECR program. The Table below contains the operating vote only for the five years period.

Figure 2.2 CECR Program Operating Budget, 2007-2008 to 2011-2012

Centres of Excellence for Commercialization and Research (CECR) NSERC Vote 70 (Operating)						
	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	Totals
TOTAL CECR	\$939,250	\$1,064,875	\$1,014,875	\$1,014,875	\$1,014,875	\$5,048,750

3 Expected Results

3.1 Expected Results

The program's goal is accomplished by investing in research and commercialization centres that yield the following benefits:

Research-Related Benefits:

- Create sufficient scale and focus to position Canada at the forefront of international research breakthroughs that will yield economic, social or environmental benefits to Canadians;
- Draw on existing research strength, infrastructure, networks and funding sources to enhance capacity;
- Attract top research talent (including post-graduate and post-doctoral students) from around the world;
- Provide high quality post-graduate and post-doctoral training in innovative and internationally competitive research;
- Strengthen domestic collaboration to address significant research challenges;
- Open up new opportunities for Canadian researchers to access world-class research equipment, facilities and networks;
- Develop relationships with major international centres and research programs; and
- Brand Canada as the host of internationally recognized centres of excellence.

Commercialization-Related Benefits:

- Create, grow and retain companies in Canada that are able to capture new markets with breakthrough innovations;
- Accelerate the commercialization of leading edge technologies, goods, services in priority areas where Canada can significantly advance its competitive advantage;
- Draw on existing commercialization strength, infrastructure, networks and funding sources to enhance capacity;
- Attract investment (including foreign direct investment and venture capital);
- Attract and retain top talent (including internationally recognized business leaders);
- Strengthen domestic collaboration and ensure that benefits spill over to a wide array of firms, sectors and regions of the country;
- Open up new opportunities for Canadian firms to access world-class research

equipment, facilities and networks;

- Develop relationships with major international centres and research programs;
- Brand Canada as the host of internationally recognized centres of excellence for commercialization of research results.

In addition, centres with a strong commercialization orientation will be expected to become self-sufficient by the end of the funding period. Centres with a strong research orientation that yield significant public benefits within the funding period may be eligible for subsequent support in the event that the program is extended.

These results are graphically depicted in the logic model in a subsequent section of this document. Many of these results are expected to occur over the course of the award, although the broader outcomes can occur years after the end of the funding period due to their complexity. The longer the timeframe of an expected result, the more external mitigating factors may influence its attainment. These mitigating factors include the state of the Canadian economy, for example.

3.2 Key Risk

Key Risk Areas, described below, provide a macro view of the main areas that challenge the achievement of CECR's planned results. Key Risk Areas summarize the specific key risks that will require careful management. These Risk Areas were identified and assessed during a risk assessment exercise and are presented in Section 4.2. The Key Risks directly relevant to the CECR's program delivery are mapped onto the logic model (Figure 3.1). It should be noted that as with its ability to influence results, the Secretariat's control and influence over risks also diminishes the farther the source of the risk is removed from the Secretariat's direct activities. Integrated management of results and risks provides efficiency and increases the likelihood of program success.

The identification of these Key Risk Areas is an integral part of management's understanding of the strategic and environmental context. They relate to peer-review, matching funds and intellectual property, and potential conflict of interest.

Peer Review Challenges

Peer-review is based on two successive steps including review of each application by arms-length Expert Panels, followed by a Private Sector Advisory Board (PSAB) that will review all the applications and reports from the Expert Panels. Reports and Recommendations from the PSAB are then submitted to the NCE Steering that makes the final decision, followed by a final approval by Treasury Board. All these steps take a significant amount of time. The workload from an increasing number of applications and decreasing timelines for peer-review could diminish access to the best reviewers, affect the quality of the reports produced, and strain the peer review work force. This may lead to issues regarding the quality, credibility, and robustness of decision-making for the allocation of grants.

Matching Funds and Intellectual Property

Two key issues that may undermine program success are the potential for a lack of matching funds, and intellectual property (IP). Matching funds refers to funds from various levels of

government and the private sector to complement the NCE funding available. Shortfalls in matching funds in some sectors may weaken the business plan of some centres and lead to lack of commercialization and reduced socio-economic benefits to Canadians. Second, intellectual property may be a source of conflict between partners if the implementation of intellectual property agreements is not endorsed by all parties involved in a timely fashion. This could delay the protection and exploitation of centres supported IP. In addition, the revenues from intellectual property may not be as high as expected during the five years NCE funding period. As a result, self-sustainability of the centres may be impaired because of low intellectual property returns or additional costs due to possible litigations.

Potential Conflict of Interest

The program's support to greater private sector investment in R&D and innovation may be perceived as a source of conflict of interest. The fact that stakeholders from the private sector are involved in the decision-making process through the centre's Board of Directors and other committees may be a source of real or perceived conflict of interest in the activities or decisions of the centres. As well, effectiveness of management of conflict of interest in the peer-review and funding decision process by expert panels and PSAB may be diminished due to short timelines and peer-review burden. Therefore, the government and the NCE Secretariat credibility may be affected by adverse publicity arising from conflict of interest cases. The Granting Agencies' credibility with the community and the public could also be affected.

3.3 Logic Model

The logic model identifies the linkages between the activities of a program and its ultimate objectives. It delineates the set of activities that make up the program and the sequence of outcomes that are expected to flow from these activities. As such, the logic model serves as a "roadmap", showing the chain of results connecting activities to the ultimate outcomes, and thus, identifies the steps that will demonstrate progress towards CECR's achievements. Four levels of performance are delineated in the logic model presented in Figure 3.1: activities and outputs, immediate outcomes, intermediate outcomes and ultimate outcomes. There are two categories of outcomes to be achieved by the CECR Program: research outcomes and commercialization outcomes

3.3.1 Activities and Outputs

These outline the specific activities conducted by CECR staff and the outputs that are produced from these activities. The activities and outputs are entirely within the control of CECR staff, and program managers are directly accountable for them.

Immediate Outcomes

Immediate outcomes occur as a result of the activities and outputs produced by CECR. These outcomes are controlled by the target population, and as such, can only be influenced by the secretariat. Immediate outcomes include: enhanced research and commercialization capacity; attract top research talent; high quality training for highly qualified personnel; attract and retain top talent such as internationally recognized business leaders; and attract national and foreign investment.

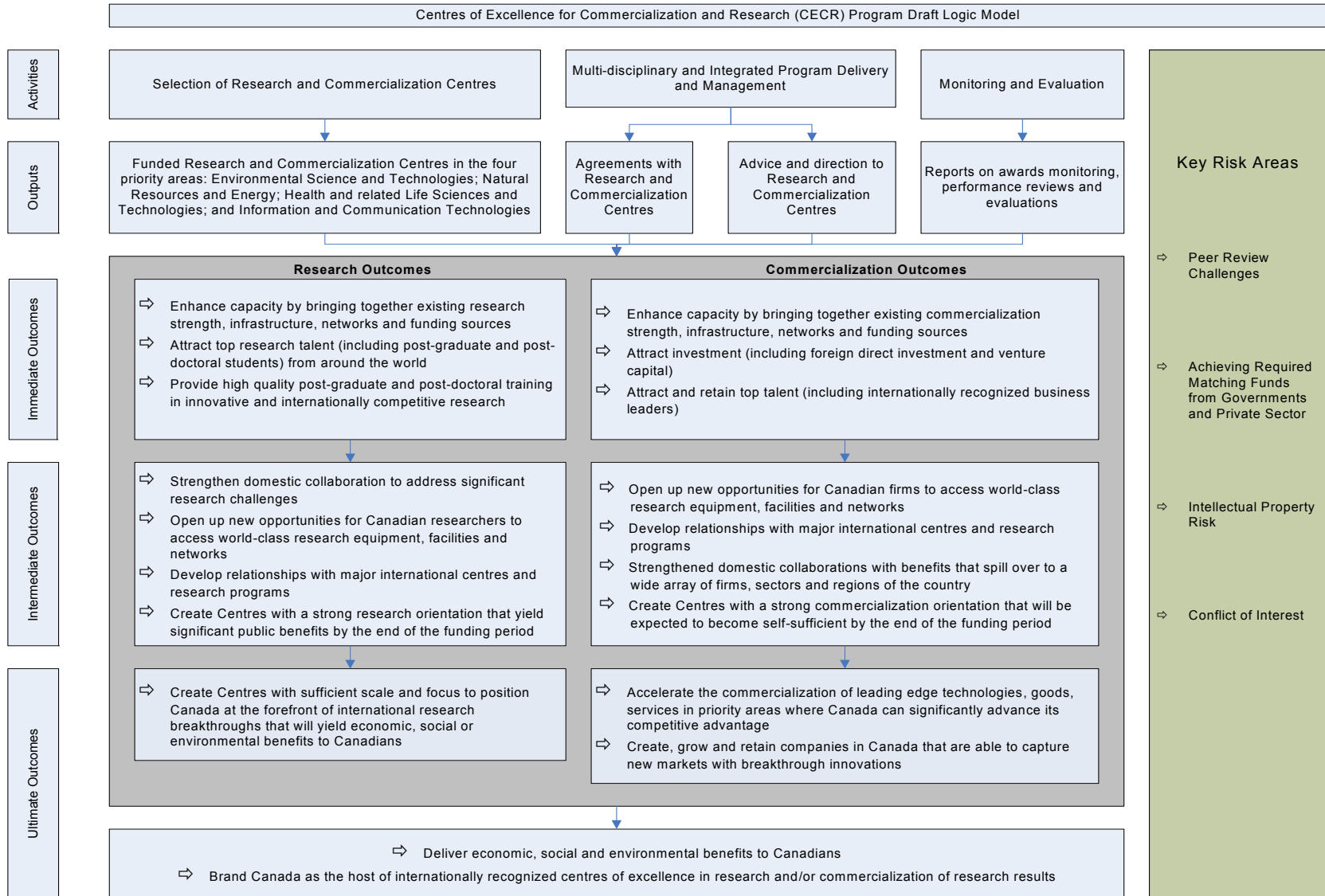
Intermediate Outcomes

Intermediate outcomes are external consequences that flow from the immediate outcomes. As a result, they are further removed from the influence of the NCE Secretariat and subject to a variety of mitigating factors. While unique to each centre, centre outcomes are expected to contribute to the achievement of the Program's intermediate outcomes, which represent key steps in the result chain toward the achievement of the program's ultimate outcomes. Intermediate outcomes are expected to be achieved within the Program's five-year funding period. In the area of research, intermediate outcomes include: strengthen domestic collaboration to address significant research challenges; open up new opportunities for Canadian researchers to access world-class research equipment, facilities and networks; develop relationships with major international centres and research programs; and create centres with a strong research orientation that yield significant public benefits by the end of the funding period. Under commercialization, intermediate outcomes are: open up new opportunities for Canadian firms to access world-class research equipment, facilities and networks; develop relationships with major international centres and research programs; strength domestic collaborations with benefits that spill over to a wide array of firms, sectors and regions of the country; and create centres with a strong commercialization orientation that will be expected to become self-sufficient by the end of the funding period.

Ultimate Outcomes

The ultimate outcomes are the external consequences that the intermediate outcomes contribute to and reflect the rationale for the program. They represent a long-term vision towards which the program contributes and are generally independent of program type and specific objectives. As such, ultimate outcomes are usually difficult to measure, because of their long-term nature and as other mitigating factors often influence their attainment. In the area of research, CECR aims to create centres with sufficient scale and focus to position Canada at the forefront of international research breakthroughs that will yield economic, social and environmental benefits to Canadians. From the specific point of view of commercialization, ultimate outcomes include: accelerate the commercialization of leading edge technologies, goods, services in priority areas where Canada can significantly advance its competitive advantage; and create, grow and retain companies in Canada that are able to capture new markets with breakthrough innovations. Together, the ultimate outcomes for research and commercialization will contribute to the program's overall ultimate outcomes; namely, to deliver economic, social and environmental benefits, and brand Canada as the host of internationally recognized centres of excellence in research and commercialization.

Figure 3.1: CECR Logic Model



3.4 Accountabilities

Consistent with the S&T Strategy and Budget 2007, the CECR program fulfills the government's commitment to take a multidisciplinary and integrated approach to program delivery. The Tri-agency NCE Steering Committee comprised of the Deputy Minister of Industry (or delegate), the Presidents of the three Granting Agencies and the President of the Canada Foundation for Innovation (observer) will be responsible for project selection. When successful projects have been selected, the NCE Secretariat, working with the Granting Agencies, will prepare an integrated submission to the Treasury Board for approval to appropriate the funding to the Granting Agencies for the recommended projects. The Granting Agencies will be accountable for all reporting obligations to Treasury Board and Parliament with respect to the funding they have received for the centres.

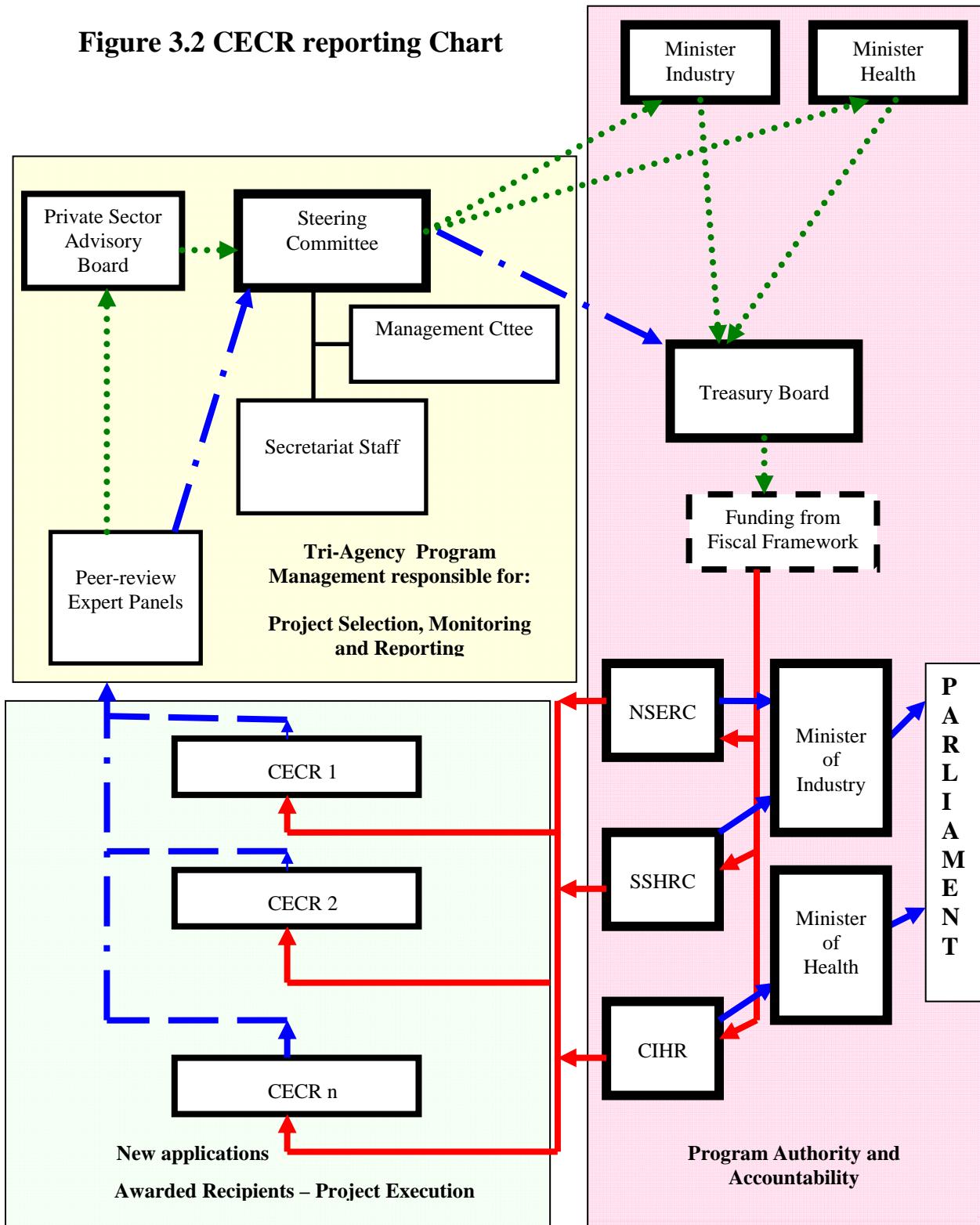
3.4.1 Governance Structure

The diagram on the following page summarizes the overall governance structure of the CECR programs as follows:

1. Program Management, including project selection, monitoring and activity/impact reporting carried out by the tri-council NCE Secretariat consisting of the following:
 - a. Steering Committee made up of the three agency presidents (NSERC, SSHRC and CIHR), Deputy Minister of Industry Canada (or his representative) and President of CFI (Observer). Chair is President of NSERC
 - b. Private Sector Advisory Board appointed by Steering and consisting of between 6 and 10 prominent members from various key economic sectors
 - c. Secretariat Staff to support all the administration of the program
 - d. Various Peer Review Expert Panels assembled on an ad-hoc basis to review project applications
 - e. Program performance is measured annually through generic indicators and is evaluated regularly through joint tri-agency Evaluation Committee
2. Program Authority and Accountability is achieved through the existing Granting Agencies authority and accountability structure as follows:
 - a. Through Expert panel and Private Sector Advisory Board reviews, the Steering Committee recommends projects for funding. These recommendations are forwarded to Ministers of Industry and Health for joint submission to the Treasury Board. Final Decision by TB appropriates funding from the fiscal framework to individual granting agencies for the recommended projects
 - b. Annually, each granting agency reports to Parliament on the funds allocated to the various projects
 - c. Annually data collected by the NCE Secretariat on the performance and impacts of these projects is reported to the Treasury Board
3. Project Execution is the responsibility of award Recipients, that must meet strict eligibility criteria, including being incorporated with an independent Board of Directors.

- a. Each CECR is assigned a responsible Secretariat Staff who is observer on the Board and the various key committees which the Board may establish
- b. Annually each project reports on its performance and impact against the program criteria.

Figure 3.2 CECR reporting Chart



3.4.2 Roles and Responsibilities

The main responsibilities of program managers and staff include program development and the management of the peer review process used to award grants. This involves providing services to applicants, promoting CECR program through visits and other presentations, and monitoring the awards. Program monitoring and financial monitoring of awards are described in details in section 5.1 Performance and Risk Monitoring Plan.

3.4.3 Review Process and Decision Making

CECR operates within a framework of clear selection criteria, in the context of the present and future challenges facing the Canadian innovation system, and in light of Canada's needs and government priorities; and a rigorous process of peer review for awarding funding within the program. The peer-review process involves two stages, letter of intent and full review, as described below.

Stage 1: Letters of Intent

The tri-agency NCE Secretariat (including CFI as an observer) will consult provinces and territories prior to issuing a call for letters of intent to identify centres seeking support in one of the above-noted priority areas identified in the S&T Strategy.

Applicants will submit letters of intent that describe the centre, its operations and planned activities, required funding, members and supporting partners and their duties and respective contributions, and expected research and/or commercialization benefits for the project period.

Letters of Intent must include letters of support from other key funding organizations, including any provincial governments where they are expected to support the Centre during its development, construction, or operations during a 10-year planning horizon.

The Private Sector Advisory Board will assess the letters of intent against the program selection criteria, and recommend a short-list of applicants to the Steering Committee for advancement to Stage II. Projects seeking operating support for existing research centres that have received federal support in the past, in order to sustain operations beyond the years covered in their existing funding agreements, will receive priority consideration for advancement to Stage II.

Stage II: Full Proposals

Centres advanced to Stage II will develop full project proposals, including complete information on the centre and its intended operations, funding requirements, the partnerships among supporters, their duties and respective contributions, and the expected research and commercialization outcomes and benefits of the project. All partnership arrangements, contributions, and allocations of benefits (such as intellectual property) among parties must be fully described for a proposal to be considered complete.

A full CECR proposal consists of the following:

- A business plan addressing the CECR selection criteria (includes a proposed budget)
- Curriculum Vitae information for the leaders of the Centres
- Letters of support and summary of contributions the applicants secured from supporting organizations.

In addition to the requirements listed above, applicants seeking renewal of operating support for existing research centres are asked to provide a progress report in which they describe the centre's progress in achieving its own goals and objectives since the last review it underwent. Progress for the centre must be detailed in terms of accomplishments that measure against the CECR selection criteria.

Complete proposals received by the NCE Secretariat by the established due date will then undergo a consultation and assessment process. Proposals will be distributed by the NCE Secretariat to CFI, the relevant granting agency(ies) and other relevant organizations (e.g. BDC, NRC, Regional Agencies) for consultation and comment, including non-binding comment on the potential likelihood of support for the relevant activities of the proposed Centre under their respective programming. The Secretariat will meet with provincial officials to identify provincial priorities and to secure their views on the project proposal(s) from their province.

Proposals will undergo review by Expert Panels established by the Secretariat, comprised of domestic and international experts, who will evaluate the project proposals, meet with applicants, and produce in-depth written assessments of the proposals. The Private Sector Advisory Board will review each Expert Panel report, the comments from the parties consulted, and then recommend to the NCE Steering Committee priority centres for approval. Centres failing to be endorsed by Expert Panels as having the potential to achieve excellence in research or commercialization will not be eligible for program funding.

In any given round, once the NCE Steering Committee has approved the projects to be funded, the NCE Secretariat, working with the Granting Agencies, will prepare an integrated submission to the Treasury Board for approval to appropriate the funding to the Granting Agencies for recommended projects. Given the multi-disciplinary nature of the projects, funding for a given centre may come from more than one Granting Agency, and so the NCE Secretariat will be the primary point of interaction for all project applicants throughout the life of their projects. Funding disbursements will be managed by the NCE Secretariat and disbursed to the recipient(s) against a funding agreement under the legal authority(ies) of the relevant granting agency(ies) (NSERC, and/or SSHRC and/or CIHR).

4 Risk Assessment and Management Summary

Through systematic risk identification, assessment and development of response procedures, program management and officers gained an explicit and common understanding of the key risks faced by the CECR program. This analysis has established the main operational risk mitigation measures and controls that will be integrated into program management practices to ensure a cost-effective balance between risk levels, investments in response measures and stakeholders' interests.

Preparatory activities included:

- Selection of the parties that should be involved - Managers from finance, operations, and programs from the three Granting Agencies as well as managers from NCE Secretariat, and external risk management experts;
- Establishment of a “time horizon” which reflects the multi-year funding timeframe;
- Review and refinement of a Risk Matrix Tool (see Appendix A) to set criteria for estimating the levels of impact and likelihood of risks, within CECR’s operating environment;
- Consideration of a Sources of Risk Template, as a prompt for risk identification; and
- Agreement on the definition of risk that would be used - “combination of the likelihood of an event and its impact” - International Standard (ISO)

4.1 Risk Management Process

The following risk assessment methodology was followed:

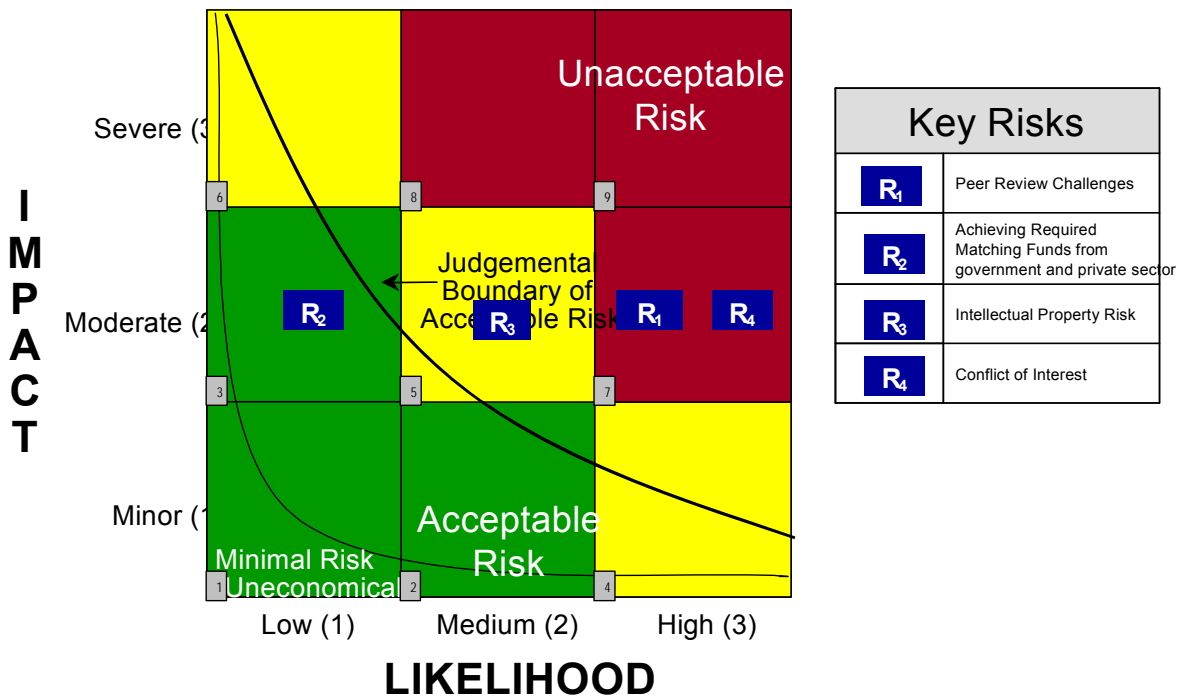
1. Understanding of Objectives
 - Articulation of intermediate outcomes established in the Results-Based Management and Accountability Framework (RMAF) Performance Logic Model.
2. Risk Area Identification
 - Brainstorming of all possible Risk Events (REs) (i.e. events, hazards, issues and circumstances that could have an impact); and
 - A preliminary analysis of the risk level, (high/medium/low) to determine the most significant/sensitive risks that would require further analysis.
3. Risk Assessment
 - Identification of concerns and impacts related to the Risk Events;
 - Determination of existing mitigation measures and their efficacy; and
 - Estimation of the residual risk which reflects the level of likelihood and impact of concerns materializing, given the information on existing measures and the criteria set out in the Risk Matrix.
4. Risk Response
 - Development of incremental strategies in cases where the estimated level of residual risk is unacceptable as per the expected actions set out in the Risk Tolerance Model attached in Appendix A.
5. Preparation of Risk Summaries
 - Summary of areas of concern related to risks as well as their existing and incremental risk management strategies.

4.2 Overall Risk Assessment

While the Secretariat administers a significant budget, its overall level of risk compared to other government entities is relatively low in terms of continuity of governments operations, and the maintenance of services to, and protection of interests of, the Canadian public. During the development of CECR program Risk Profile, 12 risk areas were identified as potential events or circumstances that can impede the achievement of program’s objectives (see Appendix B). Each risk area was subject to a preliminary risk assessment and four of the highest rated risk areas were selected for a detailed risk analysis. The results of the detailed analysis of key risks,

likelihood and impact, are presented in the Risk Scorecard (Figure 4.1) and the Risk Management Summaries which follow (Figure 5.1).

Figure 4.1 CECR Risk Scorecard 2007



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5 Monitoring and Evaluation Plan

Ongoing performance measurement and risk monitoring refers to the systematic collection of information for monitoring how a program is performing or changes in the level of a risk at any given point in time. It can be used to report on the level of attainment of planned results and planned levels of risk, and on performance/risk trends over time. The key focus of the performance and risk measurement strategy is to establish what indicators will be used to measure progress towards outputs, outcomes or levels of risk, and how, when and by whom information on these indicators will be collected.

The implementation of performance and risk indicators will require careful planning including an analysis of the resources, skills, roles and responsibilities and priority for indicators relative to ongoing policy and program implementation demands.

The implementation risk may occur if the required careful planning is not done on a timely basis, in sufficient detail or appropriately addressed. This risk will be managed through regular monitoring by the NCE management.

5.1 Program Monitoring

The monitoring of awards is an ongoing function of the NCE Secretariat to ensure that CECR funds are used effectively to attain the expected results. These monitoring activities are linked to ongoing performance measures, and the data collected also feed into summative evaluations.

Grant recipients are asked to provide annual statistics relative to the outputs and outcomes for both research related benefits and commercialization-related benefits. The indicators are presented in the Performance and Risk Measurement Strategy table in section 5.1.3.

The NCE Secretariat compiles, revises, and analyses these performance data on a yearly basis and reports to the NCE Management Committee on various trends and confirms if the CECR Program objectives are met. Summative evaluations will also be used to monitor and evaluate program performance every five years. Evaluations will make use of ongoing monitoring data as well as data collected during the evaluation.

Recipients will also be asked to provide annual progress reports to the Steering Committee. These reports will be used to determine whether grants are being used for the intended purpose and monitor centre's performance. The Granting Agencies will be accountable for all reporting obligations to Treasury Board and Parliament with respect to the funding they have received for the centres. The NCE Secretariat will be responsible for the administration of the program and for providing consolidated reports on the overall impact of the program. Given the multi-disciplinary nature of the projects, funding for a given centre may flow through more than one Granting Agency, and so the NCE Secretariat will be the primary point of interaction for all project applicants throughout the life of their projects.

In addition, each centre has a Board of Directors that has the overall responsibility for the management, direction, and financial accountability of the centre, including the approval of the audited financial statements and annual reports requested by NCE Secretariat. The Board of Directors is accountable to the NCE Steering Committee.

Finally, the centre's activities are subject to general overview and monitoring by the NCE Steering Committee through the NCE Secretariat. NCE staff sits on each centre's Board of Directors thus monitoring compliance of the program's policies and procedures.

5.2 Financial Monitoring

NCE receives its funding through parliamentary appropriations and has a responsibility to Parliament and to Canadian taxpayers to ensure that the funds entrusted to it are well managed and used effectively, economically, and in the best interest of the research supported by the award. This responsibility is shared with the recipient organization.

Robust controls are built into NCE Secretariat's systems and processes. They include clear assignments of responsibility and authority for the approval of awards, budget controls embedded in the NCE awards management database, and multi-faceted monitoring of ongoing awards. Financial controls, which are carried out by the Finance Division (Review and Investigations), Common Administrative Services Directorate at NSERC/SSHRC¹ and by the Finance Division at CIHR, are reviewed regularly and modified as needed.

Frameworks for ongoing monitoring of expenditures are in place, as described in detail in the *Tri-Agency Financial Administration Guide*. The Tri-Agency guide specifies that representatives of the Agencies will visit Institutions periodically to:

- assess whether Grantees have the necessary financial/administrative tools to properly and effectively manage their research funds;
- review the effectiveness of procedures, systems and controls in place at the Institution to ensure that the Agencies' policies and requirements are followed and that research funds are well managed;
- review expenditures from grant accounts to ensure that these were made in accordance with the established policies, requirements and guidelines and for the broad purpose intended; and
- share and disseminate information on guidelines and expectations for financial accountability and integrity.

For centres not affiliated to institutions, the monitoring procedure described above may be applied and adapted to reflect organizational context.

Payment of Grants

Payment of CECR grants is authorized by the NCE Steering Committee through one or more of the granting agencies. Due to the program funding profile announced in Budget 2007, \$165 M provided in fiscal year 2007/08, the following exemptions from the Treasury Board Policy on Transfer Payments have been requested: sections 7.6.1 in order to flow payments to selected centres in advance of need; section 7.6.2 in order to make lump sum payments instead of instalments; section 7.6.4 in order to remove the requirement to follow Appendix B of the Policy on Transfer Payments for instalment payments; and, section 7.6.9 in order to remove the requirement to deduct imputed interest from the amount of the grants. In the event that there is

¹ NSERC and SSHRC have Common Administrative Services such as the Financial Division, which oversees financial visits for both agencies and the NCE Secretariat.

an opportunity to re-profile the funding over a multi-year period, payments from the grant will instead be disbursed annually against an agreed-upon schedule between the project proponent and the NCE Secretariat.

Grants are not paid directly to the investigators. They are paid to institutions or organizations who administer the research accounts on the CECR Program's behalf. At the end of each fiscal year, organizations must complete and submit a spending report to the Secretariat for each grant. These reports provide detailed information on grant expenditures (for salaries, travel, equipment, professional and technical services and materials and supplies). Once received, spending reports are reconciled with the financial data contained in the NCE awards management database. As grant periods are completed, a final report is submitted to the Secretariat by the organization.

Stacking Provisions

Research funding is administered in the following environment.

For each approved grant, the CECR Program only funds a portion of the amount requested due to financial and budgetary constraints. Because of this, the Centres are constantly seeking other sources of funds to finance their work. In fact, the CECR Program encourages them to do so.

When a grantee is successful in attracting other funding, the additional funds do not displace the grant provided by the CECR Program. The centre will use the additional funds to complement CECR funded activities, by conducting additional work, hiring more research personnel, or by widening the scope of its activities.

The centre must have a control framework to ensure that expenditures charged to its accounts are for the purpose intended by the grant.

The current principles and practices related to stacking of assistance are as follows:

Access to CECR funds should be fair for all applicants, regardless of their other sources of funding. Applications are evaluated according to the program's selection criteria;

Applicants must provide a statement of other sources of funding with their application and on a yearly basis. There must be no duplication of funding for the same items. However, when centres are supported by multiple sources, the additional benefits of CECR support must be well explained and justified. The maximum level (stacking limit) of total government assistance for this program will not exceed 75% of the costs being covered. In the event total government assistance to a recipient exceeds the stacking limit, it will be necessary for relevant federal agencies to adjust the level of assistance so that the stacking limit is not exceeded.

The onus is on the applicant to provide sufficient information to enable review committees to evaluate the relationship with other sources of support (held or applied for) and to recommend the appropriate CECR funding level. The consequence of not providing adequate information to enable a review committee to assess the relationship to other funding support is that the committee can recommend reduced or no funding.

5.3 Performance and Risk Monitoring

Ongoing performance measurement is the regular collection of information for monitoring how a program is doing at any given time. It can be used to report on the level of attainment of planned results and on performance trends over time.

The following performance measurement strategy lists the planned outputs and outcomes of the CECR program as well as the performance indicators that need to be collected in order to monitor the progress of the program toward the achievement of its outcomes as described in the logic model.

The table also summarises the ongoing risk measurement strategy for the CECR program. It focuses on the key risks identified on the Risk Scorecard that were at the high and medium levels. The measurement strategy for key risks is provided at the end of the strategy table. Where changes in the level of a risk would be easily identifiable, risk indicators are not included. Ongoing monitoring of the level of risk is very important because risk levels may quickly increase due to environmental factors or significant risk reduction/stabilization expected from the implementation of Incremental Risk Mitigation Measures. Risk indicators provide cost effective proxy information about the level of risk between formal assessments. *Risk details are presented in italics.* In some cases, performance indicators are in italics because they have a dual nature of providing performance and risk information. Dual indicators are a key efficiency feature of an integrated RMAF-RBAF.

Figure 5.1 Performance and Risk Measurement Strategy Table

Key Performance area/Key Risk	Indicators	Data Sources/Data Collection Methods	Responsibility for Collection	Timing/Frequency of Data Collection
Outputs				
Funded Research and Commercialization Centres	Number of funded Centres	Selection Committee reports/Steering Committee recommendations	NCE Secretariat	Every competition year
	Amounts allocated to the funded Centres			
Agreements with Research and Commercialization Centres	Nature and number of agreements	Funding and agreements with Centres	NCE Secretariat	Every competition year
Advice and direction to Research and Commercialization Centres	Opinions of key informants	Periodic Evaluation	Evaluation	Every 5 years
Reports on awards	Number of participants, contributions, expenditures, HQP	Statistical reports	NCE Secretariat	Annually
Multidisciplinary and integrated approach to program delivery	Share of each granting agency	NCE Annual Report	NCE Secretariat	Annually

Key Performance area/Key Risk	Indicators	Data Sources/Data Collection Methods	Responsibility for Collection	Timing/Frequency of Data Collection
Immediate Outcomes				
Research-Related Benefits				
Draw on existing research strength, infrastructure, networks and funding sources to enhance capacity	Number of partnerships and collaborations	Annual Progress Report	NCE Secretariat	Annually
	Amount and sources of financial and in-kind contributions			
Attract top research talent (including post-graduate and post-doctoral students) from around the world	Number of foreign post-graduate students and post-doctoral researchers	Annual Progress Report	NCE Secretariat	Annually
Provide high quality post-graduate and post-doctoral training in innovative and internationally competitive research	Opinion of stakeholders (post-graduate students and post-doctoral researchers)	Periodic Evaluation	Evaluation	Every 5 years
Commercialization-Related Benefits				
Draw on existing commercialization strength, infrastructure,	Number of partnerships and collaborations	Annual Progress Report	NCE Secretariat	Annually

networks and funding sources to enhance capacity	Amount and sources of financial and in-kind contributions			
Attract and retain top talent (including internationally recognized business leaders)	Number of top researchers and business leaders (domestic and international) participating in centres	Annual Progress Report	NCE Secretariat	Annually
	Importance of the centre in decision to come/stay in Canada			
Attract investment (including foreign direct investment and venture capital)	Amount of national and foreign investment in centres	Annual Progress Report	NCE Secretariat	Annually
	Importance of the centre in decision to invest in Canada			

Key Performance area/Key Risk	Indicators	Data Sources/Data Collection Methods	Responsibility for Collection	Timing/Frequency of Data Collection
Intermediate Outcomes				
Research-Related Benefits				
Strengthen domestic collaboration to address significant research challenges	Pre and post number of domestic partnerships and collaborations related to the centre's activities	Annual Progress Report	NCE Secretariat	Annually
	Number of new domestic partnerships and collaborations			
Open up new opportunities for Canadian researchers to access world-class research equipment, facilities and networks	Number of new researchers by affiliation	Annual Progress Report	NCE Secretariat	Annually
	Number of external users of centres' equipment and facilities by affiliation			

Develop relationships with major international centres and research programs	Pre and post number of international research partnerships and collaborations related to the centre's activities	Annual Progress Report	NCE Secretariat	Annually
	Amount of foreign funding by source			
Create centres with a strong research orientation that yield significant public benefits within the funding period	Number of centres with strong research orientation	Annual Progress Report	NCE Secretariat	Annually
	Significant public benefits created			
Commercialization -Related Benefits				
Open up new opportunities for Canadian firms to access world-class research equipment, facilities and networks	Number of new firms and affiliation	Annual Progress Report	NCE Secretariat	Annually
	Number of external users of centres' equipment and facilities by affiliation			
Develop relationships with major international centres and research programs	Number of international research partnerships and collaborations	Annual Progress Report	NCE Secretariat	Annually
	Amount and sources of foreign financial and in-kind contributions			

Create centres with a strong commercialization orientation that will be expected to become self-sufficient by the end of the funding period	Number of self-efficient centres with strong commercialization orientation	Annual Progress Report	NCE Secretariat	Annually
	Revenues of commercialization			
	Significant public benefits created			
Strengthen domestic collaboration and ensure that benefits spill over to a wide array of firms, sectors and regions of the country	Number of domestic collaborations by firm, sector and region	Annual Progress Report	NCE Secretariat	Annually

Key Performance area/Key Risk	Indicators	Data Sources/Data Collection Methods	Responsibility for Collection	Timing/Frequency of Data Collection
Ultimate Outcomes				
Research-Related Benefits				
Position Canada at the forefront of international research	Extent to which Canada is at the forefront of international research	Periodic Evaluation	Evaluation	Every five years
Economic, social or environmental benefits to Canadians	Evidence of economic, social or environmental benefits to Canada	Periodic Evaluation	Evaluation	Every five years
Commercialization -Related Benefits				
Accelerate the commercialization of leading edge technologies, goods, services in priority areas where Canada can significantly advance its competitive advantage	Opinion of Key informants on accelerated commercialization	Periodic Evaluation	Evaluation	Every five years
	Extent to which Canada has advanced its competitive advantage			
Create, grow and retain companies in Canada that are able to capture new markets with breakthrough innovations	Number and nature of companies that captured new markets with breakthrough innovations	Periodic Evaluation	Evaluation	Every five years

Ultimate Benefits				
Deliver economic, social and environmental benefits to Canadians	Opinion of Key informants and experts	Periodic Evaluation	Evaluation	Every five years
	Significant public benefits created	Annual Progress Report	NCE Secretariat	Annually
Brand Canada as the host of internationally recognized centres of excellence in research and/or commercialization of research results	Level of branding of Canada	Periodic Evaluation	Evaluation	Every five years
Key Risks				
<i>Risk 1–Peer review challenges</i>	<i>peer-review fatigue</i>	<i>After-award report to NCE Steering</i>	<i>NCE Secretariat</i>	<i>On-going</i>
	<i>Shortage of peer-reviewers</i>			
<i>Risk 2–Athe required matching funds from the governments and private sectors</i>	<i>Lack of matching funding</i>	<i>Annual reports</i>	<i>NCE Secretariat</i>	<i>Annually</i>
<i>Risk 3–Intellectual Property risk</i>	<i>Delays in implementing Intellectual Property Agreements</i>	<i>Annual reporting on IP outcomes</i>	<i>NCE Secretariat</i>	<i>Annually</i>
<i>Risk 4–Conflict of Interest</i>	<i>Delays in implementation of Conflict of Interest Policy</i>	<i>Annual report on Conflict of Interest: implementation of the CECR Policy/ compliance to the NCE framework</i>	<i>NCE Secretariat</i>	<i>Annually</i>

5.3.1 Data Sources and Integrity

The data sources and collection methods identified in the Performance Measurement Strategy table constitute multiple lines of evidence that can be used to gather the appropriate information for each indicator. Each of these data sources and collection methods are described in this section. Note that data for some indicators will also be collected within the course of evaluation activities; the data sources more appropriate to evaluation are described in the next section of the RMAF.

5.3.2 Progress and Final Reports

The use of annual progress reports submitted by award recipients as a data collection method for performance measures is currently being implemented for the CECR. Recipients will be able to send progress reports electronically, making data capture and analysis relatively easy and timely, two important features of any good performance measurement system.

Data integrity for annual progress reports is based on the quality of the information provided by researchers. The validity of the reporting instruments will be monitored and any required clarifications will be made based on pilot results. This ensures that the questions structuring the reports are clear and unambiguous.

Whenever possible, program data and statistics that are either already available or that can be collected using a file review method will be used. These data sources include survey results or data from Statistics on target population. Data integrity for this type of performance information largely depends on the methods used to collect it by the organizations providing it.

5.3.3 Database

The NCE Secretariat has a database that stores information necessary to manage and monitor the lifecycle of the granting processes, such as information relating to the receipt of the initial application; peer review; final approval, and monitoring of awards. The Secretariat database is an invaluable source of information for ongoing performance management, since reports can be developed once and then generated with updated information whenever necessary. Measures to ensure data integrity are built into the input process managed by program staff.

5.3.4 Review and Adjustment of the Strategy

Detailed performance measurement strategies for the CECR program has been developed over the design phase of the program and reflect the program structure at that time. Each performance measurement strategy will be reviewed as it is implemented, and changes made to reflect new program orientations or delivery mechanisms. In the future, the data collection methods used will be refined as needed to provide more streamlined information or to include missing information.

5.4 Performance Reporting

The information collected for performance measurement will be reported through various mechanisms. Recipients will be asked to provide annual progress reports to the Steering Committee. These reports will be used to determine whether grants are being used for the intended purpose. The Granting Agencies will be accountable for all reporting obligations to Treasury Board and Parliament with respect to the funding they have received for the centres.

The NCE Secretariat will be responsible for the administration of the program and for providing consolidated reports on the overall impact of the program. Given the multi-disciplinary nature of the projects, funding for a given centre may come from more than one Granting Agency, and so the NCE Secretariat will be the primary point of interaction for all project applicants throughout the life of their projects. The table below (Figure 5.2) provides further details on performance measurement reporting procedures.

Figure 5.2 Performance Reporting

Type of Report	Purpose	Contents	Frequency of Use/ Timing	Responsibility
Departmental Performance Report	Reporting to Parliament on NCE's program outcomes	Granting Agencies funding received for the NCE's programs	Annual	Each of the participating Granting Agency
NCE Annual Report	Reporting to public on the NCE programs activities and outcomes	Summary of outcomes and achievements	Annual	NCE Secretariat
CECR Consolidated Report	Reporting to NCE Steering on specific outcomes and risks of the CECR	Summary of financial, statistical, and implementation activities	Annual	NCE Secretariat
	Reporting to NCE Secretariat on specific Outcomes/Policies of the CECR			
CECR Annual report	Reporting to the CECR member organisations	Performance and audited financial statements	Annual	CECR

5.5 Evaluation Plan

According to the Memorandum to Cabinet, a formative evaluation will be performed at the beginning of the second year of the program. As a Tri-agency program, the formative evaluation of the CECR will be overseen by the Interagency Evaluation Steering committee, which is comprised of the Heads of Evaluation of CIHR, NSERC, SSHRC, and representative of Industry Canada. The formative evaluation will look specifically at the implementation of the program data gathering strategy, design and delivery issues. Any modifications deemed necessary will then be implemented before the next competition. In addition to a formative evaluation, ad hoc studies may be required as the program is implemented.

In addition to a formative evaluation, the CECR program will be evaluated every five years in line with the federal Accountability Act. Therefore, the first summative evaluation will be conducted before 2012 in order to accompany the renewal of the program's Terms and Conditions. The evaluations will be overseen by the Interagency Evaluation Steering committee. The first summative evaluation will assess improvement in implementation, design and delivery, relevance, progress toward success, and cost-effectiveness.

Evaluation issues and questions are identified below. More specific evaluation questions and timelines specific to the summative evaluation will be determined at the time of the program evaluations. A budget in the range of \$300,000 has been set aside for evaluation purposes.

5.5.1 Evaluation Issues

The first step in developing an evaluation strategy involves the identification of the issues and associated questions that need to be addressed during the periodic evaluation. This section outlines the three basic evaluation issues (relevance, success, and cost-effectiveness) as well as implementation and design issues. The proposed evaluation issues and questions will be reviewed and modified depending on the information that will be required for decision-making, prior to undertaking the evaluation.

Relevance

The issue of relevance focuses on the needs that originally prompted the creation of the program and whether these needs have been met by the program. The relevance questions that should be asked in the evaluation of the CECR program include the following:

- What needs is the CECR program fulfilling?
- How has the program addressed these needs?
- Are the program's objectives consistent with departmental and government-wide priorities?

Success

The issue of success refers to the achievement of the outcomes outlined in the logic model. In most cases, the evaluation questions for this issue will focus on the progress towards achievement of the outcomes identified in the logic model developed for each program stream. Other questions will focus on some of the unintended impacts of the program.

- What have been the results of the program?
- What are the unique or incremental impacts of the CECR program?
- What have been some of its unintended impacts, if any?
- What is the progress toward attainment of the ultimate outcomes?

Cost-Effectiveness

The issue of cost-effectiveness focuses primarily on the delivery of the CECR program and on whether alternative delivery options would be more suitable. The evaluation questions for this issue include the following:

- Could similar outcomes/impacts be achieved more cost-effectively with some other delivery mechanism?

Design and Delivery Issues

- If the program is relevant, what changes to program design and implementation would make it more relevant and effective?
- What are the factors in the Centres' structure and operations that facilitate or hinder success?
- What should be the appropriate role of each of the three Granting Agencies within the activities of the program or centres?
- Should the program be maintained at its current level?
- Should the program be expanded or reduced?
- How adequate is the performance measurement strategy to monitor program performance?
- Are key risks areas being managed appropriately?

5.5.2 Evaluation Approach

Like the Performance Measurement Strategy, the Evaluation Strategy requires the identification of specific data requirements for each of the evaluation questions. These data requirements, or indicators, can be based on some of the performance measurement strategy or can be specific to one evaluation question. The summary table that follows (Figure 5.3) identifies the indicators specific to each evaluation question presented above, as well as data sources or collection method, responsibility for collection, and the timing/frequency of measurement. In this case, the timing/frequency of measurement refers to the type of study conducted or report produced on the measurements. In this sense, ongoing monitoring refers to the implementation of the performance measurement strategy and formative and summative evaluation refer to full evaluation studies requiring the development of an evaluation framework.

It should be noted that the evaluation issues will be measured in part by the indicators identified in the performance measurement table located in the previous section of the RMAF. To avoid duplication, the table below displays the indicators that will be measured through evaluation activities only. It is understood that the data collected on an ongoing basis will also be used to answer evaluation questions.

Evaluation Design

A control group for assessing the incremental impact of the program is not practical as it would be difficult to randomly assign participants. As well, non-participants might have different characteristics due to factors external to the program. As a result, where possible, the approach will be to use pre and post measures. The pre-post design enables a comparison over time, i.e. status of activities at the start of the grant will be compared to status of activities at the end of the grant period, and possibly after the grant period through a follow-up study. This approach will provide information on immediate, intermediate, and longer-term impacts whilst identifying the program's incremental effects. One disadvantage to this approach is that it implies the implementation of a data collection strategy at the onset of the program when the performance strategy is still under implementation.

It should be noted that the centres funded under this program are expected to be quite diverse as will be the scope of the knowledge generated, the markets, and the end-users reached by the funded centres. As a result, the proposed indicators have been designed to be quite generic in order to apply to the many situations that will be covered by the different centres.

Figure 5.3 Evaluation Strategy

Evaluation question	Indicators	Data source/collection method	Responsibility for data collection	Timing/frequency	
				Ongoing Monitoring	Evaluation
Relevance – High Priority					
What needs is the CECR program fulfilling?	Results of needs assessment performed at national level	Literature/document review Interviews with Government representatives Survey of Chairs of Board of Directors Survey of participants Needs assessment	Evaluation		Summative evaluation
How has the program addressed these needs?	Satisfaction levels of end-users of research and commercialization	Interviews with stakeholders Survey of Board of Directors' Chairs	Evaluation		Summative evaluation
	Distribution of end-users by province, user sector and industrial sector	Annual progress reports Case Study			
Are the program's objectives consistent with departmental and government-wide priorities?	Analysis of government priorities stated in literature	Literature/document review	Evaluation		Summative evaluation
	Opinion of key informants	Interviews with Government representatives	Evaluation		Summative evaluation

Evaluation question	Indicators	Data source/collection method	Responsibility for data collection	Timing/frequency	
				Ongoing Monitoring	Evaluation
Success – High Priority					
What are the unique or incremental impacts of the CECR program?	Comparison of pre and post research and commercialization activities	Annual progress reports Survey of stakeholders Survey of end-users Case studies	Evaluation / NCE Secretariat	Ongoing Monitoring	Summative Evaluation
What have been the results of the program? What have been some of its unintended impacts?	Performance indicators used to measure outcomes under the performance measurement strategy	Annual progress reports Survey of stakeholders Case studies	Evaluation /NCE Secretariat	Ongoing Monitoring	Summative Evaluation
What is the progress toward attainment of the ultimate outcomes?	Performance indicators used to measure outcomes under the performance measurement strategy	Experts interviews Key informant interviews Survey of Board of Directors' Chair Case Studies	Evaluation		Summative Evaluation

Evaluation question-	Indicators	Data source/collection method	Responsibility for data collection	Timing/frequency	
				Ongoing Monitoring	Evaluation
Cost-effectiveness – High Priority					
Could similar outcomes/impacts be achieved more cost-effectively with some other delivery mechanism?	Administrative costs as a percentage of total costs in comparison to other models	Data/document review Benefit/cost analysis	Evaluation		Summative evaluation
	Projection of increase/decrease in efficiencies relative to other models	Data/document review Benefit/cost analysis	Evaluation		Summative evaluation

Evaluation question-	Indicators	Data source/collection method	Responsibility for data collection	Timing/frequency	
				Ongoing Monitoring	Evaluation
Design and Delivery – High Priority					
If the program is relevant, what changes to program design and implementation would make it more relevant and effective?	Informed opinions of stakeholders (Centres managers, partners, researchers, granting agencies etc.)	Key informant interviews Survey of stakeholders	Evaluation		Formative Evaluation Summative Evaluation

What are the factors in the Centres' structure and operations that facilitate or hinder success?	Informed opinions of stakeholders (Centres managers, partners, researchers, granting agencies etc.)	Key informant interviews Survey of stakeholders Case studies	Evaluation		Formative Evaluation Summative Evaluation
What should be the appropriate role of each of the three Granting Agencies within the activities of the program or centres?	Level of funding and commitment to each granting council	Data/document review Program annual expenditures	Evaluation		Summative Evaluation
	Opinion of key informants	Interviews with granting agencies representatives	Evaluation		Summative Evaluation
Should the program be maintained at its current level?	Informed opinions of key stakeholders (Centres managers, partners, researchers, granting agencies etc.)	Key informant interviews Survey of stakeholders Need assessment	Evaluation		Summative Evaluation
Should the program be expanded or reduced?	Informed opinions of key stakeholders (Centres managers, partners, researchers, granting agencies etc.)	Key informant interviews Survey of stakeholders Need assessment	Evaluation		Summative Evaluation

<p>How adequate is the performance measurement strategy to monitor program performance?</p>	<p>Informed opinions of key stakeholders (Centres managers, partners, researchers, granting agencies etc.)</p>	<p>Key informant interviews Survey of stakeholders</p>	<p>Evaluation</p>		<p>Formative Evaluation Summative Evaluation</p>
<p>Are key risks areas being managed appropriately?</p>	<p>Evidence risk management plan has been implemented</p>	<p>Key informant interviews Document review (updated risk assessment plan)</p>	<p>Evaluation / NCE Secretariat</p>		<p>Formative Evaluation Summative Evaluation</p>
	<p>Evidence of new or unforeseen risks</p>				

5.5.3 Data Sources and Collection Methods

Surveys/Interviews with Target Audiences

Surveys and interviews will be used in the context of program evaluations to obtain data on the opinions and perceptions of university researchers, industrial partners, government departments, and other experts on activities of research and commercialization. Periodic surveys also allow the collection of data that can be used to validate other data collection methods, such as the review of progress and final reports. A consultant is usually tasked with the survey process.

Literature/Document Review

The review of existing literature is a useful way to get a broad perspective on a specific topic. It is particularly useful when other methods, such as surveys or interviews would be too costly to implement. The evaluation group is normally responsible for document reviews pertaining to ongoing performance measurement or evaluation studies.

Benefit/cost Analysis

The benefit/cost analysis proposes a systematic analysis of whether a program is an efficient delivery model or whether the same results could be achieved at a reduced cost by using other delivery models. It allows establishing the extent to which similar outcomes/program impacts could be achieved more cost-effectively using an alternative delivery structure.

Case Studies

Case studies involve the systematic documentation (e.g., using files reviews and interviews) of the impacts of research and commercialization activities. Attempts are made to identify not only the direct impacts by either government or industry but also the indirect impacts, such as contributions to the improvements to the national innovation systems and the branding of Canada as host of internationally recognized centres of commercialization of research results. They can also provide good illustrations and understanding of the effects of institutional, organizational, and technical factors influencing research and commercialization processes. Retrospective case studies focusing on multiple scientific innovations and their commercialization rather than just one may be useful to identify impacts and linkages between R&D programs and projects over long intervals of research investment. Generally, however, there is no way to add up all the results of a group of case studies to obtain a measure of the total impacts of the program.

5.6 Reporting Strategy

In addition to performance reporting, program performance is reported in evaluation reports. The NCE Management Committee oversees the implementation of the integrated RMAF-RBAF and all other reporting requirements. This implies that the NCE Management Committee and staff of the NCE Secretariat are responsible for managing adequate data collection, performance reviews and reporting on an ongoing basis.

The NCE Steering Committee is responsible for reporting the performance information and the evaluation results to Industry Canada. The evaluations of all of the NCE programs are

conducted by the three Granting Agencies. To keep this process arm's length, and Interagency Evaluation Steering committee has been created to oversee the evaluation process for the NCE programs, including the CECR, and submit a final evaluation report to the NCE Steering Committee. The 2007 Evaluation Steering Committee is composed of representative from the three granting agencies, as well as from Industry Canada, Treasury Board, and the Department of Finance.

Figure 5.4 Evaluation Reporting

Type of Report	Purpose	Contents	Frequency of Use/ Timing	Responsibility
Ongoing Performance Measurement	To report on annual progress toward success.	Integrated Annual Performance Report	Annual	NCE Secretariat
Special Studies	To obtain specialized information, for example, on implementation issues raised during usual monitoring of the program	Summary of specialized information	Variable, conducted on an ad hoc basis	NCE Secretariat
Formative Evaluation Report	To report on CECR with respect to implementation, design and delivery issues	Summary of evaluation findings, conclusions and recommendations	Beginning of year 2	Interagency Evaluation Steering committee
Summative Evaluation Report	To report on CECR with respect to its continued relevance, program success and cost-effectiveness.	Summary of evaluation findings, conclusions and recommendations	End of year 3	Interagency Evaluation Steering committee

5.7 Risk Management Plan

The proposed Incremental Mitigation Measures identified during the risk assessment will be assessed for urgency and practicality in terms of short, medium, and long-term strategic planning. The objective is to determine the areas to focus investment based on priorities and available resources. Once there is agreement on the incremental measures that could be implemented, the NCE Program Management Committee will plan the management of key risks by establishing the relevant inputs and outputs (i.e. timelines, stakeholder accountability, resources, frequency of reporting, and stakeholder communications) as illustrated in Figure 5.5, below. The proposed plan can then be set out in a **Risk Register** and appropriately integrated into strategic and operational planning and reporting.

Figure 5.5 Risk Management Plan

Risk Management Tasks	Risk Management Plan	Time Line			Responsible Parties
		0-6m	6-12 m	12-24 m +	
1. Who needs to review the risk assessment to assure its reliability and credibility?	<ul style="list-style-type: none"> ▪ NCE Management Committee 	√			Associate Vice-President NCE
2. To whom do the results of the risk assessment need to be communicated and when	<ul style="list-style-type: none"> ▪ President and NCE Steering ▪ NCE Management Committee 	√			Associate Vice-President NCE
3. Who needs to review/approve the choice of Incremental Risk Management Measures and Risk Indicators?	<ul style="list-style-type: none"> ▪ NCE Management Committee 	√			Associate Vice-President NCE
4. How will the measures be implemented and managed (activities, resources, skills, training, organization, roles etc.)?	<ul style="list-style-type: none"> ▪ As an ongoing element of the Secretariat management regimes ▪ Final commitments to Incremental Risk Management Measures will be set out in a Risk Register and the status on action will be reported on the Risk Register semi-annually 		√	√	Associate Vice-President NCE
5. What stakeholders, if any, should be informed of the Key Risks and Incremental Risk Management Strategies?	<ul style="list-style-type: none"> ▪ Treasury Board of Canada, Secretariat ▪ Over a medium term timeframe, centres will be introduced to the Secretariat's risk management practices and reports 	√		√	Associate Vice-President NCE
6. What stakeholders, if any, need to be included in the implementation of incremental risks management measures?	<ul style="list-style-type: none"> ▪ None at this time, Incremental Risk Management Measures are internal to the NCE Secretariat 				N/A

Risk Management Tasks	Risk Management Plan	Time Line			Responsible Parties
		0-6m	6-12 m	12-24 m +	
7. What strategies should be in place to address potential surprise events (unforeseen events)?	<ul style="list-style-type: none"> Potential for surprise will be a regular consideration incorporated into NCE management regimes 	√			Associate Vice-President NCE
8. What is the strategy for updating the risk assessment on a regular basis? <ul style="list-style-type: none"> Updating the Risk Matrix Updating the Tolerance Model 	<ul style="list-style-type: none"> An update of the risk assessment will be done regularly The Risk Matrix and Tolerance Model will be reviewed with each update 		√	√	Associate Vice-President NCE
9. How will the results of the risk assessment and risk management strategy be reported and disclosed?	<ul style="list-style-type: none"> External reporting and disclosure will be done through the Reports to the NCE Steering Committee and reports on the Departmental Performance Report of each funding Granting Agency 		√		Associate Vice-President NCE Granting Agencies
10. How will the results of the risk assessment be coordinated with audits or evaluations?	<ul style="list-style-type: none"> Annual audit and evaluation plans will incorporate consideration of risk assessment updates 			√	NSERC Corporate Internal Auditor and Heads of Evaluation

5.8 Internal Audit

Each participating agency has its own Internal Audit function, however, program funding administered by the NCE Secretariat falls under the purview of NSERC's internal audit function. NSERC's internal audit function supports the agency's efforts to achieve its corporate objectives, through its independent assessment of NSERC's internal management framework and by providing senior management with assurance regarding its risk management, internal controls, and governance practices, including, but not limited to NSERC's core granting programs. In compliance with the Treasury Board Policy on Internal Audit, the priorities for NSERC's internal audit function are determined based on a risk-based audit-planning framework. This framework includes the annual review of NSERC's core controls, as part of the holistic assurance regime, and annual assessment of specific risk exposures across NSERC, whereby programs and functional activities with the highest associated risks are recommended for audit, as part of the internal audit function's annual plan. The resulting annual plan for internal audit is submitted to NSERC's Audit Committee for approval.

The Auditor General of Canada is NSERC's external auditor and is responsible for conducting an external audit of NSERC's financial statements. Over the years, the Auditor General has consistently rendered an unqualified opinion regarding the agency's and NCE's financial statements.

Program Audit Framework

As a condition of eligibility, an organization applying for CECR funds shall have an established Board of Directors responsible for the approval of its annual financial reports and related audit. Recipient organizations are subject to active monitoring and the need for the audit of recipient organizations is established as a function of risk.

Recipients will be informed of the right to audit provisions of the Auditor General Act. The Auditor General (AG) has the power to inquire into the use of a transfer payment, including provision for the AG to undertake performance or compliance audits with respect to the use of federal funds, and for the recipient to make records and information available to the AG.

5.9 Audit Reporting

The table below (Figure 5.6) provides further details on audit reporting.

Figure 5.6 Audit Reporting

Type of Report	Purpose	Contents	Frequency of Use/ Timing	Responsibility
Audit Report	Assurance fundamental controls are performing effectively and identification of opportunities for improvement, if significant weaknesses are detected.	Statement audit objectives, scope, methodology applied, overall opinion, supported by detailed observations & related recommendations.	Variable – typically 2-3 assignments per year.	Internal Audit

Management Letters	Communication of issues of lesser significance, which do not adversely effect the audit opinion.	Description of issue sufficient to enable management to act, either to study the issue further or to take corrective action.	Periodic – tied to audits, but not always needed.	Internal Audit
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Appendix A – CECR Risk Matrix Tools

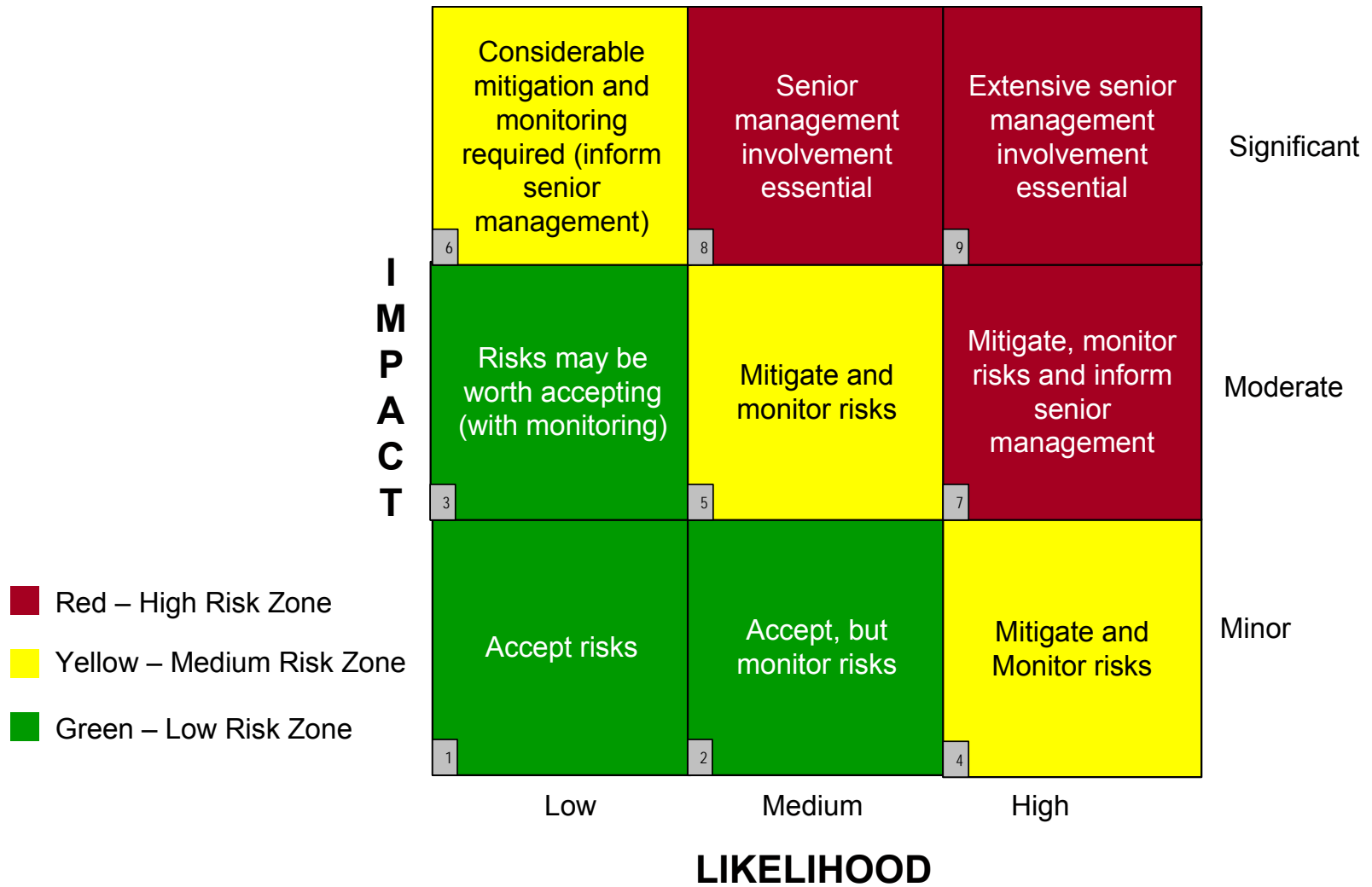
Qualitative Measures of Impact

Level	Impact	Damage & Liability	Operational Effects	Reputation loss
3	SEVERE	<ul style="list-style-type: none"> Loss or disclosure of highly sensitive client information (IP or key grant application) or NCE Secretariat information Financial loss > \$1M 	<ul style="list-style-type: none"> Significant underachievement of objectives Disruption of programs/services > 14 calendar days for large numbers of clients Loss of key corporate knowledge 	<ul style="list-style-type: none"> Significant loss of client group trust or confidence in decision making Public/media outcry for removal of Minister and/or departmental official Strong criticism by review agencies (OAG, PAC)
2	MODERATE	<ul style="list-style-type: none"> Loss or disclosure of sensitive client (IP or key grant application) or NCE Secretariat information Financial loss \$250k to \$1M 	<ul style="list-style-type: none"> Some underachievement of objectives Disruption of some programs/ services 7 - 14 calendar days Some loss of corporate knowledge 	<ul style="list-style-type: none"> Some loss of client group trust or confidence in decision-making Negative media attention Criticism by review groups (PAC)
1	MINOR	<ul style="list-style-type: none"> Financial loss < \$250K 	<ul style="list-style-type: none"> Minor disruption of programs/ services 	<ul style="list-style-type: none"> Setbacks in building of client group trust or confidence in decision making Some unfavorable media attention Some unfavorable observations by review groups (OAG, PAC)

Qualitative Measures of Likelihood (360 Months Time Horizon)

Level	Likelihood	Description
3	HIGH	The event is likely to occur
2	MEDIUM	The event may occur at sometime
1	LOW	The event is unlikely to occur

CECR Risk Tolerance Model



Appendix B - Risk Areas

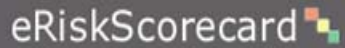


Program: NCE Portfolio, CECR
Session: Risk Assessment – October 2007

RISK AREAS IDENTIFICATION WORKSHEET			
<p><i>Objectives / Outcomes:</i> To achieve the expected results of CECR: maximize the benefits of government investment in R&D to create internationally recognized Centres of Commercialization and Research to accelerate commercialization, strengthen domestic collaborations, and to enable opportunities for Canadian firms to access world-class equipment/facilities/networks, and develop relationships with major international centres and research programs.</p>			
Risk Areas <i>(including estimate of the potential for surprise element)</i>	Preliminary Risk Assessment		
	High	Medium	Low
1. Peer Review Challenges (R1)		X	
2. Achieving the required matching funds from governments and private sector (R2)		X	
3. Intellectual property risk (R3)		X	
4. Conflict of interest (R4)		X	
5. Potential For Surprise		X	
6. Applicants concern about administrative burden with three new programs (application fatigue)			X
7. Variability of the centres at the start may lead to not being able to achieve the sustainability within 5 years			X
8. Competing priorities, disengagement of an agency in a multi-agency program			X
9. Financial/Program management risk			X
10. Failing to meet the requirement of reporting			X
11. Legal risk (ATIP, CEEA liability)			X
12. Stacking funds			X



Appendix C - Risk Assessment Summary



Program: NCE Portfolio, CECR

Session: Risk Assessment – October 2007

RISK ANALYSIS WORKSHEET				
<p>Objectives / Outcomes: To achieve the expected results of CECR: maximize the benefits of government investment in R&D to create internationally recognized Centres of Commercialization and Research to accelerate commercialization, strengthen domestic collaborations, and to enable opportunities for Canadian firms to access world-class equipment/facilities/networks, and develop relationships with major international centres and research programs</p>				
<p>Risk Area (R): R1 - Peer review Challenges – Short timelines for the overall peer review process (much shorter than the NCE Program standard process) may limit the process effectiveness (insufficient time for international participation, workload too intensive for some peer reviewers to become involved, leading to reduced number of expert panel members). Perception of reduced quality of the peer review process may result as well as an unintended burden on participating members of the peer review community.</p>				
Particular Concerns & Impacts (Damages & Liabilities, Op. Effects, Rep. Loss)	Existing Measures for Managing Risk Area	Residual Risk Level (1-9)	Incremental Risk Management Strategies	Responsible Party
<p>CONCERNS</p> <ul style="list-style-type: none"> - shorter timelines between the successive steps of the review, i.e Expert Panels reviewing each application, followed by a Private Sector Advisory Board (PSAB) that will review all the applications and report from the Expert Panels. - With 3 new programs, the increased workload may discourage potential members to participate thus reducing the pool of peer reviewers - higher likelihood of conflict of interest with a smaller pool - short timelines limit geographic distance of reviewers (less international) - private sector advisory board (PSAB) conflict of interest is a significant issue - workload of PSAB exceeds the anticipated level at the time the policy was established with 3 new programs, which will try to use the same people <p>IMPACTS:</p> <ul style="list-style-type: none"> - potential perception of reduced quality of peer review process, which leads more risks of questioning the final decision - loss of credibility of the program criticism of the government - it will take more resources to offset the time factor - increase admin cost 	<ul style="list-style-type: none"> - effective and well connected staff - benefit from small pool of committed reviewer - new procedure of PSAB on how to manage conflict interest - systems and processes for exchanging information for reviewers - good crisis communication methods <p>Efficacy (1-5)= 4 (= 2 on PSAB workload)</p>		<ul style="list-style-type: none"> - post competition analysis (lessons learned and feedback from peer reviewers) will be a key element for first round and in order to coordinate with all the programs. - provide input to the peer review review - Formative evaluation will review this risk 	<ul style="list-style-type: none"> - Program lead - Program Lead - Tri-Agency Evaluation Steering Committee



Program: NCE Portfolio, CECR


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RISK ANALYSIS WORKSHEET

Objectives / Outcomes:

To achieve the expected results of CECR: maximize the benefits of government investment in R&D to create internationally recognized Centres of Commercialization and Research to accelerate commercialization, strengthen domestic collaborations, and to enable opportunities for Canadian firms to access world-class equipment/facilities/networks, and develop relationships with major international centres and research programs

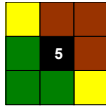
Risk Area (R): R2 -Achieving required matching funds from governments and private sectors – Shortfalls in matching funds in some sectors may weaken the business plan of some centres and lead to lack of commercialization and less socio-economic benefits to Canadians.

Particular Concerns & Impacts (Damages & Liabilities, Op. Effects, Rep. Loss)	Existing Measures for Managing Risk Area	Residual Risk Level (1-9)	Incremental Risk Management Strategies	Responsible Party
<p>CONCERNS:</p> <ul style="list-style-type: none"> - Weak business plan because of lack of matching funds - Support from industrial partners depends on viability of companies and strenght of sectors (e.g. information technology, biotechnology, etc.) <p>IMPACTS:</p> <ul style="list-style-type: none"> - Lack of partner's committment through matching funds may lead to lack of commercializations and less socio-economic benefits to Canadians - Unability to reach sustainability goal 	<ul style="list-style-type: none"> - Peer-reviewers scrutinize partners' commitments and viability in letter of support in full application - Regular monitoring by NCE staff to allert centres of possible issues <p>Efficacy (1-5)= 3</p>		<ul style="list-style-type: none"> - Ensure impact of matching funds is emphasized in communication to centres - Annual performance monitoring - Formative evaluation will look at this risk 	<ul style="list-style-type: none"> - NCE Secretariat - NCE Secretariat - Tri-Agency Evaluation Steering Committee



Program: NCE Portfolio, CECR

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RISK ANALYSIS WORKSHEET				
<p><i>Objectives / Outcomes:</i> To achieve the expected results of CECR: maximize the benefits of government investment in R&D to create internationally recognized Centres of Commercialization and Research to accelerate commercialization, strengthen domestic collaborations, and to enable opportunities for Canadian firms to access world-class equipment/facilities/networks, and develop relationships with major international centres and research programs</p>				
<p>Risk Area (R): R3 - Intellectual property risk - Implementation of intellectual property (IP) agreements may not be endorsed by all involved parties in a timely fashion and IP revenues may be less than expected which may lead to sustainability targets not met and possible litigation.</p>				
Particular Concerns & Impacts (Damages & Liabilities, Op. Effects, Rep. Loss)	Existing Measures for Managing Risk Area	Residual Risk Level (1-9)	Incremental Risk Management Strategies	Responsible Party
<p>CONCERNS:</p> <ul style="list-style-type: none"> - Implementation of intellectual property (IP) agreements may not be endorsed by all involved parties in a timely fashion and IP revenues may be less than expected which may lead to sustainability targets not met and possible litigation. This could delay the protection and exploitation of centre's supported IP. - The revenues from IP may not be as high as expected in the NCE funding period <p>IMPACTS:</p> <ul style="list-style-type: none"> - Expectations of self-sustainability may be impaired because of low IP returns - Possible litigations within the centres may create additional costs 	<ul style="list-style-type: none"> - Intellectual property policy defined in CECR funding agreement - Monitoring of stakeholders' involvement and signature of agreements at early stage - Annual statistics on the number of agreement signed <p>Efficacy (1-5)= 4</p>		<ul style="list-style-type: none"> - Communicate best practices of Intellectual Policy management to the centres - Formative evaluation will look at this risk 	<ul style="list-style-type: none"> - NCE Secretariat - Tri-Agency Evaluation Steering Committee

