

**Joint Results-based Management and Accountability Framework (RMAF)
and Risk-Based Audit Framework (RBAF)**

for the

Class Grants Industrial Research and Development Internship (IRDI) Program

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1 Introduction

1.1 Background

The class grants Industrial R&D Internship (IRDI) Program is a federal mechanism whereby, through a competitive, peer-reviewed process, successful recipient organizations are funded to take on the responsibility of matching graduate students and post-doctoral fellows with private sector organizations for private sector research internships. The interns will work on research projects jointly developed by their industrial partner and academic supervisor. To maximize private sector engagement, the matching of interns and private sector organizations will be an ongoing process.

The Industrial R&D Internship Program is overseen by a tri-agency NCE Steering Committee made up of the Deputy Minister of Industry Canada, the Presidents of the three granting agencies and the President of the Canada Foundation for Innovation (as an observer).

Administration of the Industrial R&D Internship Program is provided by the Networks of Centres of Excellence Secretariat (the NCE Secretariat), housed at the Natural Sciences and Engineering Research Council (NSERC).

The NCE Secretariat will issue calls for applications that will propose models to administer an industrial R&D internship initiative. An Interdisciplinary Expert Panel composed of domestic and international experts will be engaged to assist in the evaluation of proposals as required. The tri-agency NCE Steering Committee (including CFI as an observer) will make the grant selection decisions.

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 IRDI 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 IRDI 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 IRDI 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 IRDI 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 IRDI 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 the 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 Industrial R&D Internship (IRDI) program will match graduate students and postdoctoral fellows with Canadian firms to undertake research projects. Modeled on the successful internship initiative of the Mathematics of Information Technology and Complex Systems

(MITACS) Network of Centres of Excellence, the IRDI Program will address the host firm's innovation needs and stimulate private sector demand for S&T graduates. In terms of precedents, the government has been encouraging Canadian employers to make use of Canada's talented science and technology graduates. For example, one goal of the S&T Strategy is to enhance opportunities for science and technology graduates through internship programs such as the MITACS initiative that pairs up graduate students undertaking research-related degrees with businesses. This initiative aligns student research interests with business needs and creates a new receptor capacity in business for the results of mathematics research. Success to date has been achieved by using NCE program funding as well as agreements with Western Economic Diversification, the Atlantic Canada Opportunities Agency, and various provinces.

The proposed instrument for delivering the IRDI Program is a class grants transfer payment program. The grants mechanism is in keeping with existing NSERC and NCE class grant programs and is consistent with the MITACS model that was provided as an example in the announcement of the IRDI Program in Budget 2007.

2.2 Objectives

The goal of the IRDI Program is to fund eligible recipient organizations to establish industrial R&D internship initiatives that introduce graduate students and post-doctoral fellows to practical business problems and provide them with the opportunity to apply their scientific and technical expertise to address the needs of participating businesses, as well as to create a vehicle that will facilitate increased private investment in R&D. The IRDI program will support up to 1000 internships per year when fully operational. Each intern will receive a minimum \$10K stipend for a period of no less than four months.

2.2.1 Primary targets

Primary targets are the individuals (interns) and organizations (private sector) that the IRDI Program aim to mobilize to achieve the expected results. Academic researchers are significant players to ensure achievement of the results.

2.2.2 Other stakeholders

Other possible partners are industry and provincial governments, which are expected to share the cost of the internships and provide additional funding to the recipient organizations for additional activities. Parliament is another stakeholder given the significant role played by the IRDI 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 might have important impacts on the economy and on the quality of life of Canadians.

2.2.3 Key Stakeholders and Beneficiaries

Eligible interns will be graduate students and post-doctoral fellows enrolled in a Canadian institution eligible to receive and manage funds under the guidelines of the granting agencies (including the requirements of the Memorandum of Understanding on the Roles and Responsibilities in the Management of Federal Grants and Awards), in any area of research provided that their skills are sought by the participating firm to support innovation by the firm.

Organizations eligible to receive funds are not-for-profit organizations, including existing Networks of Centres of Excellence, fourth-pillar organizations, and consortia of firms, universities and/or colleges. As a condition of eligibility, organizations applying for IRDI funds shall have an established Board of Directors responsible for the approval of annual financial reports and audits.

Recipient organizations will also be required to sign an agreement that will outline a set of financial controls to which they agree to adhere. Stipends to the internship recipients will be paid through a Canadian post-secondary institution which is eligible to receive and manage funds under the guidelines of the granting agencies (including the requirements of the *Memorandum of Understanding on the Roles and Responsibilities in the Management of Federal Grants and Awards*).

2.3 Resources

2.3.1 Program Resources

IRDI total resources for five years, starting in 2007-2008 are \$22 million. As indicated below, NSERC has set aside \$115,000 in each of 2007-2008, 2008-2009, 2009-2010, 2010-2011, and 2011-2012 for Operating expenditures, to support the administration of the IRDI Program. Another \$4,800 per year is set aside for PWGSC accommodation charges.

Figure 2.1 IRDI Program Operating Budget (2007-2008 to 2011-2012)

Industrial R&D Internship (IRDI) NSERC Vote 70 (Operating)						
	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012	Totals
TOTAL IRDI	\$119,875	\$4,379,875	\$4,499,875	\$5,999,875	\$6,999,875	\$21,999,375

NSERC is seeking exemption to Section 7.6.4 (Cash Management Policy) of the Treasury Board Policy on Transfer Payments for the IRDI Program. This exemption is being sought in order to accommodate special cash flow needs which the eligible recipient organizations may have in supporting the anticipated large number of internship placements. Factors that would affect cash flow may include the seasonal nature of certain internships, the support of field business development officers to attract industrial partners, and timing issues related to the receipt of matching funds from funding partners (provincial governments, industry or others). An exemption to the cash management policy will therefore provide the administrative flexibility to make payments to the recipient organizations on the basis of their anticipated needs, rather than on a fixed schedule.

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 \$150,000 is set aside for the IRDI program.

3 Expected Results

3.1 Expected Results

To compete and win through new technologies and innovative solutions, Canadian businesses need to increase S&T investments and hire more talented science and technology graduates. The Industrial R&D Internship Program aims at creating additional opportunities for skilled graduates by linking them with businesses that can make use of their talents. The overall result of this program will be an increase in S&T activities of businesses with a corresponding increase in S&T jobs for trained graduates. Specific outcomes of this program include:

Immediate outcomes (during award period)

- Increase the number of graduates with both research and user-sector skills and know-how;
- Expose S&T graduates to real world business problems.
- Develop new S&T solutions for business needs;
- Expose private sector to S&T benefits;

Intermediate/long term outcomes

- Create positions for S&T graduates;
- Enhance the use of S&T graduates by the private sector;
- Create longer term S&T positions in business sector, thus creating more job

- opportunities in Canada for S&T graduates;
- Change in business culture to lead to increased and sustainable business S&T activities and long term university-private sector collaborations.
- Increase private sector investment in S&T;

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 Areas

Key Risk Areas, described below, provide a macro view of the main areas that challenge the achievement of IRDI's planned results. Two key Risk Areas were identified: program monitoring and challenges related to the recipient organizations. These summarize the specific four key risks that will require careful management. The Key Risks areas were identified and assessed during a risk assessment exercise and are presented in Section 4.2. The Key Risks directly relevant to IRDI'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 NCE Secretariat's control and influence over risks also diminishes the farther the source of the risk is removed from the Secretariat direct activities. To gain efficiency and effectiveness, management of results and risks are be integrated.

Challenges relating to the Recipient Organizations

The IRDI program is designed to receive proposals from recipient organizations (e.g.: consortia, fourth pillar organizations, not-for-profit organizations, and existing Networks of Centres of Excellence) to manage the internships. As such, the recipient organizations who will become the delivery agents are still unknown, as is their capacity for good financial management. The competition process asks for demonstration of a governance structure accountable for the progress and monitoring of the program and cost effective. However it will be difficult at the beginning of an award to determine if a particular organization has been too ambitious and has engaged itself to take on more than they it can comfortably handle, whether it will learn to manage eligibility rules, whether competing priorities will dilute efforts on IRDI, or what additional issues it will need to manage with regard to obtaining and reporting of cash/in-kind contributions. In addition, it may not be possible to reallocate funding from a poor performer to a high performer over the short fixed timeframe (two-year award). If challenges arise, there may be delays in processing internship applications, poor quality internship experiences, and annual target number of internships may not be met.

Program Monitoring and Management

Program monitoring can be a concern for new programs like IRDI which will use recipient organizations (e.g., not-for-profit) that may be less familiar with managing the administration and granting portions of the funding in accordance with Granting Agencies' Policies. There could be some issues with the need to track industry contributions that may not be well reported. Concern also arises about the financial monitoring that NSERC undertakes because IRDI will be added to the on-going framework of the tri-agency monitoring cycle (10 institutions per year for 5 years). The addition of new institutions may put pressures on the resources of the current three-person tri-council monitoring team. In a similar manner, there is a concern the NCE team managing IRDI must do so while also having responsibilities for other new programs (CECR, Business-Led Networks) and for existing Networks of Centres of Excellence (approximately 20 active networks). IRDI is a large financial investment (\$22 M over 4 years) to a large volume of interns (up to 1000 per year when the program is fully implemented). Without careful program monitoring and management, there may be implementation problems that are not identified and corrected in a timely enough manner to avoid impairment of IRDI's objectives. For example, interns may not receive proper experience, and there may be reputation loss by all parties involved.

3.3 Logic Model

The logic model identifies the linkages between the activities of a program and its final 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 developed for the IRDI Program serves as a "roadmap", showing the chain of results connecting activities to the final outcomes, and thus, identifies the steps that will demonstrate progress towards their achievement as illustrated in Figure 3.1.

Activities

The IRDI Program undertakes a number of core activities to bring about its intended outcomes, which are undertaken by both the NCE Secretariat and grant recipient organizations. The NCE related activities are performed by the NCE Secretariat, Interdisciplinary Expert Panel, and the NCE Steering Committee. The NCE Secretariat issues calls for proposals, administers the peer review process and granting process, and monitors the progress of grant recipient organizations. The Interdisciplinary Expert Panel evaluates proposals against the selection criteria and recommends meritorious proposals to the NCE Steering Committee for approval. Based on reports from the Interdisciplinary Expert Panel, the NCE Steering Committee makes the final funding decisions. Once selected, recipient organizations will work to strengthen linkages between business and universities, and implement their approved proposal and business plan through managing the initiative by facilitating the co-funding of interns to undertake research on-site with a private sector partner.

Outputs

Outputs are the immediate results of the activities; they are tangible products and/or services produced or delivered through the activity and, as such, demonstrate the implementation of the activity. The NCE Secretariat has direct control over its outputs and is accountable for them, but has less direct control over the outputs of the recipient organizations. The outputs for the NCE Secretariat include: Funding Agreements with recipient organizations, the provision of grants to recipient organizations. The activities of the Interdisciplinary Expert Panel result in recommendations to the NCE Steering Committee and in-depth written assessments of evaluated proposals. The key outputs of the NCE Steering Committee are the grant selection decisions. The outputs of the recipient organizations are internships for S&T graduates co-funded by recipient organizations and the private sector. This private sector investment is made via matching contributions. Although the outputs provide an indication of the volume of work being carried out, they do not provide an indication of the benefits or changes occurring as results of the activities – these are reflected in the outcomes.

Immediate Outcomes

The immediate outcomes of the IRDI Program are the first results to occur due to the activities and outputs of both the NCE and the recipient organizations. While the Program has influence over these outcomes, they are directly controlled by the recipient organizations. These outcomes focus on the actions of the recipient organizations, their staff, partners from the private sector, and other key stakeholders involved in the implementation of organizations' internship model. The primary direct outcome resulting from the co-funded internships is the increased exposure of S&T graduates to real world business problems. This increased exposure of S&T graduates within the context of internships is expected to result in new S&T solutions being developed for private sector business needs. The exposure of graduates to business problems and their work at the private sector organizations to develop solutions can be expected to result in an increased number of graduates with research and user sector skills and know-how. These outcomes will result in an increased exposure of private sector to S&T benefits. The immediate outcomes are expected to occur during the funding period of the grants to the recipient organizations; however, given the varying degrees of complexity of these outcomes, some may take place after the period of the award.

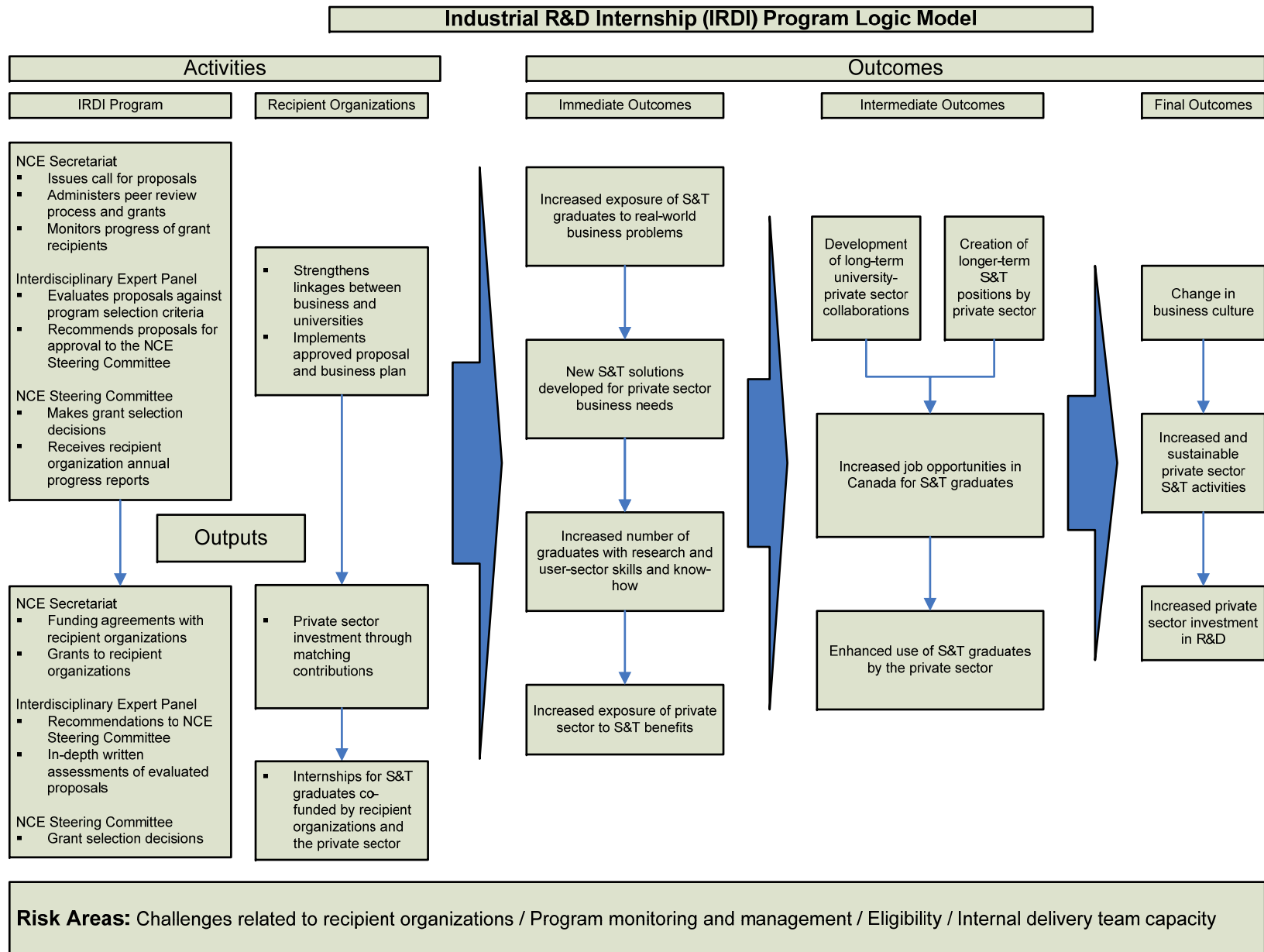
Intermediate Outcomes

Intermediate outcomes represent the impacts that flow from the immediate outcomes and, for the most part, are expected to occur after the funding period of the grant to the recipient organization. These outcomes include: development of long term university and private sector partnerships; creation of longer-term S&T position by the private sector; increased job opportunities in Canada for S&T graduates; and enhanced use of S&T graduates by the private sector. The degree to which the IRDI Program has influence over these outcomes is reduced from the immediate outcomes as there are a number of other factors that could influence the realization of these outcomes; it is expected that progress toward these outcomes will be observed approximately two to five years after the end of the award.

Final Outcomes

Final outcomes represent the broader societal impacts that the IRDI Program contributes to along with other programs and initiatives, as well as environmental factors. It is expected that the Program will contribute to final outcomes at the national level however, the degree to which the Program can influence the achievement of these longer-term outcomes is considered to be even less than for previous levels of outcomes. These are usually not measured at the program level due to problems with attribution. The final outcomes include a change in business culture leading to increased and sustained private sector S&T activities, which will result in increased private sector investment in R&D.

Figure 3.1: IRDI Logic Model



3.4 Accountabilities

Consistent with the S&T Strategy and Budget 2007, the IRDI program fulfils 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 approval of final grant selection decisions. When successful recipient organizations have been selected, the NCE Secretariat, working with NSERC, will prepare an integrated submission to the Treasury Board for approval to appropriate the funding to the Granting Agency for the recommended recipient organizations. NSERC will be accountable for all reporting obligations to Treasury Board and Parliament with respect to the funding received for the IRDI Initiative(s).

3.4.1 Governance Structure

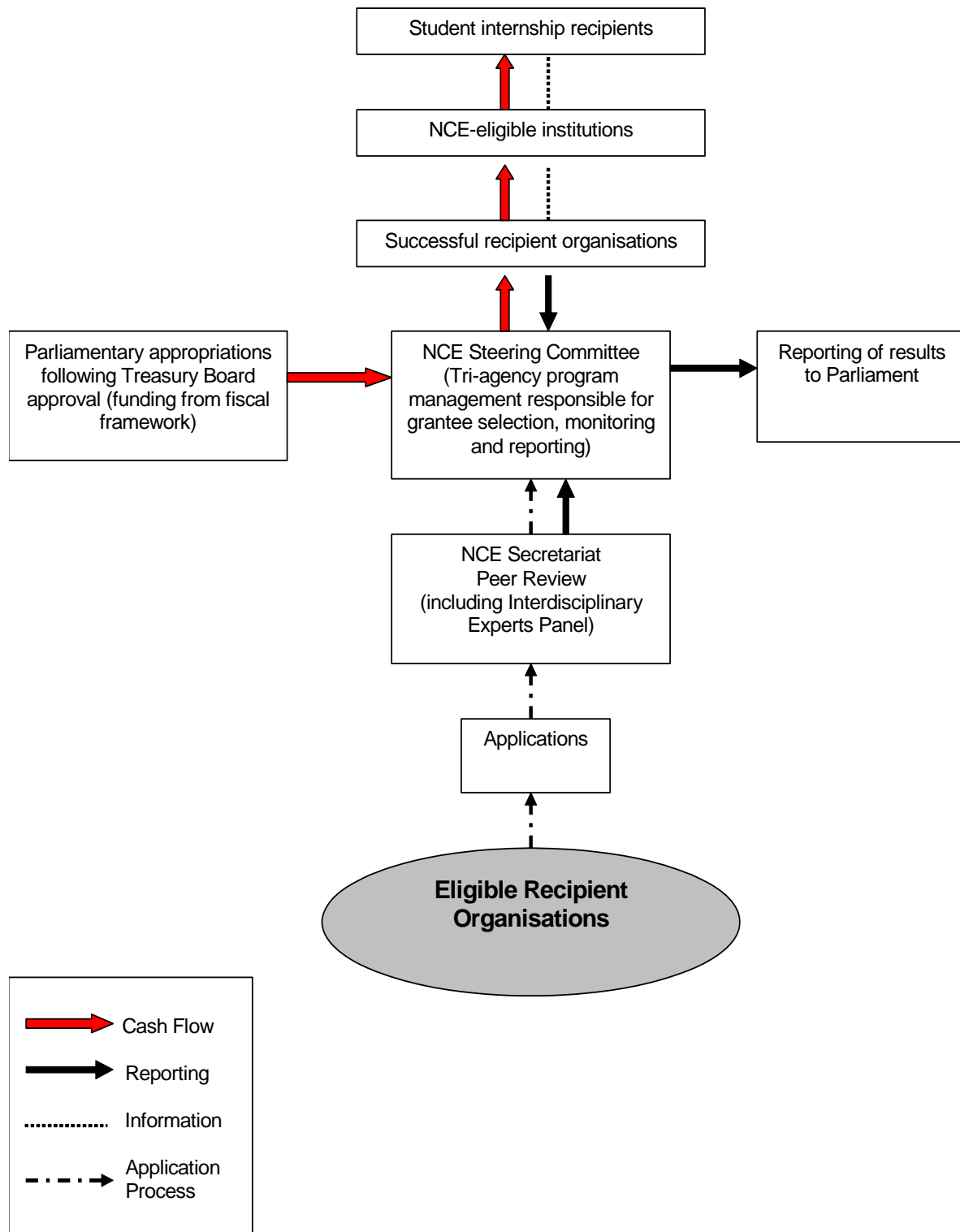
The diagram on the following page summarizes the overall governance structure of the IRDI program as follows:

1. Program Management, including project selection, monitoring and activity/impact reporting carried out by the tri-council NCE Secretariat consisting of the following:
 - Steering Committee made up of the presidents of the three agency (NSERC, SSHRC and CIHR), Deputy Minister of Industry Canada (or a representative) and President of CFI (Observer). Chair is President of NSERC
 - NCE Secretariat Staff (housed at NSERC) to support all the administration of the program
 - Interdisciplinary Expert Panels assembled on an ad-hoc basis to review applications
 - Program performance is measured annually through generic indicators and is evaluated regularly through a tri-agency Evaluation Steering Committee
2. Program Authority and Accountability is achieved through NSERC authority and accountability structure as follows:
 - On the recommendation of Interdisciplinary Expert panel reviews, the Steering Committee approves recommended recipient organizations for funding.¹
 - Annually, NSERC reports to Parliament on the funds allocated to the various recipient organizations.

¹ Should any recommended grant be determined to be beyond NSERC'S mandate, then the appropriate granting agency, either SSHRC or CIHR, will prepare a Treasury Board Submission to seek the authorities necessary to make the grant payments.

- Annually, data collected by the NCE Secretariat on the performance and impacts of these projects is reported to the Treasury Board Secretariat through the NSERC Departmental Performance Report.
3. Project Execution is the responsibility of award recipients that must meet strict eligibility criteria, including being incorporated with an independent Board of Directors.
- Each IRDI recipient organization is assigned a responsible NCE Secretariat Staff who is observer on the Board of Directors and the various key committees which the Board may establish.
 - Annually, each recipient organization reports on its performance and impact against the program criteria.

Figure 3.2 Governance Structure for the Industrial R&D Internship Program



3.4.2 Roles and Responsibilities

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

3.4.3 Review Process and Decision

The IRDI program 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 an intent to apply and a full application stage, as described below.

Intent to Apply

An indication of an intent to apply will need to be submitted electronically to the NCE Secretariat. This Intent to Apply should be no longer than 1 page and should include the following:

- Title of the IRDI Initiative
- Name of the applicant organization
- Total amount requested
- Contact information
- Number of internships considered
- Provinces and Territories, as well as sectors, where internships are proposed
- If a group, who are the members
- Initial list of members

This Intent to Apply will not be used for peer review purposes. It will be used to aid with recruitment of review committee members and administrative purposes.

3.5 Applications

Recipient organizations will receive IRDI program funding to manage an internship initiative through which they will facilitate the co-funding of interns to undertake research on site with a private sector partner.

A full application must consist of:

- Description of the IRDI Initiative proposed
- A business plan addressing the IRDI Program selection criteria (includes a proposed budget)
- Letters of support and summary of contributions the applicant organizations have secured from supporting partners

Proposals will undergo review by an International Expert Panel established by the Secretariat, comprised of domestic and international experts. They will evaluate the proposals against the program selection criteria, recommend to the Steering Committee priority proposals for approval and produce in-depth written assessments of the evaluated proposals. Organizations failing to be endorsed by Expert Panels and approved by the NCE Steering committee will not be eligible to receive program funding.

The NCE Secretariat will be the primary point of interaction for all 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 of NSERC.

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 NCE-IRDI. 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.

Preparation Steps

Preparatory activities included:

- selection of the parties that should be involved - program managers from NCE and related programs, as well as representatives from corporate management functions in the Granting Agencies, 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 to set criteria for estimating the levels of impact and likelihood of risks - see Appendix A;
- 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. Understand Objectives
 - articulation of a summary objective based on the 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 lead to 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 REs;
- 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 and the expected actions set out in the Risk Tolerance Model attached in Appendix B.

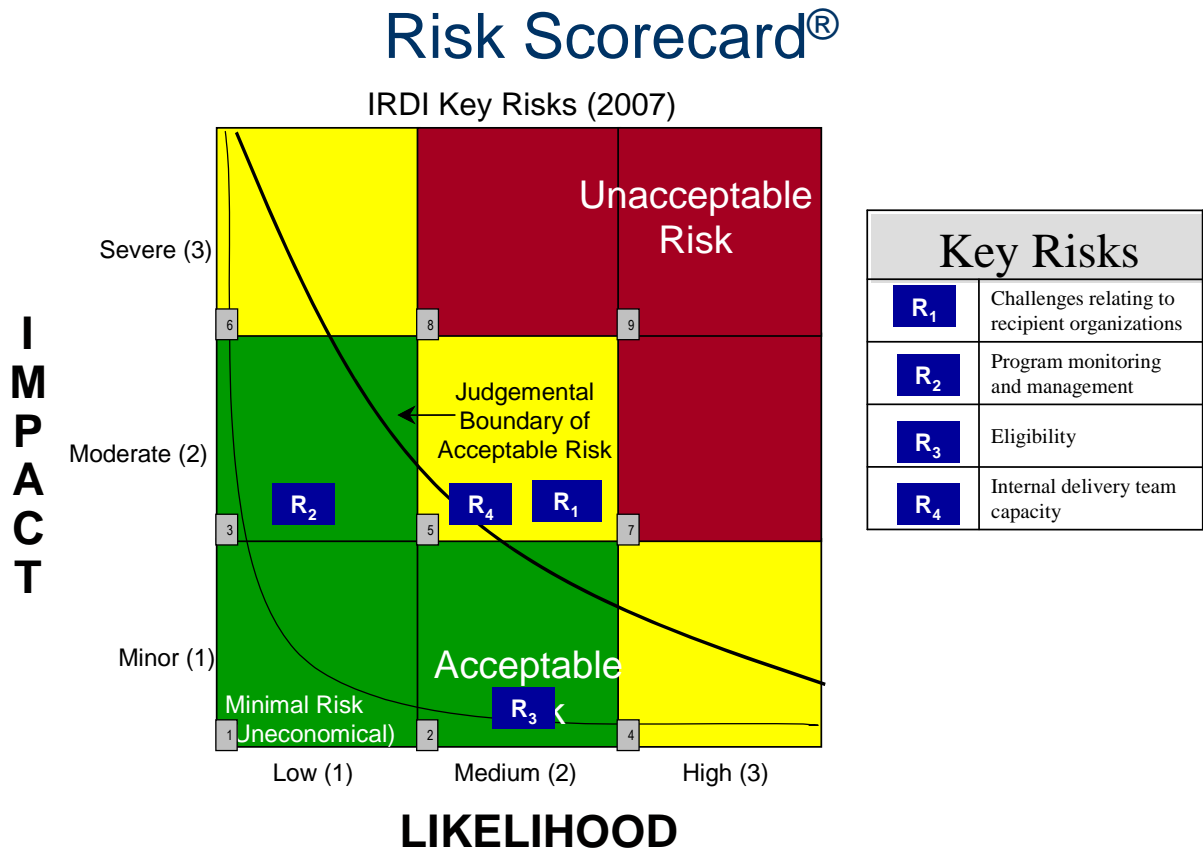
5. Preparation of Risk Summaries

- summary of areas of concern related to risks as well as their existing and incremental risk management strategies.

4.2 Overall Risk Assessment

Twelve (12) risk events were identified as potential events or circumstances that can impede the achievement of the program's objectives (refer to the preliminary risk assessment, Appendix A). Each risk area was subject to a Preliminary Risk Assessment and four (4) of the highest rated risk events 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). The worksheets for the detailed analysis are presented in Appendix C.

Figure 4.1 IRDI Risk Scorecard



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5 Monitoring, Evaluation and Auditing

Ongoing performance measurement and risk monitoring refers to the systematic collection of information for monitoring how a program is performing or what 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 IRDI funds are used effectively to attain the expected results. These monitoring activities are linked to ongoing performance measures, also the data collected feed into evaluations.

Grant recipients are asked to provide annual statistics relative to the outputs and outcomes of industrial R&D internship Initiatives. 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 IRDI Program objectives are met. 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.

NSERC will be accountable for all reporting obligations to Treasury Board and Parliament with respect to the funding received for the internship initiatives. Administration of the IRDI Program is provided by the NCE Secretariat, which reports administratively to NSERC. The NCE Secretariat will be responsible for the administration of the program and for providing consolidated reports on the overall impact of the program. The NCE Secretariat will be the primary point of interaction for all recipient organizations throughout the life of their projects.

In addition, each industrial R&D Internships Initiative has a Board of Directors that has the overall responsibility for the management, direction, and financial accountability of the internships initiative, 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 internship initiative's activities are subject to general overview and monitoring by the NCE Steering Committee through the NCE Secretariat. NCE staff sits on each internship initiative's Board of Directors thus monitoring compliance of the program's policies and procedures.

5.2 Financial Monitoring

Administration of the IRDI Program is provided by the NCE Secretariat, which reports administratively to NSERC. NSERC 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 internships supported by the award. This responsibility is shared with the recipient organization. The funds from the IRDI Program will be transferred by the recipient organizations to the internship award holders' institution, therefore leveraging on the established financial and accounting frameworks in place at eligible institutions.

NSERC has successfully managed its research portfolio using class grants since its inception, developing along the way a rigorous system of oversight. The majority of NSERC's grants and scholarships to recipients are transferred to the award holders' academic institution, which must show evidence of an effective financial and accounting framework, as well as enter into a Memorandum of Understanding with the granting agencies on the roles and responsibilities in the management of federal grants and awards. NSERC relies on the institutions' internal controls to administer the grants and scholarships on behalf of the award holders themselves to ensure appropriate financial practices and policies are respected, and monitors these on a regular basis.

Robust controls are also 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 (Financial Monitoring) Common Administrative Services Directorate at NSERC/SSHRC² 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 recipient organization to ensure that the Agencies' policies and requirements are followed and that research funds are well managed;

² NSERC and SSHRC have Common Administrative Services such as the Financial Division, which oversees financial visits for both agencies and the NCE Secretariat.

- 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 recipient organizations not affiliated to institutions, the monitoring procedure described above may be applied and adapted to reflect organizational context. These recipient organizations will also enter into a funding agreement with the NCE Secretariat on the roles and responsibilities in the management of federal grants and awards. At the end of each fiscal year, organizations must complete and submit a financial report to the NCE Secretariat, providing detailed information on grant expenditures. As grant period are completed, a final report is submitted to the Secretariat by the organization.

Payment of Grants

Payment of IRDI grants is authorized by the NCE Steering Committee through NSERC. An exemption to the cash management policy (Treasury Board Policy on Transfer Payments, section 7.6.4) has been sought for the IRDI Program in order to accommodate special cash flow needs which the eligible recipient organizations may have in supporting the anticipated large number of internship placements. Factors that would affect cash flow may include the seasonal nature of certain internships, the support of field business development officers to attract industrial partners, and timing issues related to the receipt of matching funds from funding partners (provincial governments, industry or others). This exemption to the cash management policy provides the administrative flexibility to make payments to the recipient organizations on the basis of their anticipated needs, rather than on a fixed schedule. Consequently, NCE Secretariat will closely monitor the recipient organizations' unexpended balances, particularly in the final year and months of the grant period, prior to making payments.

Grants will not be paid until signed grant agreements are in place confirming partnership arrangements, contributions and allocations of benefits (such as intellectual property) as described in the full proposal from applicant organizations.

Grants are made for specific purposes. The tri-agency NCE Steering Committee expects grant holders to use their grant for that purpose and in accordance with the Program's and their institution's policies and guidelines. The Steering Committee reserves the right to terminate or suspend a grant should the recipient organization cease to meet the program's eligibility criteria. Amounts paid after the expiry of eligibility or on the basis of fraudulent or inaccurate information, or in error, are subject to recovery action. Funding will be provided as class grants to the successful recipient organizations over a maximum five-year period.

Grants are paid to the recipient organizations who will administer the IRDI program. At the end of each fiscal year, organizations must complete and submit a financial report to the NCE Secretariat, providing detailed information on grant expenditures, As grant periods are completed, a final report is submitted to the Secretariat by the organization.

Stacking Provisions

The maximum level (stacking limit) of Total Government Assistance (federal, provincial and municipal assistance for the same eligible expenditures) for this program will not exceed 75% of eligible expenditures. The principles and practices related to stacking of assistance are as follows:

- Access to IRDI Program funds should be fair for all applicant organizations, regardless of their other sources of funding;
- Applications are evaluated according to the program's selection criteria;

Applicant organizations 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 applicants are supported by multiple sources, the additional benefits of IRDI Program support must be well explained and justified. 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 organization 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 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.

Financial Reporting

The information collected for financial monitoring is reported on through various mechanisms. The table below (Figure 5.1) provides further details on financial reporting.

Table 5.1: Financial Reporting

Type of Report	Purpose	Contents	Frequency of Use/ Timing	Responsibility
Competition Results	Awards management - to report on the demand and take-up of NCE programs.	Summaries of number of applications, success rates and funding rates.	As required	Finance - but results are signed off by Program Manager, Associate Vice-President and President
Financial Data Submission and Reconciliation Reports	Awards management - to reconcile spending at recipient organisations with the Grants Management System	Summary of Form 300 – recipient organisations expenditures	Annually	NCE Secretariat
Financial Monitoring Report	To report on the results of financial monitoring visits to recipients organizations	Assessment of select universities' policies/ guidelines, controls, and systems in place to ensure sound management of agencies funds.	As required	Finance

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 IRDI 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 summarizes the ongoing risk measurement strategy for the IRDI 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.

Table 5.2 Performance Measurement Strategy for the Industrial R&D Internship Program

Key Performance Area / Key Risk	Indicators	Data Source / Data Collection method	Responsibility for Collection	Timing / Frequency of measurement
Outputs				
<i>Grants to recipient organizations</i>	<ul style="list-style-type: none"> <i>Number and size of grants</i> 	<i>NCE database</i>	<i>NCE Secretariat</i>	<i>Annually</i>
<i>Strengthen linkages between business and universities</i>	<ul style="list-style-type: none"> <i>Number of new university-industry partnerships created (number of funding agreement)</i> <i>Nature of linkages developed</i> 	<i>Annual progress/ statistical reports / Final performance reports</i>	<i>NCE Secretariat</i>	<i>Annually</i>
		<i>Periodic Evaluation / case study</i>	<i>Tri-Agency Evaluation Steering Committee</i>	<i>Every 5 years</i>
<i>Private sector investment through matching contributions</i>	<ul style="list-style-type: none"> <i>Amount of matching contribution and in-kind leveraged from private sector partners</i> <i>Nature of in-kind contributions</i> 	<i>Annual progress/ statistical reports / Final performance reports</i>	<i>NCE Secretariat</i>	<i>Annually</i>
		<i>Periodic Evaluation / case study</i>	<i>Tri-Agency Evaluation Steering Committee</i>	<i>Every 5 years</i>
<i>Internships for S&T graduates co-funded by recipient organizations and the private sector</i> <i>(Target: 1000 per year when fully implemented)</i>	<ul style="list-style-type: none"> <i>Number of interns placed annually and overall</i> <i>Area of study of graduates</i> <i>Sector of operations of partner</i> 	<i>Annual progress/ statistical reports / Final performance reports</i>	<i>NCE Secretariat</i>	<i>Annually</i>

Key Performance Area / Key Risk	Indicators	Data Source / Data Collection method	Responsibility for Collection	Timing / Frequency of measurement
Immediate Outcomes				
Increased exposure of S&T graduates to real world business problems	<ul style="list-style-type: none"> Total and average number of months of internship provided 	Annual progress/ statistical reports / Final performance reports	NCE Secretariat	Annually
New S&T solutions developed for private sector business needs	<ul style="list-style-type: none"> Example of value-added to private sector business needs by interns 	Annual progress/ statistical reports / Final performance reports	NCE Secretariat	Annually
		Periodic Evaluation / case study	Tri-Agency Evaluation Steering Committee	Every 5 years
Increased exposure of private sector to S&T benefits	<ul style="list-style-type: none"> Perceptions of private sector partners of the benefits of internship 	Follow-up survey	NCE Secretariat	Bi-annually
		Satisfaction survey	NCE Secretariat	Annually
Increased number of graduates with research and user-sector skills and know-how	<ul style="list-style-type: none"> Number of students and postdoctoral fellows trained through IRDI that otherwise would not have happened Perceptions of students and postdoctoral fellows of their research skills, user-sector skills, and know-how 	Follow-up survey	NCE Secretariat	Bi-annually
		Satisfaction survey	Recipient organization	Annually
Intermediate Outcomes				
Development of long term university-private sector collaborations	<ul style="list-style-type: none"> Number of university-private sector collaborations that survive after grant period Average duration of university-private sector collaborations 	Final performance reports / Follow-up survey	NCE Secretariat	Bi-annual
Creation of longer-term S&T positions by private sector	<ul style="list-style-type: none"> Number of positions for S&T graduates created by private sector partners following internships Number of graduate and postdoctoral fellows hired by private sector partners through IRDI that otherwise would not have been hired 	Annual progress/ statistical reports / Final performance reports	NCE Secretariat	Annually
		Follow-up survey	NCE Secretariat	Bi-annual
Increased job opportunities in Canada for S&T graduates	<ul style="list-style-type: none"> Perceptions of students and postdoctoral fellows on the impact of internships on their career 	Periodic Evaluation / survey	Tri-Agency Evaluation Steering Committee	Every 5 years
		Follow-up survey	NCE Secretariat	Bi-annual
	<ul style="list-style-type: none"> Number of job opportunities for S&T graduates created through IRDI that otherwise would not have been created 	Periodic Evaluation / survey	Tri-Agency Evaluation Steering Committee	Every 5 years
		Follow-up survey	NCE Secretariat	Bi-annual
Enhanced use of S&T graduates by the private sector	<ul style="list-style-type: none"> Number of students and postdoctoral fellows trained through IRDI that otherwise would not have happened 	Annual progress/ statistical reports / Final performance reports	NCE Secretariat	Annually
	<ul style="list-style-type: none"> Average number of internships by private sector participants 	Periodic Evaluation/ Secondary data analysis	Tri-Agency Evaluation Steering Committee	Every 5 years

Key Performance Area / Key Risk	Indicators	Data Source / Data Collection method	Responsibility for Collection	Timing / Frequency of measurement
Final Outcomes				
Change in business culture	<ul style="list-style-type: none"> Perceptions of private sector partners of the change in business culture Use of S&T graduates Investment in R&D 	Periodic Evaluation / Survey; Case study	Tri-Agency Evaluation Steering Committee	Every 5 years
Increased and sustainable business S&T activities	<ul style="list-style-type: none"> Type and duration of S&T positions for private sector partners having participated in IRDI Initiatives that otherwise would not have been created Amount of R&D activity spending from private sector partners having participated in IRDI Initiatives that otherwise would not have been created 	Follow-up survey	NCE Secretariat	Bi-annual
		Periodic Evaluation / Survey; Case study	Tri-Agency Evaluation Steering Committee	Every 5 years
Increased private sector investment in R&D	<ul style="list-style-type: none"> Amount of R&D spending from private sector partners that otherwise would not have happened Trends in R&D spending from private sector partners over long term 	Follow-up survey	NCE Secretariat	Bi-annual
		Periodic Evaluation / Survey; Case study	Tri-Agency Evaluation Steering Committee	Every 5 years
Key Risks				
<i>Risk 1– Challenges related to recipient organizations</i>	<i>(see indicator of output)</i>	<i>Annual progress/ statistical reports / Final performance reports</i>	<i>NCE Secretariat</i>	<i>Annually</i>
<i>Risk 2– Program monitoring and management</i>	<i>(see indicator of output)</i>	<i>Annual progress/ statistical reports / Final performance reports</i>	<i>NCE Secretariat with the assistance of NSERC finance</i>	<i>Based on risk</i>
<i>Risk 3– Eligibility</i>	<i>(see indicator of output)</i>	<i>Annual progress/ statistical reports / Final performance reports</i>	<i>NCE Secretariat with the assistance of NSERC finance</i>	<i>Based on risk</i>
<i>Risk 4– Internal delivery team capacity</i>	<i>Opinion of program managers</i>	<i>Post-mortem implementation</i>	<i>NCE Secretariat</i>	<i>Based on risk</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/statistical reports submitted by recipient organizations as a data collection method for performance measures is currently being implemented for the IRDI. 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/statistical reports is based on the quality of the information provided by recipient organizations. 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 available 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 Satisfaction and Follow-up Survey

Two surveys of program recipients are conducted on an annual or bi-annual basis. At the end of the first year of grant, recipient organizations are requested to conduct a satisfaction survey of all parties involved, including interns (graduate students and post-doctoral fellowships), academic supervisor, and industrial partner/supervisor. Recipient organizations will also be contacted to participate in a follow-up survey conducted to assess the longer-term benefits and impact of the IRDI initiatives. This survey, under the responsibility of the NCE Secretariat, will be conducted bi-annually and include some of the measures identified in the performance measurement strategy.

5.3.4 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.

5.3.5 Review and Adjustment of the Strategy

Detailed performance measurement strategies for the IRDI 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/statistical reports to the NCE Steering Committee. These reports will be used to determine whether grants are being used for the intended purpose. NSERC will be accountable for all reporting obligations to Treasury Board and Parliament with respect to the funding received for the Internship initiatives. The NCE Secretariat will be responsible for the administration of the program and for providing consolidated reports on the overall impact of the program. The table below (Table 5.3) provides further details on performance measurement reporting procedures.

Table 5.3 Performance Reporting

Type of Report	Purpose	Contents	Frequency of Use/ Timing	Responsibility
Departmental Performance Report	Reporting to Parliament on NCE's program outcomes	Granting Agency funding received for the IRDI's initiatives	Annual	NSERC
NCE Annual Report	Reporting to public on the NCE programs activities and outcomes	Summary of outcomes and achievements	Annual	NCE Secretariat
IRDI Consolidated Report	Reporting to NCE Steering on specific outcomes and risks of the IRDI	Summary of financial, statistical, and implementation activities	Annual	NCE Secretariat
	Reporting to NCE Management on specific Outcomes/Policies of the IRDI			
IRDI Initiative Progress/Statistical Reports	Reporting to the NCE Steering Committee on progress toward performance of IRDI Initiative	Information on number of interns placed and results of satisfaction surveys	Annual, end of first year	IRDI Initiatives
IRDI Initiative Final Performance Report	Reporting to the NCE Steering Committee on overall performance of IRDI Initiative	Summary of the results and value-added of the IRDI to the organization and Canada	Within six months after the end of the initiative's term	IRDI Initiatives
IRDI Follow-up Survey	Reporting to the NCE Steering Committee on long-term benefits and impact of the IRDI Initiative	Summary of the longer terms benefits and impact of the IRDI Initiatives	Bi-annual	NCE Secretariat

5.5 Evaluation Plan

The IRDI program will be evaluated every five years in line with the federal Accountability Act. According to the Terms and Conditions for the IRDI program, the first evaluation will be conducted before 2012 in order to accompany the renewal of the program's Terms and Conditions. The evaluation will assess implementation, design and delivery, relevance, progress toward success, and cost-effectiveness. As a Tri-agency program, the evaluation of the IRDI will be overseen by the Interagency Evaluation Steering committee, which is comprised of the Heads of Evaluation of CIHR, NSERC, SSHRC, and a representative of Industry Canada.

Evaluation issues and questions are identified below. More specific evaluation questions and timelines specific to the evaluation will be determined at the time of the program evaluation. A budget 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 of the program.

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 IRDI program include the following:

- What needs is the IRDI 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 IRDI program?
- What have been some of its unintended impacts, if any?
- What has been the progress toward attainment of the ultimate outcomes?

Cost-Effectiveness

The issue of cost-effectiveness focuses primarily on the delivery of the IRDI 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?
- How effective have been the different delivery models used by the various internship initiatives?

Design and Delivery Issues

- Are the target numbers of internships set for the program appropriate?
- 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 Internship initiatives' structure and operations that facilitate or hinder success?
- Should the program be maintained at its current level, 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

An evaluation is proposed every five years for the IRDI program. An impact evaluation that focuses on progress towards achieving the program results, especially for making decisions about program continuation, expansion, reduction and funding is proposed. The proposed impact evaluation will be based on a goal-based evaluation model. This model calls for research design to evaluate attainment of program goals and makes use of both quantitative measures and qualitative techniques. For example, one aspect of the proposed approach is a pre-post design where there is a comparison between the situation before the implementation of the program and after. In the case of IRDI, the research design will compare the number of internships provided to industrial partners before the inception of the grant to the situation at the end of the grant period. Baseline data will come from the application form where recipient organizations outline their track record in delivering similar program(s). Those recipient organizations that have no track record in delivering internship program(s) will be deemed starting from zero.

Table 5.4 Evaluation Strategy

Evaluation question	Indicator	Data sources / collection methods	Responsibility for data collection	Timing / Frequency of data collection	
				Ongoing measurement	Evaluation
Relevance — High Priority					
What needs is the IRDI 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 Case Study	Evaluation		Impact evaluation
How has the program addressed these needs?	Satisfaction levels of all parties (interns, academic supervisor, industrial supervisor)	Satisfaction surveys Survey of Board of Directors' Chairs Annual progress/statistical reports Case Study	NCE Secretariat / Evaluation	Ongoing Monitoring	Impact evaluation
	Distribution of interns by province and industrial sector	Secondary data analysis			
Are the program's objectives consistent with departmental and government-wide priorities?	Analysis of government priorities stated in literature	Literature / document review	Evaluation		Impact evaluation
		Interviews with Government representatives			
Success— High Priority					
What are the unique or incremental impacts of the IRDI program?	Comparison of pre and post number of interns placed	Annual progress reports Survey of stakeholders Survey of end-users Case studies	Evaluation / NCE Secretariat	Ongoing Monitoring	Impact 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	Impact evaluation
What has been 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		Impact 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 of internships	Financial data / document review Cost effectiveness analysis	Evaluation / NCE Secretariat	Ongoing Monitoring	Impact evaluation
	Projection of increase/decrease in efficiencies relative to other models of internships	Financial data / document review Cost effectiveness analysis	Evaluation / NCE Secretariat	Ongoing Monitoring	Impact evaluation
How effective have been the delivery models used by the internship initiatives?	Operating costs of internship initiatives as a percentage of total costs		Evaluation / NCE Secretariat	Ongoing Monitoring	Impact evaluation

Evaluation question	Indicator	Data sources / collection methods	Responsibility for data collection	Timing / Frequency of data collection	
				Ongoing measurement	Evaluation
Design and delivery— High Priority					
Are the target numbers of internships set for the program appropriate?	Comparison of number of interns placed with number of interns initially set by recipients organizations and by the program	Document review	Evaluation		Impact evaluation
If the program is relevant, what changes to program design and implementation would make it more relevant and effective?	Informed opinions of stakeholders (Internships Initiative managers, industrial partners, graduate students, post-doctoral fellows, academic supervisors, granting agencies etc.)	Key informant interviews Survey of stakeholders	Evaluation		Impact evaluation
What are the factors in the Internship initiatives' structure and operations that facilitate or hinder success?	Informed opinions of stakeholders (Internships Initiative managers, industrial partners, graduate students, post-doctoral fellows, academic supervisors, granting agencies etc.)	Key informant interviews Survey of stakeholders Case studies	Evaluation		Impact evaluation
Should the program be maintained at its current level?	Informed opinions of stakeholders (Internships Initiative managers, industrial partners, graduate students, post-doctoral fellows, academic supervisors, granting agencies etc.)	Key informant interviews Survey of stakeholders Need assessment	Evaluation		Impact evaluation
Should the program be expanded or reduced?	Informed opinions of stakeholders (Internships Initiative managers, industrial partners, graduate students, post-doctoral fellows, academic supervisors, granting agencies etc.)	Key informant interviews Survey of stakeholders Need assessment	Evaluation		Impact evaluation
How adequate is the performance measurement strategy to monitor program performance?	Informed opinions of stakeholders (Internships Initiative managers, industrial partners, graduate students, post-doctoral fellows, academic supervisors, granting agencies etc.)	Key informant interviews Survey of stakeholders	Evaluation		Impact evaluation
Are key risks areas being managed appropriately?	Evidence risk management plan has been implemented Evidence of new or unforeseen risks	Key informant interviews Document review (updated risk assessment plan)	Evaluation / NCE Secretariat		Impact evaluation

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 Internships Initiative managers, industrial partners, graduate students, post-doctoral fellows, academic supervisors, granting agencies, and other experts on activities of internship and R&D activities. 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.

Cost Effectiveness Analysis

The cost effectiveness 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 will involve the systematic documentation (e.g., using files reviews and interviews) of the impacts of internships and research activities undertaken to support the private sector. Attempts are made to identify not only the direct impacts by the private sector but also the indirect impacts, such as change in business culture and contributions to the improvements to the national innovation. They can also provide good illustrations and understanding of the effects of institutional, organizational, and technical factors influencing the private sector S&T activities. Retrospective case studies focusing on multiple scientific innovations and their commercialization rather than just one may be useful to identify impacts and linkages between internship programs and R&D 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 a 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 IRDI PROGRAM , 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.

Table 5.5 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
Impact evaluation Report	To report on IRDI with respect to its continued relevance, program success and cost-effectiveness.	Summary of evaluation findings, conclusions and recommendations	End of year 3 of the program	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 Table 5.6, below. The proposed plan can then be set out in a **Risk Register** and appropriately integrated into strategic and operational planning and reporting.

Table 5.6 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"> Chair of NCE Steering 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 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, IRDI Initiatives 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
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? - 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 NSERC 		√		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

Program funding administered by the NCE Secretariat such as IRDI 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 IRDI 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 (Table 5.7) provides further details on audit reporting.

Table 5.7 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

Appendix A Risk Matrix Model

Risk Matrix

(Industrial R&D Internships Program)

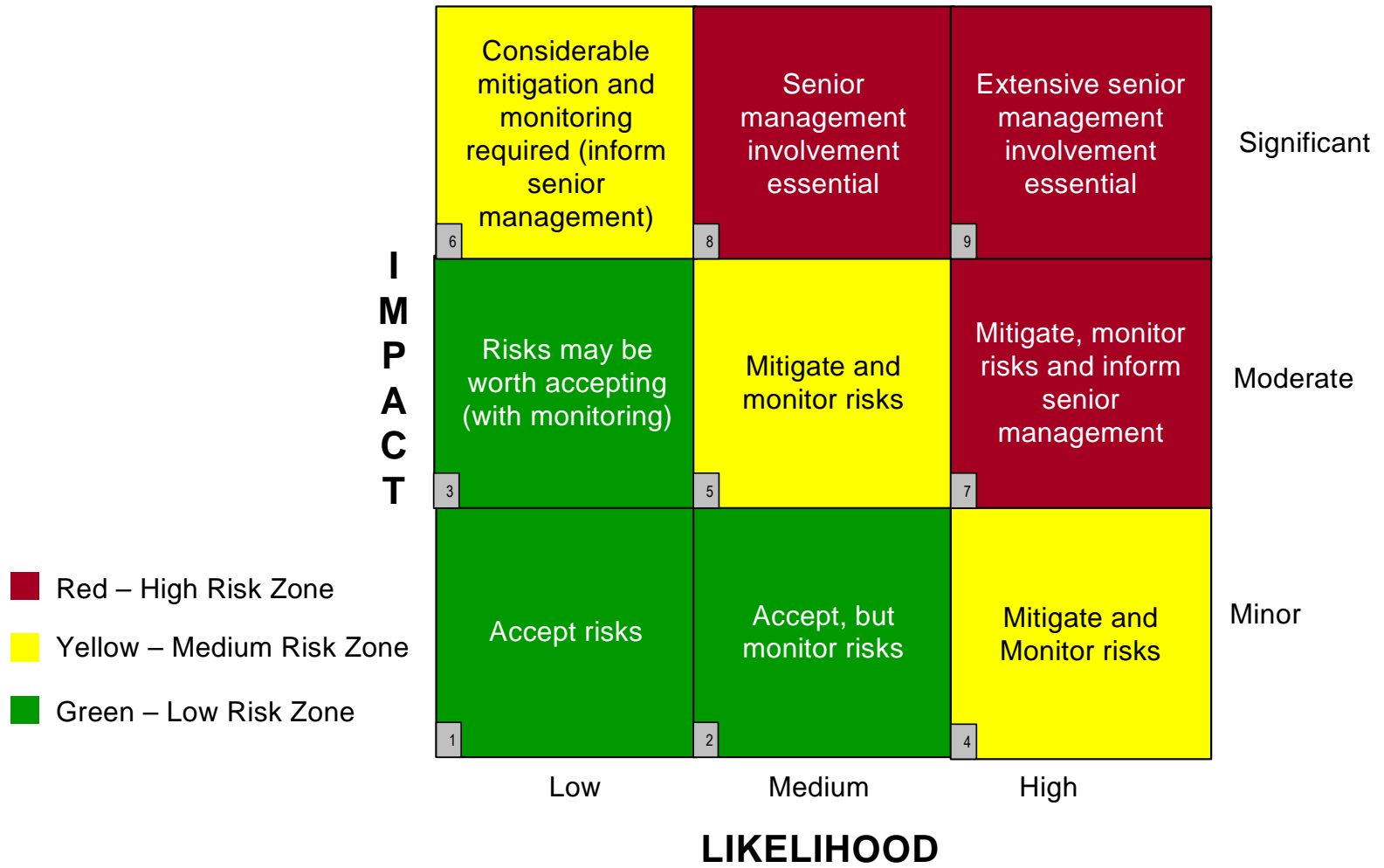
Qualitative Measures of Impact

Level	Impact	Damage & Liability	Operational Effects	Reputation loss
3	SEVERE	<ul style="list-style-type: none"> Loss or disclosure of highly sensitive client information (IM or key Grant application) or NCE Secretariat information Financial loss > \$250k 	<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 \$50k-\$250k 	<ul style="list-style-type: none"> Some underachievement of objectives Disruption of some programs/services 7- 14 calendar days Some loss of key corporate knowledge 	<ul style="list-style-type: none"> Some loss of client group trust or confidence in decision-making loss of client group trust Negative media attention Criticism by review agencies (OAG,PAC)
1	MINOR	<ul style="list-style-type: none"> Financial loss < \$50k 	<ul style="list-style-type: none"> Minor disruption of some 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 (60 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

Appendix B Risk Tolerance Model



Appendix C Risk Assessment

eRiskScorecard

Program: IRDI

Session: Risk Assessment – February 2008

RISK AREAS IDENTIFICATION WORKSHEET			
<p>Objectives / Outcomes: Delivery of short term internships (four to six months) by not for profit organizations, including existing Networks of Centres of Excellence, fourth-pillar organizations, and consortia of firms, universities and/or colleges, to increase the number of graduates with both research and user sector skills, enhance the use of S&T graduates by the private sector, create more job opportunities for S&T graduates, and increase and sustain business S&T activities and long term university-private sector collaboration</p>			
Risk Areas <i>(including estimate of the potential for surprise element)</i>	Preliminary Risk Assessment		
	High	Medium	Low
1. Challenges relating to recipient organizations (R1)		X	
2. Program monitoring and management (R2)		X	
3. Eligibility (R3)		X	
4. Internal delivery team capacity (R4)		X	
5. Challenge of measuring long-term outcomes - acquiring data from students and industry partners, needs for adequate metrics		X	
6. Tri-agency challenges ,e.g. timely communication, different operating style and expectations; Only NSERC has funds to manage		X	
7. Conflict of Interest (unknown elements)		X	
8. Intellectual Property			X
9. Stacking funds			X
10. Challenge of reporting - the challenge of reporting/monitoring on the partner contribution			X
11. Consistent delivery –recipient organizations design their own deliveries. Therefore, there is a chance of inconsistency			X
12. Potential for Surprise (Unknown)			X

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RISK ANALYSIS WORKSHEET				
<p>Objectives / Outcomes: Delivery of short term internships (four to six months) by not for profit organizations, including existing Networks of Centres of Excellence, fourth-pillar organizations, and consortia of firms, universities and/or colleges, to increase the number of graduates with both research and user-sector skills, enhance the use of S&T graduates by the private sector, create more job opportunities for S&T graduates, and increase and sustain business S&T activities and long term university-private sector collaboration</p>				
<p>Risk Area (R): R1 - Challenges relating to recipient organization - Delivery Agents may face challenges such as competing priorities which affect their ability to deliver, leading to potential delays in processing internship applications, poor quality internship experiences, and program targets not met.</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"> Are there enough companies to receive high numbers of interns e.g. up to 1000 per year Recipient organizations will be involved in many granting and other activities. Such competing priorities may affect their ability to deliver IRDI Some recipient organizations may be more ambitious and take more than they can handle. The anticipated allocation process is intended to fix the funding to a recipient organizations for 2 years so it would be difficult to reallocate money from a low performer to a high performer <p>Impacts:</p> <ul style="list-style-type: none"> Target level may be threatened because poor performers may not meet their targets Targets may also be threatened because we do not have enough companies to place interns Quality of internship may be reduced. 	<ul style="list-style-type: none"> The application process will ask for a detailed plan including the track record operating similar programs There will be selection criteria for choosing recipient organizations Reporting after one year may provide an opportunity to address poor performance issues <p>Efficacy(1-5)= 3</p>	5	<ul style="list-style-type: none"> Ensure internal regular on-going monitoring is part of recipient organizations' business plans. Share good practices and coaching 	<ul style="list-style-type: none"> NCE Secretariat program Lead NCE Secretariat program Lead



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RISK ANALYSIS WORKSHEET				
<p>Objectives / Outcomes: Delivery of short term internships (four to six months) by not for profit organizations, including existing Networks of Centres of Excellence, fourth-pillar organizations, and consortia of firms, universities and/or colleges, to increase the number of graduates with both research and user-sector skills, enhance the use of S&T graduates by the private sector, create more job opportunities for S&T graduates, and increase and sustain business S&T activities and long term university-private sector collaboration</p>				
<p>Risk Area (R): R2- Program Monitoring and Management - Program monitoring is a clear concern for new programs like IRDI which will use delivery agents (recipient organizations) some of which will be generally less familiar with managing the administration and granting portions of the funding, which will have some scope to set their own financial practices, and where there will need to be tracking of industry contributions (which is often not well reported).</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"> Lack of resources to include these recipient organizations in the regular tri-council monitoring cycle - 10 institutions per year must be done by 3 people over 5-year period Current monitoring approach may not fit the recipient organizations well as they are less homogeneous; therefore the monitoring may be more challenging. The approach with recipient organizations will include a general framework from NCE (defining basic program/financial procedures), but for the IRDI program, recipient organizations will have some scope to set their own detailed procedures. Recipient organizations will manage the administration of funds and the grant portion – recipient organizations generally have less experience in how to manage these funds than universities do. Recipient organizations will be chosen based on their proposals. It is unknown who the recipient organizations will be and their capacity for good financial management Recipient organizations may receive industry requests to make in-kind contributions and how such would be addressed may present challenges. Fairly large program (\$22 m) over a short time frame to a large volume of interns (up to 1000/year when fully implemented) – taken together, this creates complexity Tracking of the industry contributions <p>Impacts:</p> <ul style="list-style-type: none"> Loss of reputation for the program (there will be careful scrutiny of the program) Financial loss (if funds are mismanaged) Internship may end up without a proper experience 	<ul style="list-style-type: none"> Tri-council framework, cycle and experience in financial monitoring Existing funding agreement for other NCE programs Tri-council and NCE policy and guidelines for expenditures Experience with two Fourth Pillar organizations and many universities Standard reporting procedures and requirement Eligibility process and policy NCE staff participation on the boards of directors and receive all financial reports <p>Efficacy (1-5) = 3</p>	3	<ul style="list-style-type: none"> Ensure that the existing policies and framework are adapted for the program of the recipient organizations. 	<ul style="list-style-type: none"> NCE secretariat with the assistance of NSERC finance and secretariat divisions



eRiskScorecard 

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RISK ANALYSIS WORKSHEET

Objectives / Outcomes:
 Delivery of short term internships (four to six months) by not for profit organizations, including existing Networks of Centres of Excellence, fourth-pillar organizations, and consortia of firms, universities and/or colleges, to increase the number of graduates with both research and user sector skills, enhance the use of S&T graduates by the private sector, create more job opportunities for S&T graduates, and increase and sustain business S&T activities and long term university-private sector collaboration

Risk Area (R): R3 - Eligibility – Recipient organizations may have a range of experience with assessing eligibility (including ensuring continuing eligibility) from little experience to good experience

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"> The recipient organizations may have a range of experience with assessing eligibility from little experience to good experience Continuing eligibility - what if the students leave shortly after starting, withdrawal from the program of study and how the recipient organizations will monitor and respond (how will they know). <p>Impacts:</p> <ul style="list-style-type: none"> Ineligible institution or students may be selected some delays in processing the internship applications 	<ul style="list-style-type: none"> It will be specified in the affiliate agreement that institutions will have the obligation to inform the manager of the FPO any changes of student status Available list of eligible institutions updated regularly will be shared Experience of NCE/agency staff and institution to flag issues on timely basis. Existing experience of tracking education status by universities <p>Efficacy (1-5) = 4</p>	<p style="text-align: center;">2</p>	<ul style="list-style-type: none"> Ensure a training – information session is held to clarify issues related to eligibility 	<ul style="list-style-type: none"> NCE Secretariat program lead



eRiskScorecard

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RISK ANALYSIS WORKSHEET

Objectives / Outcomes:

Delivery of short term internships (four to six months) by not for profit organizations, including existing Networks of Centres of Excellence, fourth-pillar organizations, and consortia of firms, universities and/or colleges, to increase the number of graduates with both research and user sector skills, enhance the use of S&T graduates by the private sector, create more job opportunities for S&T graduates, and increase and sustain business S&T activities and long term university-private sector collaboration

Risk Area (R): R4 - Internal Delivery Team Capacity - IRDI's internal delivery team's efforts are spread across other new programs (CECR and Business-Led) and on-going NCE program (around 20 existing networks).

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"> The challenge for the NCE team to deliver IRDI program at the same time as many other new programs (CECR, Business-Led, new NCEs) and on-going NCE program (around 20 existing networks) Limitation in staff in support groups of granting agencies (e.g. finance, evaluation, HR) Matrix management approach results in all program managers provide help in other programs, which could create high overload Growth of the program has meant more on-going management meetings and work plan meetings and revision of tools and structures, which dilutes the time actually available to deliver programs. <p>Impacts:</p> <ul style="list-style-type: none"> It may reduce ability of staff to monitor IRDI effectively High workload may lower productivity and lead to staff tension Under achievement of overall objectives 	<ul style="list-style-type: none"> Dedicated and experienced staff in place Additional support staff has been hired Consultant hired to analyze the team structure Regular program managers meetings Possibility of compensated overtime <p>Efficacy (1-5) = 3</p>	<p>5</p>	<ul style="list-style-type: none"> Timely review and response of consultant report on re-organisation of team-structure. Increase communication with NSERC/NCE management maintain good communication between program leads 	<ul style="list-style-type: none"> associate VP of NCE Secretariat Associate VP of NCE Secretariat Program leads

