



Industry  
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**Evaluation of Industry Canada's  
Support to the Innovation and Innovation  
Commercialization Initiative of the Industrial  
Research and Development Institute**

**Final Report**

**Audit and Evaluation Branch**

**August 19, 2004**

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## **LIST OF ACRONYMS**

IRAP	The Industrial Research Assistance Program of the National Research Council
IRDI	Industrial Research and Development Institute
ITA	Industrial Technology Advisor (program delivery staff for the IRAP program)
NRC	The National Research Council
QA	Quality Assurance
R&D	Research and Development
SME	Small and medium-sized enterprises

## 1.0 EXECUTIVE SUMMARY

In 2000, Industry Canada agreed to provide a financial contribution of \$3 million to the Innovation and Innovation Commercialization Initiative of the Industrial Research and Development Institute (IRDI) over a three-year period in order to enable the Institute to expand its contract research and development services to small and medium-sized enterprises (SMEs). Subsequently, as a result of deteriorating economic conditions which limited the rate of expansion of these services, the Agreement was extended by one year.

Industry Canada engaged BearingPoint to carry out an evaluation study of its support to IRDI. The objectives of the study were to:

- (a) Document what has been accomplished as a result of the Industry Canada contribution.
- (b) Describe the expected future benefits arising from these accomplishments (including IRDI's alliance with Georgian College).
- (c) Document the lessons learned from IRDI's experience.

BearingPoint's approach to conducting the study included a document review, discussions with Industry Canada officials, and interviews with IRDI officials, Georgian College officials, and SMEs.

An overriding finding of the evaluation was that the Industry Canada contribution enabled IRDI to continue its services to SMEs until the relationship with Georgian College could be established.

The evaluation examined five issues:

1. How has IRDI used the Industry Canada contribution – what activities have been supported by these funds, and what outputs have been produced?
2. What valuable services have been provided to SMEs as a result of the Industry Canada Agreement?
3. Given IRDI's current situation and plans, what services can be expected to be provided to SMEs in the future?
4. What were the key factors that enabled IRDI to enter into the arrangement with Georgian College?
5. What are the expected benefits from IRDI's arrangement with Georgian College?

The starting point for identifying the issues outlined above was the IRDI Evaluation Framework study carried out by BearingPoint in the Spring of 2002.<sup>1</sup> However, there have been significant changes in IRDI's situation since that study was prepared, particularly the arrangement that has been made with Georgian College. As a result of these changes, the issues outlined in the framework study were modified accordingly.

In examining the first of the issues, IRDI projections were compared to actual achievements in the following areas:

- Marketing activities
- Education and training programs
- Capacity development
- R&D services to SMEs.

With the exception of the mass mailing marketing campaign, the marketing activities were of high quality and well executed. Education and training was less successful. This became less of a focus for IRDI during the latter period of the contribution, as they chose to concentrate on project activities that provided higher revenue potential. Training is still seen as a very important investment by IRDI officials, however, as it provides companies with increased awareness of new processes and technologies. The agreement with Georgian College should enable IRDI to expand its education and training activities. The capacity development initiative suffered because the majority of the investment was used to support SME services, and most of the objectives in this area were not achieved (although it should be noted that there was reported to be overcapacity in staff at the beginning of the contribution period). With regards to R&D services, some of the objectives in this area were achieved, while others fell short. In particular, while IRDI has been successful in expanding its SME client base, revenues and profits from this component of their operations have fallen short of forecasts.

Regarding evaluation issue #2, the Industry Canada contribution enabled IRDI to provide valuable services to SMEs, such as product feasibility analyses and concept design. It was estimated by IRDI that approximately one-third of their SME clients could not have been served in the absence of the contribution. The SME clients interviewed were very happy with IRDI's services and would consider using IRDI services again in the future.

Regarding future services to SMEs, IRDI is expected to continue to provide the same sorts of contract R&D services (e.g., development of innovative manufacturing processes, improvement of designs for parts and tools, identification of cost savings), but this will be done in a more focussed way. IRDI is also expected to increase its course offerings to SMEs.

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<sup>1</sup> *Evaluation Framework for the Innovation and Innovation Commercialization Initiative of the Industrial Research and Development Institute*, KPMG Consulting (now BearingPoint), June, 2002.

The Industry Canada contribution was an important factor in effecting the arrangement with Georgian College:

- It enabled IRDI to continue the SME component of its business, so that services to SMEs can become a potentially viable part of the joint IRDI-Georgian College operation.
- It made IRDI more financially viable and attractive.
- It enabled Georgian College to gain a better understanding of IRDI's strengths and weaknesses, as a result of being able to observe IRDI's full operations over a significant period of time.

Finally, IRDI's arrangement with Georgian College created synergies between the two institutions, because of the college's focus on *applied* education and training and IRDI's focus on *applied* research and development. IRDI will obtain greater financial stability and visibility, as well as significantly increased potential to offer education and training services. Georgian College will obtain access to commercial-scale infrastructure and technical staff at a satellite campus in the Midland area, a broad base of applied research expertise, and opportunities for applied training experiences for students.

## 2.0 BACKGROUND

The mission of the Industrial Research and Development Institute (IRDI) is to *increase the competitiveness of Canadian manufacturing through the development, application of, and training on new and improved technologies for part manufacturing and design in Canada*. Since its inception in 1992, the Institute has provided a wide range of research and development services and associated education and training services to Canadian industry.

Among R&D service providers to the manufacturing industry, particularly the tool, die, and mold industry, IRDI has a comparatively high rate of recognition and usage. In a recent survey<sup>2</sup> of the industry sectors served by IRDI, the rate of recognition of IRDI was much higher than for other R&D service providers – for example, 16% recognition for IRDI compared with 2% for the National Research Council and 4% for Materials and Manufacturing Ontario.

The Institute provides contract R&D services to both small and medium-sized enterprises (SMEs) and larger firms. In fact, eighty percent of the Institute's membership accounts are with SMEs. However, while SMEs account for the bulk of the Institute's membership accounts, it is the smaller client base of large companies which account for 80% of its R&D contract revenue. SME contracts contribute little to overhead costs, but up until about five years ago IRDI was able to provide services to these clients with the help of significant private sector financial support. However, this support ceased at that time, and the Institute was placed in a situation where it had to reconsider its role as contract R&D service supplier for its SME client base. In order to continue to provide contract R&D services for SME clients, IRDI submitted a business plan to Industry Canada in order to enhance its services to SME clients as an option to dropping SME services all together.

Industry Canada, which views the importance of investment by the small business sector as being crucial to the Canadian economy, particularly in terms of job creation, believed there was a need for the Institute to maintain its role as contract R&D service provider to SMEs. In August 2000, Industry Canada agreed to provide a financial contribution to IRDI in support of its Innovation and Innovation Commercialization Initiative for SMEs. The primary goals of the Innovation and Innovation Commercialization Initiative project for SMEs were to:

- Contribute to the development of an innovation infrastructure at IRDI offered through an expanded service capability (expected to result from expanding the in-house design team); and
- Provide targeted assistance to innovators and innovative SMEs, so that they will more effectively apply the latest technologies and manufacturing practices and techniques in developing and commercialising new products and processes.

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<sup>2</sup> *Driving Innovation in Manufacturing: A Response to Canada's Innovation Strategy*, survey carried out by the Canadian Association of Mold Makers, Canadian Die Casters Association, Canadian Plastics Industry Association, and Canadian Tooling and Machining Association, August, 2002.

The Initiative involved an increased level of marketing to SMEs together with the provision of a higher level of services to SMEs.

Industry Canada's contribution for this Initiative was \$3 million. The period of this contribution was initially planned to be three years but this period was subsequently extended to four years.

The Industry Canada contribution was intended to allow IRDI to expand its current SME client base. In marketing its services to SMEs and in proving its value to this client base, IRDI expected to expand its repeat business; this was expected to ultimately contribute to increased margins and an improved ability to break even on this segment of the business and operations overall. In addition, as the SME client base expanded, the costs per SME client were projected to diminish as a result of economies of scale.

Industry Canada's contribution was intended to serve two main purposes:

- To assist with the costs of marketing to SMEs.
- To assist IRDI in providing services to SMEs until the IRDI SME client base expanded to the point where IRDI breaks even on its SME services.

As noted above, the amendment to the IRDI contract provided for a one-year extension of the project completion date to March 31, 2004. The amendment reflected IRDI's lower-than-planned level of activity for its SME Program commencing early 2001 and extending throughout the year 2002. IRDI attributed the reduced level of activity to the general broad-based weakening of the Canadian economy, which resulted in many companies scaling back and often completely cancelling their planned expenditures for contract R&D services.

The Industry Canada contribution should be seen in the context of the following:

- the need for increased international competitiveness by Canadian industry through better technology application and product/process development;
- the focus of the federal government since the mid-1990s on funding academic research, with less attention given to the support of the practical, problem-solving needs of traditional industries; and
- the lack of a broad knowledge base, facilities, and equipment that can be used by small and medium-sized enterprises for research, development, testing, and pre-commercialization activities.

IRDI is an example of the type of organization that addresses these needs. Industrial institutes and laboratories such as IRDI are more common and more accepted in some of the other G7 countries, where they function as an important part of the industrial fabric of the country. One of the envisioned outcomes of the Industry Canada contribution was a higher level of recognition and acceptance of IRDI by Canadian industry.



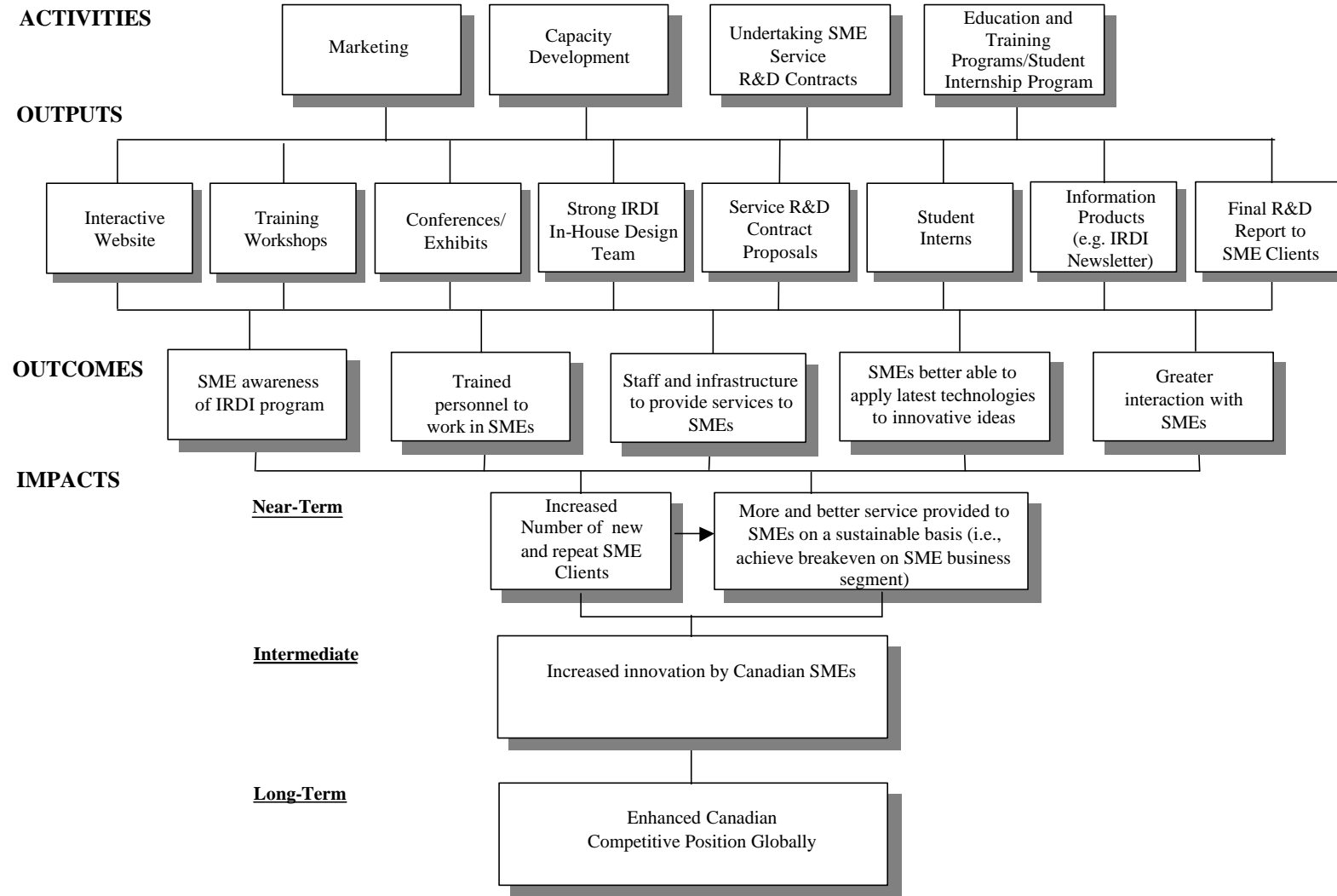
## 2.1 Logic Model

The logic model for the IRDI Innovation and Innovation Commercialization Initiative is presented in the following exhibit. The terms along the left-hand side of the exhibit are defined as follows:

- Activities: the main work tasks carried out by IRDI personnel.
- Outputs: goods and services which are produced by IRDI personnel and distributed outside the program.
- Outcomes: things which are done or experienced by others (i.e., IRDI clients) as a result of the program outputs.
- Impacts: what is supposed to happen in the longer term as a result of the program outcomes and other factors outside of the program.

The exhibit illustrates the main categories of activities, outputs, outcomes and impacts of the program and the logical relationships between these activities/outputs/outcomes/impacts – i.e., how the activities lead to the outputs which lead to the outcomes which will contribute to the impacts.

**Logic Model - IRDI**



As shown in the logic model, there were planned to be four main categories of activities carried out under the Innovation and Innovation Commercialization Initiative for SMEs:

1. Marketing activities focused on expanding the SME client base (organizing conferences, developing an interactive website, mailing campaigns, exhibiting at trade shows, etc.)
2. Capacity development (strengthening IRDI's infrastructure and in-house design team).
3. Undertaking SME service R&D contracts.
4. Education and Training Programs (technology courses, seminars and workshops, student interns). Providing education and training is viewed, to some extent, as a marketing effort to get SMEs acquainted with IRDI facilities and services.

## **2.2 Study Objectives**

The objectives of this study were to:

- (a) Document what has been accomplished as a result of the Industry Canada contribution.
- (b) Describe the expected future benefits arising from these accomplishments (including IRDI's alliance with Georgian College).
- (c) Document the lessons learned from IRDI's experience.

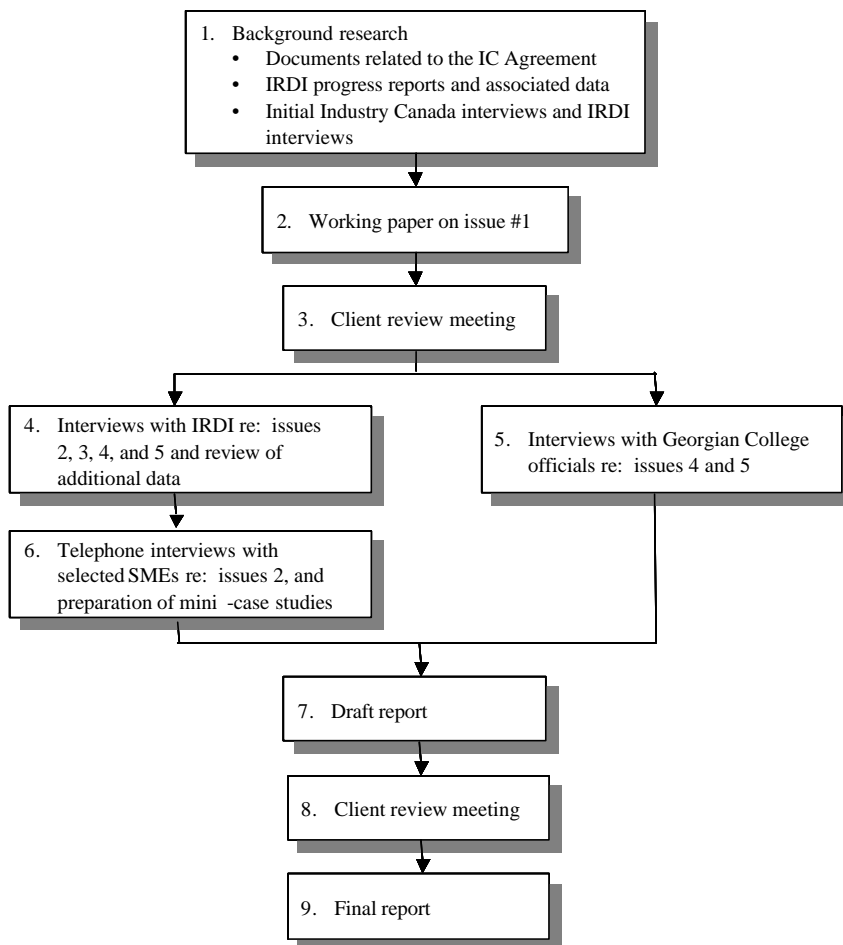
By way of background, one of IRDI's initiatives during the four-year period of the Industry Canada contribution involved the development of a formal strategic alliance with Georgian College. This alliance is now in place, and it has placed the Institute on a sounder financial footing. The alliance appears to be a promising arrangement for both IRDI and Georgian College.

### 3.0 EVALUATION APPROACH & METHODOLOGY

The figure below illustrates the evaluation approach and methodology used for carrying out the IRDI evaluation study. The figure is largely self-explanatory, but we elaborate on two points:

- In Activity 1, we reviewed all the available information on the Industry Canada Agreement and the activities that have been carried out under the Agreement. We prepared a paper (Activity 2) summarizing this information and we presented it to the Steering Committee before proceeding with the remainder of the work plan. This was to ensure that we had a complete and accurate understanding of how the Agreement operated as a base for the analysis of the subsequent issues.
- For the subsequent Activities (2, 3, 4 and 5), we conducted interviews with IRDI officials, Georgian College officials, and a selection of SME clients of IRDI.

**Figure 1.0 – Evaluation Approach and Methodology**



## 4.0 EVALUATION ISSUES

### 4.1 Issue #1: How has IRDI used the Industry Canada contribution – what activities have been supported by these funds, and what outputs have been produced?

In order to answer the above question, we will look at what IRDI projected and compare it with what they achieved in the following four areas:

- Marketing activities
- Education and training programs
- Capacity development
- R&D services to SMEs.

#### 4.1.1 Marketing Activities

Marketing is conducted for the purpose of increasing awareness of a company's capabilities and service offerings, which in turn results in an increased number of service contracts and revenue growth. The challenge in this particular case is that it has proved difficult in the past to market the types of services provided by IRDI in Canada.<sup>3</sup> A portion of the Industry Canada contribution was intended to enhance IRDI's marketing activities to ultimately expand the SME client base.

##### Projections:

The following activities were projected at the initiation of the Agreement:

- Organizing and participating in conferences and trade shows.
- Conducting seminars and training sessions for SMEs.
- Mail-outs of various types.
- Developing an interactive website.
- Hiring technical sales representatives.

The expected output to these activities was an increased visibility of the SME program.

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<sup>3</sup> This could be because of lack of awareness by industry of the potential benefits, reluctance of Canadian companies to use outside help, a "branch plant mentality" in Canadian industry, and other similar "cultural" reasons.

Achievements/ Findings:

IRDI participated at exhibitions and conferences, such as the Canadian Plastics Tradeshow 2000-2001, Communitech, the Medical Industry/ Medical Research Forum, and CPIA show (2003). Furthermore, they are scheduled to participate in Numisheet 2005. They have presented papers at sponsored events, such as events organized by Economic Development Departments in Southwestern and Central Ontario. They have become a member of organizations and organizing committees related to the industry, such as AOMM, MATD, and Tech-Med 2002, and the international committee, NADDRG. In addition, they will be joining the Auto21 Consortium this year.

IRDI is becoming more involved with member companies, such as inviting them to AGMs, giving them plant tours, creating a Membership Benefits Plan<sup>4</sup>, and promoting and providing workshops for SMEs.

Targeted mailings were sent out monthly over the past three years with follow-up, which included training course solicitation and follow-up, as well as targeted newsletters.

IRDI has developed and is maintaining an informative and easy to navigate website that showcases their success stories and capabilities.

In fiscal year 2001, IRDI hired two technical sales representatives to assist in business development and to proactively liaise with SME clients.

As a result of these activities, IRDI increased the visibility of its SME program.

Results/ Conclusions:

On a positive note, IRDI has participated heavily in trade shows, conferences, and committees. Their Membership Benefits Plan is an innovative idea to retain SME clientele. Their web site is high quality and informative. IRDI is currently in the process of creating a Strategic Marketing Plan with Georgian College.

On the negative side, the response rates for targeted mailings and follow-ups were low, especially for the postcard promotions. It appears that these may have been discontinued in more recent years, presumably because the output did not warrant the effort (see Chart 1.0).

The short-term 'resignation' of the marketing manager may have temporarily affected marketing efforts/ strategies for the three-month absence period. Good SME relations with the marketing manager are seen as very valuable to IRDI. IRDI's Chief Executive Officer also resigned during the contribution period, and this probably also negatively affected the Institute's marketing efforts.

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<sup>4</sup> The objective of the Membership Benefits Plan is to increase the perceived value of membership with IRDI and to gain greater exposure to member companies (customers and active SMEs). Benefits offered to companies who become members of the plan, include such things as free trials and consulting days in their area of interest (e.g., hydroforming).

**Chart 1.0** – Targeted mailings/ follow-up responses per fiscal year (approx.):

Fiscal Year	Type of Targeted Mailing/ Follow-up	Number of Accounts Contacted	Number of Positive Responses	Positive Response Rate
2000-2001	Postcard mailing promotions with follow-up call	1152	145	13%
	Newsletters	6500	unknown	unknown
2001-2002	Postcard mailing promotions with follow-up call	981	101	10%
	Training course follow-up	417	64	15%
	Phone calls/ faxes to solicit training course attendees	2500	unknown	unknown
	Targeted newsletters	351	26	7%
2002-2003	unknown	unknown	unknown	unknown
2003-2004	Quarterly newsletter	2500	unknown	unknown

#### 4.1.2 Education and Training Programs

IRDI provides both standard training courses, as well as customized training programs to its customers that are specific to their needs. Providing education and training courses is also a key marketing effort to acquaint SMEs with IRDI facilities and services.

Projections:

The following activities were projected at the initiation of the Agreement:

- Provide training on latest technologies.
- Focus intern use on SME projects.

The following outputs were projected at the initiation of the Agreement:

- 20% increase in SME participation in training seminars (an increase of more than 275 per year).
- Student interns would increase marginally but the focus on SME projects would increase from 40% to 75% (12 of 16 interns) – it was planned that 6 to 10 students would be trained through the internship program.

Achievements/ Findings:

Training on the latest technologies was achieved through seminars and customized training courses provided to SME clients (e.g., DDM Plastics received a tailored training course on statistical process control for injection moulding and quality control). Although a number of seminars were conducted over

the past 3 years, there were many months where there were no seminars conducted, and the occurrence of seminars decreased significantly over the years, as illustrated below:

- 2000-2001: 26 seminars conducted.
- 2001-2002: 10 seminars conducted.
- 2002-2003: 2 seminars conducted + 1 workshop at a conference.
- 2003-2004 (YTD): 1 seminar conducted.

We were told that seminar activity is expected to increase with more marketing exposure through Georgian's course calendars.

Intern use did not appear to be more focussed on SME projects, as the number of student internships was consistently reduced over the past 3 years and the actual numbers for interns diverged further from the forecasts (see Chart 2.0). The number of interns is expected to increase as a result of the agreement with Georgian College<sup>5</sup>.

**Chart 2.0 - Number of student interns per fiscal year (forecast vs. actual):**

Fiscal year	Forecast	Actual
2000-2001	2	3
2001-2002	4	1
2002-2003	6	0
2003-2004 {YTD}	8 {1}	{0}

Actual outputs fell short of expectations. The projected 20% increase in SME participation in training seminars was not achieved, which could be due to a number of factors, including insufficient or inappropriate marketing of seminars and the fact that very few seminars were being held (see Chart 3.0). As shown in chart 2.0, student interns diminished to non-existent, and could thus not be used for any project, let alone SME projects. Some future talent was developed through internships in the earlier years, seminars, workshops, and the alliance with Georgian College.

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<sup>5</sup> The August 2003, progress report on the IRDI Agreement with Industry Canada states that "IRDI and Georgian College are working together to formulate a marketing strategy for IRDI that will involve education and training, apprenticeships and applied research".



**Chart 3.0 – SME participation in seminars per fiscal year (forecast vs. actual):**

Fiscal year	Forecast	Actual	Actual as a % of Forecast
2000-2001	125	70	56%
2001-2002	175	34	19%
2002-2003	225	5	2%
2003-2004 {YTD}	275 {20}	{3}	{15%}

Results/ Conclusions:

On a positive note, the alliance with Georgian College is an excellent opportunity to increase the number of interns available for focus on SME projects and to keep courses current. (A high enrolment is needed to justify the cost of continually updating courses). The tailored/customized training courses are an excellent way to educate existing SME clients and to recruit new SME clients. Finally, IRDI has continued efforts to develop a workshop for Injection Moulding companies for Fingerprinting of Plastic Resins as a QA Tool.

On the negative side, the large decrease in SME participation in seminars could be a result of insufficient marketing or ineffective marketing techniques, as well as the reduction in the number of seminars being offered.

**4.1.3 Capacity Development**

A company that intends to grow its customer base must correspondingly increase its capacity in order to sustain an increase in service. Capacity development, in a manufacturing context, includes increasing the base of qualified personnel, improving internal practices and processes, as well as investing in equipment and technology in order to progress towards sustainable development.

Projections:

The following activities were projected at the initiation of the Agreement:

- Investment in technical infrastructure.
- Hiring new/ additional staff.

The expected output to these activities was an increased potential to meet higher capacity requirements for an expanded base of SME clients.

Achievements/ Findings:

IRDI's investment in technical infrastructure included the creation of technical specifications for computer equipment and software during the period of April-July of 2000, as well as the purchase of 5 high-end computer desktop units to support Technology and Design projects in the August-September 2000 timeframe.

In fiscal year 2000-2001, job descriptions were created for four new positions. In the August-September 2000 timeframe, there were 2 new hires in Technology and Design Project Support, as well as a new hire to fill the position of a contract Telemarketer. In October of 2000, a Technology Managers in Plastics and a Senior Lab Analyst were hired. In December of 2000, a Senior Part Designer was hired in Plastics. In March of 2001 and April of 2001, a Technical Sales Representative and a Technical Sales Representative - Business Development Manager for Medical Applications were hired, respectively.

Since limited investments were made in capacity development, IRDI's capacity was not significantly increased, thus the increased potential to meet higher capacity requirements for an expanded base of SME clients was not achieved.

Results/ Conclusions:

On a positive note, job descriptions and recruiting plans were created, and hardware and software specifications were developed. Furthermore, the alliance with Georgian College provided easy access to resources (both equipment/ hardware resources and people resources).

On the negative side, following the first year efforts, subsequent efforts for hiring additional staff and to purchase additional equipment were not made. There was a minimal investments made in the technical infrastructure and few resources were hired during this period. Note, however, that relative to the demand, IRDI was reported to be in a staff overcapacity position at the beginning of this period, so additional hiring was not warranted.

#### **4.1.4 R&D Services to SMEs**

As previously mentioned, at the time of the Agreement with Industry Canada, revenues from the provision of services to SMEs were not sufficient to cover expenditures. Consequently, a portion of the Industry Canada contribution was intended to underwrite IRDI's research and development services to SMEs. These services include proposal development, actual research and development work, as well as seminar and training session work.

Projections:

The projected activity was continued service provision to SMEs (while revenue and expense gaps diminish as a result of higher volumes due to marketing activities, seminars and workshops, and capacity development).

The following outputs were projected at the initiation of the Agreement:

- Increased SME innovation development proposals from 300 to 1,300 a year (more than 500 were projected to develop into commercially viable innovative products or processes).
- Focus on SME projects was projected to increase from 40% to 75% of total IRDI projects.
- A \$750K to \$2M growth of service revenue from SMEs was projected.

Achievements/ Findings:

Services to SMEs continued in the form of proposal development, seminars, training programs, workshops, as well as contract R&D.

Proposal development was consistently under forecast (see Chart 4.0) and decreased substantially throughout the second and third fiscal-year period – progress reports show, however, at least 1 or 2 major proposal submissions occurring each month.

**Chart 4.0 – Proposals to SMEs per fiscal year (forecast vs. actual):**

<b>Fiscal year</b>	<b>Forecast</b>	<b>Actual</b>	<b>Actual as a % of Forecast</b>
<b>2000-2001</b>	300	255	85%
<b>2001-2002</b>	420	203	48%
<b>2002-2003</b>	600	174	29%
<b>2003-2004 {YTD}</b>	800 {128}	{81}	{63%}

The number of SME service contracts decreased substantially throughout the second and third fiscal-year period (see Chart 5.0) – the last fiscal-year period forecast seems quite low, as the YTD period is past the semi-annual mark, yet the YTD forecast is less than 25% of the entire forecast.

**Chart 5.0 – Service Contracts to SMEs per fiscal year (forecast vs. actual):**

Fiscal year	Forecast	Actual	Actual as a % of Forecast
2000-2001	200	232	116%
2001-2002	280	195	70%
2002-2003	360	150	42%
2003-2004 {YTD}	450 {102}	{102}	{100%}

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The number of SME customers and active SME customers met or exceeded forecasts consistently over the 3 ½ year period (see Chart 6.0 and Chart 7.0).

**Chart 6.0 – Number of SME Customers per fiscal year (forecast vs. actual):**

Fiscal year	Forecast	Actual	Actual as a % of Forecast
2000-2001	150	191	127%
2001-2002	175	245	140%
2002-2003	200	281	141%
2003-2004 {YTD}	225 {303}	{297}	{98%}

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**Chart 7.0 – Number of Active SMEs per fiscal year (forecast vs. actual):**

Fiscal year	Forecast	Actual	Actual as a % of Forecast
2000-2001	100	116	116%
2001-2002	125	163	130%
2002-2003	150	187	125%
2003-2004 {YTD}	175 {206}	{198}	{96%}

Although both the number of total projects and the number of SME projects decreased from the baseline each subsequent year, the percentage of SME projects met or exceeded its target of 75% of total projects (see Chart 8.0).

<sup>6</sup> Forecast is identical to Actual and therefore, does not appear correct.

<sup>7</sup> SME Customers includes recipients of proposals and seminar attendees, as well as those involved in service contracts (i.e., Active SMEs)..

**Chart 8.0 – Total Projects vs SME Projects per fiscal year**

Fiscal year	Total Projects	SME Projects	% of SME Projects to Total Projects
<b>1999-2000 (Baseline)</b>	<b>335</b>	<b>204</b>	<b>61%</b>
<b>2000-2001</b>	181	142	78%
<b>2001-2002</b>	141	105	74%
<b>2002-2003</b>	126	97	76%
<b>2003-2004 {YTD}</b>	{86}	{69}	{80%}

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With the exception of the first fiscal year (not including the baseline), revenues fell short of forecast each year (see Chart 9.0). As a result, the \$750K to \$2M expected growth in SME service revenue was not attained.

**Chart 9.0 – SME Revenue per fiscal year (forecast vs. actual):**

Fiscal year	Forecast	Actual	Actual as a % of Forecast
<b>1999-2000 (Baseline)</b>	<b>1150</b>	<b>900</b>	<b>78%</b>
<b>2000-2001</b>	750	906	121%
<b>2001-2002</b>	1250	491	39%
<b>2002-2003</b>	1750	656	37%
<b>2003-2004 {YTD}</b>	{420}	{337}	{80%}

Costs have continued to exceed revenues in each fiscal year, yet the Gross Margin appears to be improving slightly since its significant decrease in FY 01-02 (see Chart 10.0).

**Chart 10.0 – SME Revenue, Project Costs, and Gross Margin per fiscal year:**

\$'000	Forecast FY'99-00 Baseline	Actual FY'99-00 Baseline	Forecast FY'00-01	Actual FY'00-01	Forecast FY'01-02	Actual FY'01-02	Forecast FY'02-03	Actual FY'02-03	Forecast FY'03-04	Actual FY'03-04
<b>SME Revenue</b>	1150	900	750	906	1250	491	1750	656	420	337
<b>Project Costs</b>	737	659	890	1092	1317	1008	1542	1048	572	509
<b>Gross margin</b>	413	241	(140)	(186)	(67)	(517)	208	(392)	(152)	(172)
<b>% to Revenue</b>	35.9%	26.8%	-18.7%	-20.5%	-5.4%	-105.3%	11.9%	-59.8%	-36.1%	-51.0%

<sup>8</sup> YTD figures are as at December 31<sup>st</sup>, 2003.

Results/ Conclusions:

On a positive note, although the actual number of proposals and service contracts have decreased over the years, more proposals are being won as a percentage of proposals being submitted. This reduces the expenses incurred in writing 'lost' proposals. The actual number of SME customers and active customers has increased, and the goal to increase the ratio of SME projects to total projects was attained.

On the negative side, the number of service contracts decreased while the number of active SMEs increased. This implies less contracts per active SME. With the exception of the baseline year<sup>5</sup>, costs continue to exceed revenues, which has resulted in continual losses in this part of the business (SMEs), although the gross margin appears to be improving gradually. Revenues have continued to fall short of forecasts, with the exception of the first fiscal year, even though the number of active customers has increased. This implies fewer projects per customer and/or smaller dollar value projects.

Chart 11.0 (taken from the Industrial Research and Development: 2003 Intentions report by Statistics Canada) provides an overview of Canadian industrial R&D spending over a 20-year period. These data do not precisely reflect expenditures on contract R&D by potential IRDI clients, because they include:

- in-house R&D spending vs. outsourced spending,
- all industries versus manufacturing only, and
- all sizes of companies vs. SMEs only.

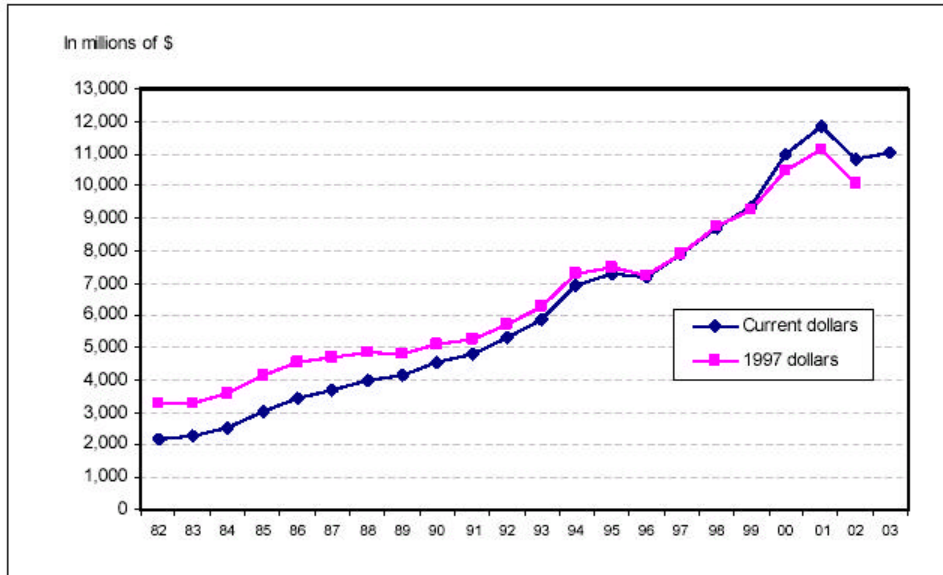
However, these data can still be used to assess general R&D spending trends during the period of the Industry Canada contribution.

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<sup>5</sup> The drop in profitability from the baseline year to subsequent year losses can be attributed to two factors:

- (1) the economic slowdown following 9-11 (please see Chart 11.0 on next page)
- (2) the loss of a key client (revenues of approx. \$50K/month) towards the end of 1999, due to staff turnover and the creation of a spin-off company

**Chart 11.0 – Current intramural R&D expenditures, 1982 to 2003**



As demonstrated in the chart, there was a significant decline in R&D spending spanning the 2001-2002 period, which is in-line with the assumption that the economic slowdown following 9-11 contributed to IRDI's 2001-2002 downturn in profitability.

#### 4.1.5 Summary of Issue #1

The following summary rates the categories of activities in terms of effort made, how successful the efforts were in achieving the forecasted projections, and how successful the efforts were in achieving the project objectives. The summary also indicates, at a very high level, an estimate of the percentage of the Industry Canada contribution allocated to each area.

- Marketing activities

Each of the project objectives was achieved in this area. Approximately 25% of the Industry Canada contribution was allocated to marketing activities.

- Education and training programs

Some of the project objectives were achieved, while others fell short. Approximately 15% of the Industry Canada contribution was allocated to education and training programs.

- Capacity development

Most of the project objectives in this area fell short of projections. Approximately 10% of the Industry Canada contribution was allocated to capacity development.

- R&D services to SMEs

Some of the project objectives were achieved, while others fell short. Approximately 50% of the Industry Canada contribution was allocated to underwriting R&D contract services to SMEs.

#### **4.2 Issue #2: What valuable services have been provided to SMEs as a result of the Industry Canada Agreement?**

In order to answer this question, we will look at interview results from IRDI officials, as well as from the SME interviews. Four mini case studies were prepared on the basis of the SME interviews.

##### **4.2.1 Interview Results**

###### IRDI Interview Results

Of the 300 SME clients served by IRDI, it is estimated that approximately one-third of these would not have been able to be served in the absence of the contribution. In other words, if the Industry Canada contribution had not been provided to IRDI, IRDI would have had to be more selective in accepting SME clients. Clients unable to pay the full costs of services – estimated to be approximately one-third of the clients who were actually served – would not have been accepted. Note that this is the opinion of IRDI staff. Prior to receiving the Industry Canada contribution, IRDI's Board of Directors had decided to stop serving SMEs altogether and focus on large accounts in order to ensure the survival of IRDI. So it is possible that, in the absence of the contribution, very few of these SME clients would have been served.

The contribution enabled valuable services, such as product feasibility and concept design, to continue to be provided to SMEs. The contribution also enabled IRDI to provide SMEs with the additional level of support that they require beyond the scope of project proposal. SMEs tend to have a more limited technical ability than do larger companies and often need additional assistance in order to implement the results of contract R&D.

###### SME Interview Results

The four SMEs interviewed were, on balance, content with IRDI services and expertise. The services provided to these SMEs included material analysis, plastics, conceptual designs, and prototype tooling. Each of the clients mentioned that they would consider future work with IRDI.

Improved marketing, especially through "information funnels" such as Industry Canada and the National Research Council, was recommended by some of the SMEs. It was also mentioned that IRDI must maintain a strong customer focus in order to be successful in their service delivery to SMEs.

Education and training courses need more promotion, as the SMEs interviewed were not aware of IRDI's offerings. Most seemed interested in learning more about the courses.



#### 4.2.2 SME Case Studies

As a result of the interviews conducted with SMEs, mini-case studies have been prepared for the following companies:

- Smart Technologies.
- Garrison Guitars.
- Eco Lure.
- Cape Support Services.

<b>Company Name:</b>	<b>Smart Technologies</b>
<b>Company Overview:</b>	Designer and manufacturer of large computer driven displays used for meetings and education.
<b>Overview of project:</b>	IRDI was engaged to provide material analysis services in order to resolve a manufacturing and materials problem with a particular metal component.
<b>Positive comments:</b>	Very happy with IRDI services and analysis techniques. Investment is expected to remain consistent at \$10-20K a year and client remains loyal even through employment changes. Would not consider competitor companies as they do not possess the same range of knowledge and expertise.
<b>Suggestions for improvement:</b>	More time could be given to providing more recommendations. Recommend that IRDI target product development in their marketing efforts.

<b>Company Name:</b>	<b>Garrison Guitars</b>
<b>Company Overview:</b>	Designer and manufacturer of guitars.
<b>Overview of project:</b>	IRDI was engaged to assist in the development of a new concept for a high volume low cost acoustic guitar. IRDI developed a plastic resin that matched the acoustic properties of spruce. This reduced the part count of the guitar, as well as the assembly time.
<b>Positive comments:</b>	The research and design phases of the project went smoothly. IRDI is very good at research and design.
<b>Negative comments:</b>	Problems occurred after the design phase, including a delay in parts acquisition and some flaws in the tooling. "We would resort to a competitor for their expertise in design and manufacturing. IRDI is not an expert at implementation. Prior to some top management turnover, the 'customer-focus' aspect of IRDI was lacking. The new employees were much more 'customer-driven'."
<b>Suggestions for improvement:</b>	Customer focus could bring our business back. Should better promote education and training courses.

<b>Company Name:</b>	<b>Eco Lure</b>
<b>Company Overview:</b>	Designer and manufacturer of fishing lures.
<b>Overview of project:</b>	IRDI was engaged to develop a clear plastic fishing lure cover to protect it from damage and to magnify its colours to attract fish. The project involved design refinements, material selection, and a prototype tool.
<b>Positive comments:</b>	Efficient and executes work schedule accordingly and delivers product(s) on time. Saved us time and money. Will pursue subsequent phase with IRDI that will increase the client's investment. There are competitors to choose from but IRDI meets our needs, is price competitive, and has a high level of commitment.
<b>Suggestions for improvement:</b>	Phase one of the project was completed by another company. The second phase required a plastics manufacturer and an IC plastics expert recommended IRDI. If IC had referred IRDI earlier on in the project, IRDI could have done the full-scale project. IC should better promote IRDI services.

<b>Company Name:</b>	<b>Cape Support Services</b>
<b>Company Overview:</b>	Specializes in alarm systems installation, monitoring, and servicing, and oil tank gauge manufacturing.
<b>Overview of project:</b>	IRDI was engaged to develop a new concept for an oil storage tank level metering system. The project included conceptual design, material selection, prototype tooling, and a small quantity of pre-production parts.
<b>Positive comments:</b>	Extremely helpful and provided good guidance from the design stage to commercialisation. Considering their services for other projects. More positive and comfortable with IRDI than with competitor who had lower costs.
<b>Suggestions for improvement:</b>	Their marketing efforts do not stand out. They should focus more on marketing and should talk to information funnels (such as the NRC) to get their name out there.

### 4.3 Issue #3: Given IRDI's current situation and plans, what services can be expected to be provided to SMEs in the future?

In order to answer this question, we will summarize the interview results from IRDI officials and Georgian College officials.

#### IRDI Interview Results

IRDI plans to continue serving SMEs. Participants have seen growth in the SME market in the past three months and expect the growth to continue into the near future. Trade show participation in 2004 is expected to generate additional project activity.

Going forward, IRDI will focus efforts on projects with the most business potential and provide less 'hand-holding' activities to SMEs since this will no longer be financially viable in the absence of the Industry Canada contribution.

#### Georgian College Interview Results

Georgian College officials felt that IRDI should continue to focus on assisting clients in developing innovative manufacturing processes, improving designs of parts and tools, providing savings in material costs, and reducing processing times. Since only the most efficient and innovative SMEs will survive, IRDI must be able to respond to client needs more quickly, otherwise, they risk losing clients to their competitors and their clients risk going out of business. In order to better compete, IRDI must consider becoming more of a partner, particularly with consortia.

The College is in the process of updating IRDI's course offerings for innovation and quality purposes, thereby revitalizing this area of the business. Currently, the courses are perceived to be out of date and requiring improvement.

#### **4.4 Issue #4: What were the key factors that enabled IRDI to enter into the arrangement with Georgian College?**

In order to answer this question, we will summarize the interview results from IRDI officials and Georgian College officials.

##### IRDI Interview Results

IRDI wanted a college/ university partner to become eligible for government funding for universities and colleges, as well as industrial funding opportunities. Georgian's international expansion is expected to provide IRDI with the opportunity for international partnering and knowledge sharing. The arrangement would also give IRDI access to Georgian's strong marketing capabilities.

On the other side of the coin, IRDI's skilled trades people and equipment could be used by Georgian College to expand their course offerings. Georgian would also benefit from IRDI's abundant building and land space, as their campus was overcrowded. Because the Industry Canada contribution enabled IRDI to continue full operations, the contribution enabled Georgian to gain a better understanding of IRDI's strengths and weaknesses and to respond to IRDI's challenges by improving the delivery and content of the education and training programs.

##### Georgian College Interview Results

IRDI and Georgian partnered on a project approximately four years ago and as part of the arrangement, Georgian's President became a member of IRDI's Board of Directors. This relationship enabled Georgian and IRDI to become familiar with each other's capabilities, which ultimately led to the current arrangement.

The agreement resulted in IRDI donating its assets to Georgian College and, in turn, Georgian enabled IRDI to qualify for more federal and provincial funding.

IRDI chose a college versus a university because colleges focus on applied education and training and IRDI focuses on applied research and development. Thus, synergies could be more easily established between the two organizations.

Furthermore, the SME contribution from Industry Canada made IRDI financially more viable and attractive to Georgian. Industry Canada was involved throughout the entire negotiation process and the arrangement was structured to be acceptable under the Agreement.

**4.5 Issue #5: What are the expected benefits from IRDI's arrangement with Georgian College?**

In order to answer this question, we will summarize the interview results from IRDI officials and Georgian College officials in the following chart:

**Chart 12.0 – Benefits of arrangements to various stakeholders**

IRDI	Georgian College	Regional and National economy
<ul style="list-style-type: none"> <li>• Stability (financial)</li> <li>• Visibility</li> <li>• Greater education and training potential</li> <li>• Qualification for a wider selection of funding potentials</li> <li>• Apprenticeship training</li> </ul>	<ul style="list-style-type: none"> <li>• Commercial-scale equipment</li> <li>• Access to a research facility</li> <li>• Technical staff with expertise in R&amp;D activities</li> <li>• Potential for work-related experience for students</li> <li>• Potential to apply for funding to support consortium-based research</li> </ul>	<ul style="list-style-type: none"> <li>• Potential for continued contract R&amp;D services to SMEs</li> <li>• More local skilled trades training</li> <li>• International scope enables the supply of 'best practices' to industry</li> <li>• Apprentice training capacity – bridge between industry and academia</li> <li>• Synergies between IRDI and Georgian should enable improved services to industry, including automotive sector (southern Ontario region is heavily dependent on this sector) and biotechnology</li> </ul>

## 5.0 SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

The overriding finding of the evaluation was that the Industry Canada contribution enabled IRDI to continue its services to SMEs until the relationship with Georgian College could be established.

The arrangement with Georgian College should enable IRDI to become more financially stable, maintain and potentially expand their service offerings to SMEs, enhance their education and training potential, become eligible for additional government funding, and take advantage of the potential for international partnering and knowledge sharing. IRDI's future survival clearly depends heavily on getting broad industry involvement, and the arrangement with Georgian College should help them to achieve this.

### 5.2 Recommendations

Since Industry Canada's support for this program is winding down, the recommendations of this study are cast as lessons learned.

The following lessons learned were extracted from interviews, committee meetings, and analysis of various documents related to this Agreement and IRDI operations:

- Commercial R&D is very cyclical and, as such, there needs to be a cushion in place and flexibility in government assistance (e.g., in this case the re-profiling of the cash-flow from 3 to 4 years).
- Although IRDI has considerable experience working with SMEs, it would still be useful to carry out a marketing study specifically addressing the requirements of SMEs. In this manner, IRDI can place its focus where it is needed most.
- The most effective marketing is 'face-to-face', such as participation at tradeshow and conferences because it is more personalized and client issues can be discussed head-on.
- Another very important form of marketing is through credible information funnels, such as NRC-IRAP. Industry Technology Advisors (ITAs) can direct SMEs to organizations, such as IRDI, that have the facilities and expertise needed to carry out R&D activities. IRDI should do everything that it can to strengthen its ties with organizations such as NRC-IRAP (and we understand that IRDI is, in fact, making considerable efforts in this area).
- Direct mass mailing is a very ineffective form of marketing, because it is too generic, impersonal, and contact names are not always up-to-date. This form of marketing is therefore not recommended.
- SME companies generally require a bigger investment of IRDI time and effort, especially up-front. Too often, an SME will back out of the project once they understand the magnitude, which results in a loss of expenses incurred to date by IRDI. Cost recovery options should be considered for these situations.

- As SMEs must continue to be efficient and innovative in order to compete in the global marketplace, IRDI must also remain on the leading edge of manufacturing technologies in order to be able to respond quickly, flexibly, and effectively to client needs.

## Appendix A – Steering Committee



## Appendix A – Steering Committee

The steering committee for the evaluation was composed of the following members:

- Rob Conn, Industry Canada
- John Connell, Industry Canada
- Gerry Cooper, Industry Canada
- Colin Harper, Vice Chair (and former Chair), IRDI Board of Directors
- Matthew Parthun, H.L. Blachford
- Andy Sotak, Industry Canada

## Appendix B – Interviewees

## Appendix B – Interviewees

The following individuals were interviewed and/or consulted as part of the evaluation:

### Industry Canada

- Art Eager
- Andy Sotak

### IRDI

- Chris Berni
- Brian Evans
- Sharon Tippin

### Georgian College

- Colin Harper
- Steve Lichty
- Tom St. John

### SMEs

- Representative, Smart Technologies
- Representative, Garrison Guitars
- Representative, Eco Lure
- Representative, Cape Support Services

## Appendix C – Interview Guides

## Appendix C – Interview Guides

### IRDI officials

- 1. What valuable services have been provided to SMEs as a result of the Industry Canada Agreement?**
  - I. How many SME clients were served during the agreement period (2000-2004)?
  - II. How many of these clients would not have been able to be served in the absence of the grant?
  - III. What types of services were provided during the agreement period (2000-2004) that could otherwise not have been provided in the absence of the grant?
  - IV. Which types of marketing activities do you carry out? Which of these do you find most effective and why? Which of these do you find least effective and why?
  - V. How has your focus on education and training fluctuated over the past 3-4 years? If so, why do you think it has fluctuated?
  - VI. In terms of capacity building, what are your views on the investments that were made to expand the SME business over the period of the grant?
  
- 2. Given IRDI's current situation and plans, what services can be expected to be provided to SMEs in the future?**
  - I. Do you anticipate the SME market changing in the near future?
  - II. If so, how do you intend to accommodate that change? (i.e. change of services, change of focus, etc?)
  - III. What are your future/ longer term plans for the institute in terms of the SME market?
  - IV. What, if any, issues have surfaced as a result of the Industry Canada grant? (I.e., in terms of lessons learned)?
  
- 3. What were the key factors that enabled IRDI to enter into the arrangement with Georgian College?**
  - I. How did the arrangement evolve?
  - II. Who were the key players involved in the arrangement and what were their roles?
  - III. What factors facilitated/ enabled the arrangement?
  - IV. What was the role of the Industry Canada grant in the arrangement?

V. How did Industry Canada personnel facilitate the arrangement, if at all?

**4. What are the expected benefits from IRDI's arrangement with Georgian College?**

- I. What are the expected benefits to:
- a. IRDI
  - b. Georgian College
  - c. Regional and national economy

Include a description of the types of services that will be provided by each party as a result of the arrangement, as well as what is known regarding the possible impacts of these services (e.g., on cluster development or on strengthening the innovation system in general).

**Georgian College officials**

**1. Given IRDI's current situation and plans, what services can be expected to be provided to SMEs in the future?**

- I. Do you anticipate the SME market changing in the near future?
- II. If so, how do you intend to accommodate that change? (i.e. change of services, change of focus, etc?)
- III. What are your future/ longer term plans for the institute in terms of the SME market?
- IV. How has your training course attendance fluctuated over the past 3-4 years?

**2. What were the key factors that enabled IRDI to enter into the arrangement with Georgian College?**

- I. How did the arrangement evolve?
- II. Who were the key players involved in the arrangement and what were their roles?
- III. What factors facilitated/ enabled the arrangement?
- IV. What was the role of the Industry Canada grant in the arrangement?
- V. How did Industry Canada personnel facilitate the arrangement, if at all?

**3. What are the expected benefits from IRDI's arrangement with Georgian College?**

- I. What are the expected benefits to:
  - a. IRDI
  - b. Georgian College
  - c. Regional and national economy

Include a description of the types of services that will be provided by each party as a result of the arrangement, as well as what is known regarding the possible impacts of these services (e.g., on cluster development or on strengthening the innovation system in general).

**SMEs**

**1. What valuable services have been provided to SMEs as a result of the Industry Canada Agreement?**

- I. Please describe the usefulness of the services provided by IRDI.
- II. What are the impacts of having these services provided by IRDI?
- III. Are you satisfied with the manner in which IRDI provides these services?
- IV. Has your level of investment with IRDI increased or decreased over the past 3-4 years?
- V. Are there any other institutes or companies that you could turn to for conducting the types of services that IRDI provides to you?
- VI. If so, would you consider using their services? Why or why not?
- VII. How would you rate IRDI's marketing efforts? What first prompted you to do business with IRDI? How do you think IRDI could improve on its marketing efforts? How did you feel about its direct-mail marketing efforts?
- VIII. Do you feel that IRDI continues to offer an adequate selection of education and training courses to its customers? How could they improve on their course offerings?