IRAP performance report 1999-2000

BUILDING CAPACITY IN THE CANADIAN SYSTEM OF INNOVATION AUGUST 2000



National Research Conseil national Council Canada de recherches Canada





IRAP Performance Report 1999 - 2000

Building Capacity in the Canadian System of Innovation

August 2000

Prepared by Program Support Industrial Research Assistance Program National Research Council Canada

This report has been prepared by IRAP Program Support. For more information, call the National Office at (613) 993-1770.

An electronic version is also available on the IRAP internet site: http://nrcirap.com

Table of Contents

Exe	cuti	ve Su	nmary	iii						
1.0	Introduction									
2.0	Deployment of Resources									
	2.1	Organizational Structure								
	2.2	Huma	an Capital and Budget	4						
		2.2.1	Human resources	4						
		2.2.2	IRAP Reach and Expenditures	6						
	2.3	Portfolio of Innovation Services and Output								
		2.3.1	Innovation Advice and Assistance	8						
		2.3.2	Precommercialization Assistance	12						
		2.3.3	Canadian Technology Network (CTN)	14						
		2.3.4	Sustainable Development	16						
		2.3.5	Technology Sector Groups							
		2.3.6	Industrial Biotechnology Niches							
		2.3.7	Strategic Alliances	18						
3.0	Contribution to Strengthening the Canadian System of Innovation 21									
	3.1	Fostering Innovative Capabilities in SMEs								
	3.2	nal and National Innovation Systems								
			Regional performance							
	3.3 Linkages with Innovation Players									
			Network Member Organizations							
		3.3.2	0							
		3.3.3	Canadian Universities and Community and Technical Colleges	28						
		3.3.4	C ollaborations with Government Departments and Agencies	29						
		3.3.5	Collaboration with Other Government Departments, Agencies, Others	31						
		3.3.6	International Organizations - Contribution agreement	32						
	3.4	Conti	tibutions to the Development of Highly Trained Personnel –							
		Youth	1 Initiatives	33						
	3.5	Know	ledge Sharing and Dissemination of S&T information to Industry	34						
		3.5.1	Technology Visits Program and Innovation Insights (TVP/ii)							
		3.5.2	Workshops and conferences	35						
		3.5.3	Competitive Intelligence Initiatives	36						

4.0	Ma	nagement				
	4.1	Collaboration and Synergy within NRC				
	4.2	Auditor General Review				
	4.3	Effective Leadership and Management				
		4.3.1 Information Management, Quality Assurance, Program				
		Performance Framework & Business Process Improvement				
		4.3.2 Advisory Board				
	4.4	Productive, Satisfied, Representative Workforce				
		4.4.1 Admin Workshop				
		4.4.2 Performance Bonus				
		4.4.3 Admin Review				
		4.4.4 Network Advisory Group				
Anr	nexes	5				

Executive Summary

A key component of Canada's system of innovation, the National Research Council's Industrial Research Assistance Program (IRAP) is a federal catalyst that links a diverse network of institutions, organizations and programs to help Canadian small and medium-sized enterprises develop and exploit technology in a competitive, knowledge-based economy.

Innovation is increasingly recognized as a local phenomenon that is driven in communities by clusters of innovative firms and local entrepreneurs. IRAP is a national program with a strong regional presence thus building local and national economic systems and technology clusters. As such, IRAP is well positioned to build the innovation capability of Canada.

Through highly skilled expertise and advice as well as financial assistance, IRAP provides customized solutions to the increasingly complex projects undertaken in Canada and abroad by the 12,000 Canadian industrial firms assisted in 1999-2000.

With a network of more than 100 co-delivery partners from public and private organizations and 1,000 plus members within its Canadian Technology Network, IRAP's evolving and growing programs and services help Canadian business manage and reduce the risks inherent in the innovation process. Central to IRAP's success in the face of continued budget constraints is its backbone of 262 Industrial Technology Advisors (ITAs) located in 90 communities across Canada.

In 1999-2000, IRAP:

- Provided financial assistance to 4,343 projects, amounting to \$89.8 million, an increase of 6 per cent over 1998-1999.
- Provided funding to 3,359 Canadians SMEs on innovation projects, a decrease of 12 per cent. The decrease is offset by an increase in more complex projects, teamwork activities such as training and information-sharing events, and non-funded activities, such as advice and linkages.
- Participated in more than 350 information-sharing events across the country and abroad. This includes workshops, conferences, fora, and roundtables.
- Identified 281 projects containing elements of eco-efficiency under its Sustainable Development initiative to help SMEs merge environmental concerns with social and economic needs. In addition, IRAP developed a Web-based Design for Environment guide for ITAs and clients to systematically integrate environmental considerations with product and process design.
- Continued to strengthen its presence in Canadian universities, technical and community colleges, reflecting the 1999 Advisory Council on Science and Technology (ACST) Expert Panel on the Commercialization of University Research call for a national strategy to maximize the economic and social returns to Canada of public investment in university research.
- Implemented a pilot Performance Bonus program that rewards exceptional contributions by employees.

To improve its services, IRAP:

- Developed and strengthened its national scope while broadening its regional base, with new programs and services in almost every region in Canada.
- Developed internal management tools and guides to better serve clients, improve processes in client-related activities, and measure IRAP's performance impact on the innovative capabilities of SMEs.
- Sponsored or participated in numerous workshops and technology conferences, including a biotechnology forum in Toronto with more than 200 participants and a workshop involving 125 representatives from the Canadian aerospace sector.
- Established the Strategic Alliances (SA) office to provide SMEs and ITAs with effective access to international expertise, technologies and strategic technology alliances. A dual-purpose program, the SA group also made numerous presentations about IRAP's assistance programs to interested visiting delegations from such countries as Sweden, France, Ukraine, UK, South Africa, Australia, China, Thailand and Taiwan. IRAP is linked to five of the 36 agreements between NRC and other countries including France, Indonesia and Thailand.

In addition to the regular technological innovation support, the portfolio of IRAP services includes a series of programs with specific and wide-ranging mandates and responsibilities. Other IRAP support programs and their activities in 1999-2000 include:

- The **Canadian Technology Network (CTN)**, which links innovation-related resources, provided pathfinding services to SMEs based on a membership of 1,000 plus service providers. In 1999-2000, CTN responded to more than 3,000 simple queries, and provided advisory services to 2300 clients.
- Precommercialization Assistance, a five-year \$30-million/year program since 1998 jointly with TPC/Industry Canada to deliver repayable financial assistance to Canadian SMEs for technology projects, approved 68 projects in 1999-2000 for a grand total of 108 projects since the start of the program, an increase of 70 per cent over 1998-1999. The success of this program is attributed to the IRAP network's capacity to adapt and apply its in-depth understanding of industry and market needs.
- Youth Employment Initiatives, provided support to firms to hire recent college and university graduates. Last year 643 students gained valuable work experience through this program.
- Technology Visits Program (TVP) and Innovations Insights (ii), joint programs of IRAP and the Alliance of Manufacturers & Exporters Canada (AMEC), are designed to facilitate the exchange of best practices among managers who have successfully introduced innovation and new technology into their operations. Last year these programs sponsored visits by over 2,100 senior managers to a total of 105 host companies that had successfully introduced innovation and new technology into their operations.

1.0 Introduction

The leaders of a knowledge-based global economy are innovative nations with high levels of productivity, an ability to create or to adapt the latest technology, and the courage to take strategic risks in pursuit of new opportunities and markets. Throughout its history, Canada has excelled at creation and thrived on daring. The challenge addressed by Government in recent years, however, is how to bridge a persistent innovation gap between basic research and the application and development of knowledge to convert Canadian products and services into commercial successes. Eliminating that gap is crucial, since innovation is recognized worldwide more than ever as the key to increased productivity as well as economic and social prosperity.

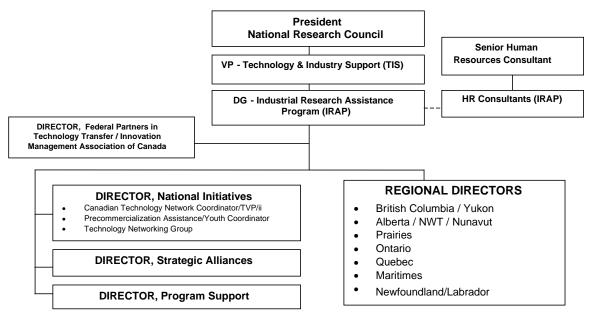
The National Research Council's Industrial Research Assistance Program (IRAP) helps small and medium-sized Canadian businesses turn good ideas into commercially viable products and services. Evolving to meet the needs of a changing economy, the role of IRAP in the fast-paced high-tech environment of the 21st century is to build and strengthen Canada's innovation infrastructure with a wide-ranging array of programs and services. In support of the increasingly complex projects of its clients, IRAP has enhanced its vast network to envelop sources of non-technical assistance, technical resources and a brand new set of innovation players. Intertwined with the National Research Council's vision to develop an innovative knowledge-based economy through science and technology, IRAP is the architect that provides the tools and services that spur economic growth through strong, community-based technology clusters that thrive within a holistic and innovation-oriented national system.

That national system is driven by the small and medium-sized enterprises that are at the heart of IRAP's activities and comprise the most dynamic sector of the Canadian economy. In a recent study by the Organization for Economic Co-operation and Development (OECD), businesses in OECD economies that employ fewer than 500 people account for more than 95 per cent of businesses and provide as much as 70 per cent of employment. In Canada, more than 12,000 small and medium-sized companies turned to IRAP for financial and support assistance in 1999-2000. With a focus on the early-stages of science-based innovation, IRAP is industry-driven and inclusive of all sectors, providing customized services that match a client's specific needs and build on individual and community strengths. IRAP's internationally praised programs are designed to stimulate the growth of community niches where innovative technology-intensive firms in related fields co-locate, interact, collaborate, compete and flourish. Such a competitive and supportive environment requires the broad stakeholder participation that IRAP encourages and builds with a network that stretches across Canada and beyond our borders.

With a vision and a strategic plan to carry Canada into 2003, IRAP is well positioned to lead in three areas that are crucial to Canada's economic performance. IRAP will build upon an infrastructure to support innovation across all sectors of the economy. It will invigorate the cluster-specific conditions and climate that are essential to the healthy and productive Canadian system of innovation. And it will strengthen the vital links among entrepreneurs, research and development institutions, technology brokers, sources of financing and technology transfer centres that are the backbone of a global and competitive economy.

2.0 Deployment of Resources

2.1 Organizational Structure



The Industrial Research Assistance Program (IRAP) is in the portfolio of the Vice-President of Technology Industry Support. The Director General of IRAP is responsible for the national delivery of a unique government program that in the recent years has gained importance as a key element of the Canadian System of Innovation.

IRAP is responsible for the development of policies and programs to help Canadian firms acquire, develop and exploit appropriate technology to meet the challenges of a rapidly evolving global economy. These responsibilities include stimulating research and development by small and medium-sized enterprises (SMEs) and building the vital expertise and knowledge required to improve their operations and develop new products for the market place.

The program is organized into four major components within a structure that strengthens national leadership while recognizing regional delivery and client focus.

- Seven IRAP Regional offices manage the delivery of IRAP services and customized solutions that build innovative capabilities in SMEs and communities. Each Regional Director also sponsors a technology sector group and links it with the IRAP Management team for planning and resourcing purposes.
- National Initiatives Directorate is a technically diverse expert group that provides national coordination for IRAP program initiatives, e.g. the Canadian Technology Network (CTN) and Technology Visit Program (TVP)/Innovation Insight (ii), Precommercialization Assistance (PA) and Youth Initiatives, and the Technology Networking (TN) group.

- Strategic Alliances Directorate coordinates and enhances the effectiveness of IRAP's international activities and IRAP's contribution to NRC's international activities.
- **Program Support Directorate** provides effective program support and leadership to national headquarters and the regions in key areas of financial management; information management and informatics support; program planning and performance; business process improvements; organizational effectiveness and quality; program policies and procedures; and communications and promotions.

IRAP benefits from the advice and expertise in human resources management through a service agreement with NRC's Human Resource Branch. The following resources are dedicated to IRAP:

- Senior Human Resources Consultant identifies, leads and facilitates human resources activities that help implement strategy, create a new culture, accomplish business goals, and create sustainability within the organization.
- Human Resources Consultants lead the implementation and delivery of a wide range of HR programs and services that support IRAP's business priorities, such as recruitment, staffing, staff relations, classification and organizational development.

Further, since 1998, Federal Partners in Technology Transfer (FPTT) has linked directly to IRAP.

• **FPTT** provides opportunities to Industrial Technology Advisors (ITAs) to foster the development of their professional capacity to enhance the effectiveness and efficiency of technology and knowledge transfer. The FPTT office also supports the Innovation Management Association of Canada (IMAC) as secretariat.

2.2 Human Capital and Budget

2.2.1 Human resources

The IRAP network is built on people, knowledge and skills. IRAP has two characteristics that distinguish it from other organizations and are key to its success: IRAP's field network of Industrial Technology Advisors (ITAs); and IRAP's ability to link with others to mobilise the most appropriate resources to meet a client's needs.

People are the source of IRAP's strength; knowledge and know-how are critical corporate assets. Chosen for their experience in business and skills in technology and science, Industrial Technology Advisors provide customized solutions to clients. IRAP maintains a network of 262 ITAs located in 90 communities and seven regions across Canada.

While 30 per cent of IRAP ITAs are NRC employees, the balance works directly for more than 100 different organizations. Through contribution agreements with NRC, these organizations participate as IRAP Network Members (NM) to help deliver the program.

The increase in the number of NRC ITAs allows IRAP to enhance its capabilities in certain areas such as pre-commercialization assistance and sustainable development as well as maintain an appropriate balance between ITAs employed by NRC and those in the employ of Network Member organizations.¹ (Section 3.4 – Linkages with Innovation Players provides more information on Network Member organizations).

The increase in the number of full time equivalent employees (mainly new ITAs) is largely due to the need to strengthen program delivery capabilities in the regions as well as augmenting national capacity for coordination and consistency of delivery.

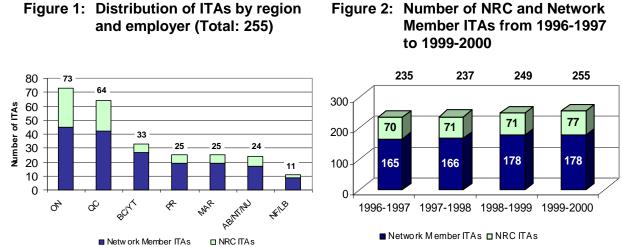
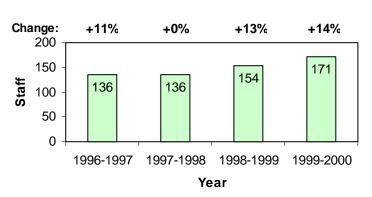


Figure 3: IRAP FTE from 1996-1997

to 1999-2000



¹ Figure 1 and 2 do not include National Initiatives (NI) Group ITAs.

2.2.2 IRAP Reach and Expenditures

IRAP Reach

IRAP helps SMEs develop strong innovation capabilities to better compete in the knowledge-based economy. The strategic mix of advice and funding is the primary reason for the success of IRAP and its clients.

Since 1996, IRAP's number and reach of services as well as levels of expertise have grown, allowing it to help SMEs with more complex projects. While IRAP clients receive cost-shared financial assistance to support their technical projects, a far greater number seek access to IRAP's advisory services.

Advisory services strengthen SMEs capability to innovate through personal delivery of exceptional services. ITAs services assist SMEs in areas such as: technical assistance, literature and patent searches, expertise searches and diagnostic services.

Building networks of key players is fundamental to this innovation approach. Extensive networks link entrepreneurs, network catalysts involve knowledgeable local sources of financing, R&D institutions and technology brokers, and technology transfer centres such as IRAP Network Member organizations. The reach of the IRAP network extends past Canada's borders, with international connections forged by technology trade missions, linkages with Technology Development Officers (TDOs) and numerous presentations.

IRAP REACH

Small and Medium-sized Enterprises

• For IRAP, SMEs have fewer than 500 employees and come from all industrial sectors of the Canadian economy. In 1999-2000, the Program reached more than 12,000 firms. Among these, approximately 2 100 were new IRAP clients and 3 359 were firms with funded projects.

National Research Council

- IRAP worked closely with all NRC's research Institutes and the Canada Institute for Scientific and Technical Information (CISTI). Linkages are also made with NRC Technology and Innovation Centres.
- The National Initiatives and Strategic Alliances groups were involved in 20 committees within NRC (see Annex 1 for list of committees).

Public and Private Innovation Players – IRAP Networks

- Network Members: more than 100 public and private research and technology-based organizations
- Canadian Technology Network: more than 1,000 member organizations with expertise in general management, business advice, marketing, technology, financial advice and services.

Other Federal and Provincial economic development organizations

- In addition to the contribution agreement that IRAP has with Network Members, each region has developed strong relationships with local organizations involved in the innovation system. Examples of these relationships are provided in section 3.3.5, Collaborations with Other Government Departments, Agencies and others.
- National Initiatives and Strategic Alliances groups are also involved in more than 25 committees with other Government and non-Government departments. (See Annex 1 for a detailed listing of NI & SA involvement in various committees).

IRAP Expenditures

IRAP has made significant investments in innovation in Canadian firms. Financial assistance is one component of a package of services that enables SMEs to validate and develop innovative ideas. Through its financial assistance and advice, IRAP helps SME clients manage and reduce the risks inherent in the innovation process.

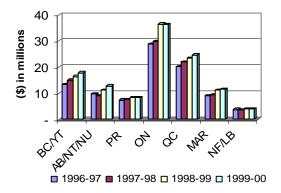
	199	98-1999	19	999-2000	% change	
	Total (\$M)	%	Total (\$M)	%	over 1998-1999	
Contributions to Firms:						
 Projects with SMEs 	75.8	63 %	65.7	58 %	-13%	
Youth Employment Initiatives	4.8	4%	4.9	4%	+2%	
Total Contributions to Firms	80.6	67 %	70.6	62%	-12%	
Contribution to organizations to provide technical and research assistance to Canadian industry*	24.0	20%	26.6	23%	+11%	
Other Expenses**	15.0	13%	16.6	15%	+11%	
Total Expenditures	119.6	100%	113.8	100%	-5%	
Total Expenditures	119.6	96 %	113.8	84 %	-5%	
IRAP-TPC	3.8	3%	19.3	14%	+408%	
Financial Arrangements with OGDs	1.1	1%	2.3	2%	+109%	
Total Level of Activity***	124.5	1 00 %	135.4	100%	+9%	

* contribution to innovation assistance services (Network Members) and the Canadian Technology Network

** includes wages, capital and other operating expenditures

*** includes total expenditures plus formal agreements with external partners and other government departments (definition provided by NRC/Corporate Services)

Figure 4: Total Expenditures by Region from 1996-1997 to 1999-2000.



The distribution of IRAP expenditures for the past five years is included in Annex 2, Table C1. IRAP's total level of activity (\$135M) includes funding received via Financial Arrangements with OGDs, i.e. Industry Canada's Technology Partnership Canada (TPC) for the delivery of pre-commercialization assistance as well as funds from Natural Resources Canada (NRCan) for Climate Change and Team projects.

Region		Contribution (M)	Total IRAP Contribution 1999-2000 (\$M)	Total Projects
	IRAP Project	s Youth Employment Initiatives	IRAP-TPC*		
BC/YT	\$ 9.00	\$ 0.71	\$ 3.89	\$ 13.60	598
AB/NT/NU	\$ 7.03	\$ 0.42	\$ 2.87	\$ 10.34	488
PR	\$ 4.53	\$ 0.38	\$ 1.33	\$ 6.33	332
ON	\$ 21.23	\$ 1.49	\$ 5.93	\$ 28.43	1205
QC	\$ 14.83	\$ 0.91	\$ 3.79	\$ 19.47	1167
MAR	\$ 6.94	\$ 0.75	\$ 1.17	\$ 8.94	416
NF/LB	\$ 2.16	\$ 0.20	\$ 0.29	\$ 2.74	137
Total 1999-2000	\$ 65.72	\$ 4.86	\$ 19.27	\$ 89.84	4,343
1998-1999				\$ 84.40	

Table 2: 1999-2000 IRAP Contribution and Projects by region

* Includes Payables at year-end (PAYE) for 1998-1999 reported in 1999-2000.

2.3 Portfolio of Innovation Services and Output

2.3.1 Innovation Advice and Assistance

Primarily focussed on providing high-quality and appropriate technical advice and assistance to its industrial clientele, IRAP also offers funding where appropriate. The financial support helps to alleviate the risk associated with the development or adoption of new technologies. It is a strategic mix of technical advice and support funding that facilitates the technology transfer process. When considering a company for project support, ITAs help define and structure the project, find appropriate expertise and technology, establish any necessary linkages, and determine whether financial assistance is appropriate.

In 1999-2000, IRAP invested over \$70M in R&D projects with SMEs providing financing to 3,359 SMEs for a total of 4,343 projects. This includes projects in biotechnology and in youth (over \$4M). This is a 12% decrease in contributions to SMEs from 1998-1999. Most of the decrease is explained by the fact that in 1998-1999 IRAP was able to obtain \$7M in additional funds from the IRAP-TPC program. This year, only \$3M was transferred from IRAP-TPC to regular IRAP projects. In addition, IRAP no longer receives funding from the National Biotechnology Strategy. Also, the increase in Precommercialization Assistance projects, which are large, complex effort-intensive projects, contributed to the decrease.

The decrease in funding has resulted in a corresponding decrease in the number of projects and clients funded in 1999-2000.

Table 3: Projects and Clients from 1996 to 2000

	1996-1997	1997-1998	1998-1999	1999-2000
Total projects	3,558	4,139	4,694	4,343
Total funded clients	3,018	3,300	3,800	3,359

In 1999-2000, IRAP undertook an in-depth analysis of 12 case studies of clients from across the country. Although these case studies are not a representative sample, they are indicative of the types of results and impacts IRAP causes to happen as it interacts with SMEs. On average, these firms have been working with IRAP for about 5 years. To illustrate, the case studies showed that IRAP helped improve the innovative capabilities of the firms involved in the study as follows:

- Clients gained the initial vision or changed its innovation culture;
- Clients developed additional linkages to sources of technical expertise (and to partner companies);
- Clients increased their in-house technical expertise and capability (e.g. equipment and facilities);
- Clients gained information needed to develop the product/process (through R&D, technical investigations, etc.);
- Clients gained additional market information or increased financial capability;
- Clients decided to continue with the innovation process (i.e. did not give up);
- Clients increased their ability to produce and commercialize the product.

The 12 case studies also demonstrated that IRAP has an impact on the improved performance of the SME. For instance, the firms credited IRAP with:

- increases in the number of jobs (12 of the 12 cases): over 400 jobs were created by the 12 firms over a period of about 5 years; this represents an average increase of 400%;
- increases in sales (11 of the 12 firms): the firms reported more than \$30M in increased revenues which represents on average a 200% increase over the course of the relationship with IRAP;
- of these increases in sales, clients attributed an estimated \$11.7M directly to IRAP's intervention;
- IRAP invested about \$4M in these 12 firms over the length of their association with IRAP (range from 12 to 3 years); this represents a return on investment from sales alone for these firms of almost 3:1.²

² This is a rough estimate only; does not take into consideration any calculation of displacement of sales for other companies.

As mentioned earlier, the results of these cases studies cannot be generalized to the total IRAP client population, as this was not a representative sample. However, the cases are useful in illustrating the types of impacts IRAP can have on improving the innovative capabilities and competitiveness of Canadian SMEs.

Over the years, IRAP has helped thousands of Canadian firms. The following table provides a flavour of the wide variety of assistance delivered and impact that the Program has had on Canadian industry. Additional success stories are included in Annex 5.

Company and Technology involved	IRAP's role	Impact/ results on firm and on Canadian innovation system
LSL Living Seafoods Ltd, B.C. Farming Sockeye Salmon	 Provided financial assistance for a number of projects Helped company face the high risks involved in this type of aquaculture Was very helpful from a business perspective in defining objectives for milestones throughout 	 Invested in R&D: was successful in responding to the multifaceted problems of cultivating sockeye (disease, flesh color, feed formulas, weight, mortality rate) Developed a new technique for farming sockeye salmon Developed a new product (a specialty blast-frozen product - fish weighting one-third of a pound -) Became the only supplier in a highly profitable niche Expanded market in Canada
MRF Geosystems Corporation Calgary, Alberta Industrial/municipal GIS mapping system with broad applications including environmental tracking	 Helped establish linkage with another IRAP company, and facilitated the merging process Provided financial support Considerable coaching and assistance 	 Redefined a business strategy plan with the merger Restarted as a spin off after 18 months Increased its sales from \$500K in 1997 to \$1.34 M in 1999 Increased its number of technical jobs from 8 in 1997 to 20 in 1999 Invested in more R&D
Agrivision Processing Co. Ltd, Rocanville, Saskatchewan Application of Imaging technology in the Manufacturing of seed sorters	 Recommended manufacturing its seed sorters in Saskatchewan Supported two successful projects to develop new software for the integration of the imaging technology and dual shoot rejection system. Helped firm hire new graduates 	 Created a new assembly facility in Rocanville in January 2000 Enhanced process through the integration of a new line scan camera into their system Produced a Computer Imaging Sorter (CIS) for use in commercial seed sorting Increased sales dramatically Increased technical capabilities

Table 4: Regional Highlights of IRAP's Influence on Increasing Innovative Capabilities

Company and Technology involved	IRAP's role	Impact/ results on firm and on Canadian innovation system
Meditech International Incorporated, Toronto, Ontario Low Intensity Laser Therapy Systems	 Provided financial support Provided technical support, studied project, analyzed and visited lab. Helped bring synergy between medicine and engineering 	 Realized important advancement in laser therapy in the development of a new procedure: BioFlex Patients' condition improved in 90 per cent of the time Improved Canadian Health system Anticipate selling 200 professional units in year 2000 (at \$25,000 a unit)
Opti-Centre Laboratories Inc., Sherbrooke, Quebec Vision correction using corneal lenses	 Provided financial support Active involvement with client at early stage Technical and scientific assistance 	 Introduced a new product (the UltraVue system) correcting presbyopia using two (2) soft contact) Acquired new equipment enabling quality preservation Obtained patent Increased sales of 50 per cent since 1994 (sales exceed \$3.5M for this new product only) Increased number of employees from 4 in 1991 to 23 employees in 1999 Continues to invest in R&D Became a leader in the field
Amirix Limited (formally Applied Microelectronics) Halifax, NS Digital signal processor based motor control for brushless direct current and permanent magnet synchronous motors	 Helped firm in several successful projects Helped develop a new core expertise through guidance and linkages Initiated a scientific assessment of project 	 Introduced a new innovative technology Developed expertise in the field Increased sales in product Invested in R&D: capability to develop a family of generic controllers ("motor dives") applicable to a broad range of motors
Griffths Guitars International Newfoundland Manufacturing of musical instruments	 Helped sponsor trip to visit several plants manufacturing guitars Worked with client to develop a research development and adaptation project involving manufacturing Technology Centre (MTC) of the University 	 Acquired technical knowledge for product enhancement and manufacturing Developed conceptual design for a guitar that could be assembled from pre manufactured highly precise components Sought technical expertise to help with prototype(s) production Improved its process through the use of laser technology to replace the conventional method of cutting skin pieces Working on attaining venture capital to proceed with the manufacturing plant

2.3.2 Precommercialization Assistance

Through the Precommercialization Assistance collaboration, IRAP-TPC is able to offer financial assistance to firms to support the various activities required to improve their technological competitiveness. The initiative provides repayable contributions that share in both the risks and rewards of high technology development. This support is delivered with the same high standards of development assistance and administrative simplicity that have characterized IRAP from its outset. As with other IRAP financial assistance, contribution decisions are made in the region. As well, the responsible ITA remains the main point of contact for questions and assistance for the duration of the project.

IRAP-TPC continues efforts to reach full-scale national delivery of the program through cooperation and interaction with its countrywide network of ITAs. The objective is to develop and strengthen both the national scope and the regional integrity of the program, in part by refining national tools and guidelines. In 1999-2000, for example, IRAP-TPC launched a Web-based Intranet platform to provide ITAs with up-to-date information and documentation.

In addition, IRAP-TPC has incorporated the changes made by TPC regarding compliance to the World Trade Organization (WTO) ruling into its own documentation and processes in order to ensure IRAP-TPC's compliance to the ruling.

Mathis Instruments Ltd in Fredericton, New Brunswick does research development, manufacturing, distribution and marketing of the latest thermal measurement instruments used to evaluate materials and end products non-destructively. Mathis Instruments Ltd supplies the appliance, automotive, aerospace and electronics industries. A small PA project totalling \$60,000 for assistance to conduct pre-market readiness engineering for the Mathis TC Probe device for specific industries was completed.

The project was instrumental in leveraging VC investment in the company for commercialization activities totalling \$1,500,000 on November 9, 1999. The Venture Capital Group of the Business Development Bank of Canada (BDC) and the Canadian Science & Technology Growth Fund (CSTGF) invested \$750,000 each, for a total of \$1.5M in Mathis Instruments. In September 1999, Mathis Instruments Ltd received a prestigious R&D 100 Award for the TC Probe, and was also chosen as one of the recipients of the 2000 Planet Entrepreneur Awards. The Planet Entrepreneur Awards recognized the excellence of Atlantic Canada's young entrepreneurs at the Spirit of Entrepreneurship 2000 Conference & Awards Ceremony in Halifax, Nova Scotia on Friday, May 5th under the "Innovation" category. The success in this regard is linked to the IRAP PA support.

Region	199	98-1999	199	Total projects	
	Number of new projects	Contribution (K)	Number of new projects	Contribution (K)	in 1999-2000
BC-Yukon	12	\$ 310.76	4	\$ 3,821.14	16
AB-NT-Nunavut	5	\$ 1,282.11	9	\$ 2,463.88	14
Prairies	3	\$ 549.15	7	\$ 1,311.22	10
ON	4	\$ 209.81	23	\$ 5,790.25	27
QC	9	\$ 625.39	16	\$ 3,732.04	25
Maritimes	5	\$ 942.08	9	\$ 1,527.74	14
NF – Labrador	1	\$ 160.00	1	\$ 265.77	2
Total	40	\$ 4,079.29	68	\$ 18,912.04*	108

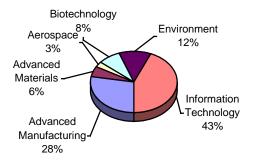
Table 5:Distribution of IRAP-TPC Contribution and Projects
by Region for 1998-1999 and 1999-2000

* Does not include Payables at year-end (PAYE) for 1998-1999 reported in 1999-2000, see Annex 2, Table C1.

Table 6: IRAP-TPC Level of Commitment for projects 1998-1999 to 2002-2003

		Commitments						
	TOTAL							
Assistance	\$4,089,168	\$ 18,912,045	\$ 15,578,593	\$ 1,739,693	\$ 241,038	\$ 40,560,537		

Figure 5: IRAP-TPC Contributions by technology sectors



2.3.3 Canadian Technology Network (CTN)

The mandate of the Canadian Technology Network is to stimulate wealth and job creation for Canada by linking innovation-related resources to provide integrated and coordinated service delivery to Canadian small and medium-sized enterprises.

The Canadian Technology Network (CTN) plays a prominent role in support of IRAP's holistic approach to innovation. Complementing IRAP's focus on improving innovative capability, CTN provides SMEs with technology-related expertise and advice in such areas as general management, business and financial activities and marketing. The network provides links between federal and provincial government labs and agencies, universities, community colleges, industry associations, technology centres and economic development agencies.

IRAP has a unique relationship with CTN through funding and operational management. It is also a key CTN Advisory Member in all the regions. The role of ITAs as liaison points between IRAP and CTN is critical. Based on a network of more than 1,000 member organizations or service providers, CTN has over 160 Advisory Members and more than 850 Affiliated Members, who provided specific services to SMEs. In 1999-2000, CTN responded to more than 3,000 simple queries, and provided advisory services to 2,300 clients. Last year statistics show that 73 per cent of CTN members were also IRAP Network Members.

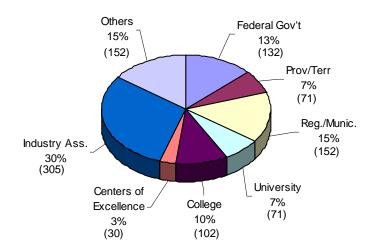


Figure 6: CTN Member Profile by Type of Organization

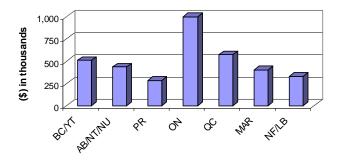


Figure 7: 1999-2000 CTN contributions by region (Total: \$3.6M)

CTN maintains an active schedule of trade shows, conferences and networking events across the country.

Events	BC/YT	AB/NT/NU	PR	ON	QC	MAR	NF/LB	National Office	Total
Trade shows	3	5	16	3	15	6	18	0	66
Conterence-seminars	6	15	8	16	7	21	4	0	77
Networking Events	2	18	10	35	23	25	3	1	117
Total	11	38	34	54	45	52	25	1	260

Earthrenew Organics Uses Waste to develop New Product Line... Earthrenew Organics Limited from Alberta came up with an innovative solution to the problem of waste in December 1999 by developing manure-processing plants at key locations throughout the province. Cattle feedlots will be used to produce a value-added organic soil regenerator and mulch. The product will be sold to agriculture and horticultural industries at both wholesale and retail levels. Completion of the pilot plant is expected to take place in October 2000. Earthrenew has received assistance from both IRAP and the Canadian Technology Network. A CTN advisor assisted the company with an industry overview of the North American fertilizer and peat moss industry. The information helped in determining the direction of Earthrenew's extensive marketing plan.

"Earthrenew Organics has come up with a practical solution to the global manure problem .. CTN and IRAP have assisted in bootstrapping the technology and helped throughout all phases. Now, Earthrenew is at the stage where it can attract other investors: Once the pilot plant is operational, ...We're not only making an impact environmentally and appealing to organic produce growers, we'll also be providing new jobs to rural Alberta." C. Carin, One of the Founders of the Company

2.3.4 Sustainable Development

IRAP recognizes that SMEs need to integrate environmental concerns with economics in business decisions. Sustainable Development (SD) is meeting today's environmental, social and economic needs without limiting the ability of future generations to meet their needs.

Planning for IRAP's Sustainable Development Initiative began in 1998. While the initiative is only in its beginning stages, concrete measures are already in place. In 1999-2000, the SD team focused on increasing ITA and client understanding of sustainable development issues to encourage greater links between SME strategic management and sustainable development. This was accomplished through the promotion of Design for Environment; eco-efficiency technology audits; and action with the Climate Change Action Fund (CCAF) and the Ontario Centre for Environmental Technology Advancement (OCETA).

Treating domestic wastewater without a mechanical system in place....

The Abydoz Environmental Company in Newfoundland is in the process of installation of a test site for a system to treat domestic wastewater. The system utilizes an engineered wetland to filter and breakdown the waste material before entering the ground surface water system. The system requires no mechanical support for normal operations and the plants are self-sustaining. IRAP has been involved since the technology was acquired from a German company. Initially 2 projects were used to assist with the adaptation of the process to this environment and now another one is ongoing to establish the first test site at a local municipality. The test site will take waste from 30 homes in the area at first. If the process proves to be functional it will be expanded to 120 homes and take all the waste from that area replacing the existing mechanical system.

Design for Environment (DfE): Design for Environment (DfE), the systematic integration of environmental considerations into product and process design, is a natural bridge between IRAP's core activity of stimulating innovation within SMEs and fostering environmentally responsible action.

In 1999-2000, IRAP developed a Web-based DfE Guide to overcome client concerns about the cost in time and money of adopting this encompassing system. The Guide provides a concise framework combined with a sophisticated information retrieval system to help ITAs and clients tackle DfE in a structured and accessible manner. Extensive work was required to adapt a substantial document on EcoDesign, originally developed by the Netherlands and published by the United Nations, to meet Canadian needs. Preparations are underway for an initial round of training for some ITAs who will pioneer the use of DfE with IRAP clients and develop the critical case studies and success stories needed for its full deployment and use by all ITAs.

Eco-efficiency technology audits: IRAP participated in three related activities in ecoefficiency audits, two pilot projects in Quebec and one in Ontario. With support from CCAF, IRAP worked with OCETA to develop and launch the Eco-Efficiency Innovation Initiative.

The initiative is a highly collaborative venture involving the Business Development Bank of Canada (BDC), Natural Resources Canada (NRCan), the Ontario government and industry associations. It focuses on helping SMEs identify opportunities for energy and materials efficiency through technological audits carried out by specialized consulting firms. IRAP typically supports 50% of the audit cost to a maximum of \$4000. ITAs follow up with SMEs to assist with action planning and implementation based on audit findings.

In 1999, the SD team conducted a survey of 1998-99 IRAP projects containing elements of eco-efficiency, totalling \$7 million in contributions. The classification was based on criteria for eco-efficiency as defined by the World Business Council on Sustainable Development. IRAP is encouraging ITAs to continue to identify successful projects so that other actions can be inspired by best-practice examples.

The SD team also created linkages with other important innovation players. These activities are discussed in section 3.3 - Linkages with Innovation players.

2.3.5 Technology Sector Groups

Technology Sector groups are teams of ITAs to provide a national perspective on specific technologies. The Technology Network (TN) group of NI continues to take the lead on Technology Sector groups, adding value to IRAP projects and establishing a strengthened collaborative network. TN has established 11 Sectors Groups:

- Agri-food
- Biotechnology
- Chemical Processing
- Communications
- Construction
- Electronics & Signal Processing
- Manufacturing Aerospace
- Manufacturing Integrated Technology
- Manufacturing & Materials Processing
- Software
- Sustainable Development

(See Annex 3 for a complete list of members and sponsors.)

Among activities in 1999-2000, Sector Groups:

- organized a number of forums (see section 3.5 Knowledge sharing Dissemination of S&T Information to Industry) ,
- participated in special initiatives with Other Government Departments (see section 3.3 – Linkages with Innovation Players)
- collaborated in various activities and projects through its involvement in numerous internal and external committees, (see Annex 1), and
- participated in strategic plans and committees within NRC (see section 4.1 – collaboration and synergy within NRC).

A Technology Sector Group Coordinators meeting was held in Ottawa in February 2000 to establish a framework for Sector Group activities for the coming year. Key decisions and topics included defining the role of Sector groups as mainly information sharing; facilitation of cross-regional collaboration; linkage to sources of technology on a national basis; and professional development & networking.

2.3.6 Industrial Biotechnology Niches

In 1999-2000, a proposal by IRAP National Initiatives (NI) secured \$226,000 over three years from the Canadian Biotechnology Strategy for the development of a program, "Bundling Emerging Canadian Industrial Biotechnology Niches: A Technology Diffusion and Infusion Strategy". The Biotechnology Sector Group is also involved with this program.

The objective is to strengthen Canadian biotechnology firms by bundling emerging Canadian industrial biotechnology niches and thus promote awareness and cooperation among these firms as well as the research community.

During the first year of the project, the team created a proprietary database of IRAP contribution agreements for all projects since 1998 to identify emerging biotechnology niches unique to Canada. This database, in addition to a public database of biotechnology firms, will be used to categorize biotech firms into niches for subsequent ranking by the Biotechnology Sector Group.

2.3.7 Strategic Alliances

The mission of the Strategic Alliances Directorate is to provide SMEs (and ITAs) with effective access to international expertise, technologies and strategic technology alliances to develop or improve technological innovation in SMEs and increase their competitiveness.

A key characteristic of globalization is the accelerating integration of both domestic and foreign markets and the subsequent disintegration of tariff barriers.

IRAP Strategic Alliances (SA) was formed in 1999 as a bridge to establish international linkages, with an initial focus on Asia and Europe. SA has a national presence, with a core group of 3 people in Ottawa and a committee of 14 ITAs from the regions, as well as a close relationship with NRC's International Relations Office (IRO) and the revamped S&T group in the Department of Foreign Affairs and International Trade (DFAIT).

In 1999-2000, the SA group's activities included:

- presentations to internal and external groups (see Annex 4);
- involvement in internal and external S&T committees (see Annex 1);
- training and program development for foreign delegations and missions; and
- establishment of links and potential collaboration between Canadian posts abroad and other S&T foreign organizations and networks.

The SA group made a number of presentations across Canada to explain its activities as well as the international aspects of accessing the European Union programs. There was a focus on issues arising from the termination on December 31, 1999 of protection afforded under the World Trade Organization R&D subsidy provisions. SA also conducted 37 formal presentations about IRAP's assistance programs to SMEs to visiting delegations from

15 countries, including China, Korea, South Africa, Sweden and Australia. In some cases, these involved SME visits coordinated by ITAs in the regions (see Annex 4 for full listing). To respond to the growing international demand to study and replicate the IRAP/CTN model, a number of activities were related to the establishment of CTN-like systems and procedures.

- Asian: In collaboration with the IRO office, IRAP developed a program for a large delegation from China's Shandong province that explored the feasibility of adopting the IRAP/CTN programs to China.
- **Taiwan**: In January 1999, IRAP provided a 10-day training session to another group from Taiwan on the IRAP/CTN model. A decision to implement an IRAP/CTN like program is expected in Fall 2000.
- **Thailand**: IRAP assisted the Thailand National Science and Technology Development Agency with a \$30-million Thailand government proposal to set up an IRAP/CTN program. A decision on IRAP resources and funding was expected in Fall 2000.

IRAP fosters new partner relationships through exchanges with foreign S&T organization and IRAP-like innovation networks. A three-member IRAP/CTN technical mission went to Stockholm in June 1999 to review IRAP's counterpart program, Nutek (Sweden Agency for Technology Development), and explore prospects for a CTN / European Union collaboration. Three presentations delivered in Stockholm and in Goteborg, Sweden led to the creation of links between Canadian studies (IRAP, and University of Toronto) with Sweden and groups in the U.S. involving biotechnology firms.

International projects and activities have been coordinated with the National Sciences and Engineering Research Council of Canada (NSERC) to better access the European Union programs and others. IRAP and NSERC have developed improved tools to assist both SMEs and university researchers in accessing international R&D programs.

International missions with SMEs. With International Technology Missions, IRAP demonstrates its commitment and willingness to assist SMEs in generating wealth and improving their technology transfer competencies. A three-month study of the 9 missions organized to south east Asia between 1997 and 1999, was conducted by the Canadian Institute for Market Intelligence (CIMI). Findings of the survey demonstrate that participating companies; move towards international partnering in S&T, market access, technology–based cooperation and exchange; were very positive about the performance of NRC-IRAP and the individual ITAs assisting them; and find the support network of NRC-IRAP to be very valuable.

For a large majority of the participants, the missions they attended have had enormous value in terms of personal experience building, relationship building, financing and revenue generation. The vast majority of interviewees wish to participate again in this kind of activity.

The direct costs of NRC-IRAP's contribution to the missions is estimated to be about \$500,000. On this basis, the return on investment of IRAP dollars is in the range of \$75 to \$184 per \$1.00 invested.

In addition to the economic benefits, there is a host of intangible and less quantifiable gains that the companies realize from these experiences. For many managers, the missions have provided their first introduction to Asia, if not to international business.

The broadening of the SMEs' management perspective on the international opportunities available to them for technology transfer and distribution of Canadian created-technologies is perhaps at least as worthwhile in the long term as the revenues they generated.

A continuing legacy has been created in terms of co-operative relationships with similarlymandated organizations in other countries. The working partnerships created with the Productivity and Standards Board in Singapore, the Chinese Academy of Sciences and the China Council for the Promotion of International Trade, and the National Science and Technology Development Agency of Thailand hold promise for further benefits in matchmaking and technology transfer.

It began with joining an IRAP trade mission to Asia.... An IRAP client, Spatial Mapping Ltd. Prince George, B.C. came back from a mission to Asia with a contract, and reports the following:

"We have been working with a gentleman in the development of a proposal to map vegetation ground change over time using Satellite Imagery for approximately 100kms worth of road in Inner Mongolia. This change is a result of the Chinese government allowing farmers to graze their cattle along the length of this road. Based upon the results of our analysis we will provide a means to survey and parcel off the road for these farmers. This is a very sizeable contract to a company of our size. We estimate the value to be between \$ 200,000.00 to as high as \$ 500,000.00, depending upon how far back in time they decide to purchase imagery. A contract of this size for a company of our size is huge. Needless to say, we are very interested in participating in any other trade missions to Asia or anywhere for that matter which fits the focus of our company."

Finally, there are benefits for the NRC-IRAP establishment itself, particularly for the Industrial Technology Advisors that participate in these missions. The benefits to them accrue in the technologies and processes they encounter, and through growth of their own understanding of the importance of a global perspective in making Canadian technology competitive.

3.0 Contribution to Strengthening the Canadian System of Innovation

3.1 Fostering Innovative Capabilities in SMEs

To help Canadian companies meet the challenges of industrial R&D in a knowledge-based economy, IRAP employs various mechanisms that provide innovation advice, technical assessment, strategic planning and financial assistance.

IRAP is also well positioned to increase the nation's overall economic performance in three main areas by its contribution to:

- the infrastructure that supports innovation across the economy;
- the understanding of cluster-specific conditions that support innovation in particular industries; and
- the strengthening of links among the innovation players.

3.2 Regional and National Innovation Systems

Innovation is increasingly recognized as a local phenomenon that is driven in communities by clusters of innovative firms and local entrepreneurs. IRAP is a national program with a strong regional presence. As such, IRAP is well positioned to build the innovation capability of Canada since it is not only close to client but also understands local and national economic systems and technology clusters.

Innovation players can access IRAP in all provinces and territories, grouped in seven regions and dispersed in about 90 communities, including remote areas such as Northwest Territories, Yukon, Labrador and Nunavut.

3.2.1 Regional performance

A summary of achievements in each region is described below. Additional regional information is available in the following annexes:

- Annex 5: Success Stories
- Annex 6: Regional Participation in Collaborative Initiatives with Regional Innovation
 Players
- Annex 7: IRAP Client Linkages with NRC Research Institutes
- Annex 8: Regional Participation in Workshops, Fora, Seminars
- Annex 9: IRAP Staff Awards

IRAP British Columbia / Yukon

A significant achievement by IRAP in BC/Yukon in 1999-2000 was the successful development of the international mission capability within the newly founded Canadian Institute for Market Intelligence (CIMI). Regional efforts focussed on a better understanding of international issues and enhancement of regional capabilities.

Activities in 1999-2000 included:

- In the BC/Yukon region, total contribution included a provincial contribution of \$1.5 million comprised of \$1 million contribution to Technology Assistance Program (TAP) and \$0.5 million contribution to Market Assessment of Research Technology (MART), which increased from \$300,000 matching 1998-1999 to \$500,000 in 1999-2000.
- SMEs achieved benefits of international initiative equal \$22 million (new investments of \$6.5 million and new contracts and sales of \$15.6 million).
- IRAP BC/Yukon participated in five Technology Missions (two in Singapore, one in Japan, Taiwan, South Korea and Singapore, and two in China). The region also participated in a mission to China with the President of NRC.
- The program delivery of IRAP-TPC was expanded beyond the initial team, improving the management of IRAP-TPC projects.
- IRAP BC/Yukon made a significant impact in the building of Sustainable Development (SD) capability, both in the region and within the national program.

IRAP Alberta / Northwest Territories / Nunavut

While Alberta experienced significant growth and development in 1999-2000, the Northwest Territories and Nunavut continue to be under-resourced and subject to many jurisdictional changes. IRAP responded to these different environments by remaining focused on the needs of its clients and has delivered valued and highly relevant services from its team of IRAP ITAs and CTN Advisors.

Activities in 1999-2000 included:

- Development of new relationships with well-established regional innovation players in Calgary and Edmonton (see Annex 6).
- Care in the selection of Regional Network Members and good communication has ensured an excellent support for the delivery of network services and provided IRAP with high calibre personnel, huge technical and business resources, and a broad technical and geographic presence.

IRAP Prairies

In 1999-2000, IRAP Prairies continued to address the multi-year trend towards clients and projects in health industries, information and communication technologies and manufacturing, while still maintaining a strong emphasis on the agricultural sector. The region is experiencing a shift towards functional foods, nutraceuticals and value-added processing as opposed to technologies associated with mainstream crops and harvesting.

IRAP Prairies supported 302 funded projects involving 500 clients. In addition, the Region provided information, counseling and advisory services to an approximately 500 other clients in Manitoba and Saskatchewan.

The Region concentrated on enhancing the innovation systems in Manitoba and Saskatchewan and positioning IRAP Prairies for a greater impact and influence. Efforts were made to diversify the Regional network; partner with industrial associations in specific initiatives such as competitive intelligence; and support collaborative efforts to create industry and technology clusters. Infrastructure and innovation support projects were also developed, in partnership with Network Members, federal departments and agencies and provincial governments.

Activities in 1999-2000 included:

- Development of a long-term planning framework to identify the strategies and opportunities IRAP supports in key areas of the Manitoba and Saskatchewan economies.
- Creation of revised procedures for the development and review of project proposals, recommendations and contributions to ensure consistent decision making within IRAP's overall operational guidelines.
- Development of communication materials with specific success stories to illustrate IRAP programs to new clients.

IRAP Ontario

In 1999-2000, IRAP Ontario established improved inter-regional cooperation, especially with Quebec, B.C. and the Prairies. NRC and Network Member ITAs continued to participate in national and regional special projects, such as Business Process improvement, Performance Framework, Quality Assurance, Precommercialization Assistance, IRAP Web Advisory Team, Training and Information Management Team. A decrease in the number of funded projects over 1998-1999 was offset by an increase in the number of more complex PA projects, teamwork activity and non-funded activity, particularly in the case of CTN.

Activities in 1999-2000 included:

- Nine refresher-training sessions for all IRAP staff, including intensified ITA training.
- Increased interactions with new clients by more than 1,600 CTN/IRAP advisors, with a focus on community-based innovation and closer relationships with local economic development officers.
- A successful "All Ontario Network Members Meeting" held in Fall 1999 and preparation
 of another in 2000 in a continuation of efforts to meet harmonization goals. Strong
 linkages continued with the Canada Institute for Scientific and Technical Information
 (CISTI), the Integrated Manufacturing Technologies Institute (IMTI), the Industrial
 Materials Institute (IMI), the Institute for Research in Construction (IRC), the Institute for
 Information Technology (IIT), the Institute for Chemical Process and Environmental
 Technology (ICPET), the Institute for Aerospace Research (IAR), the Ministry of
 Energy, Science and Technology (MEST) and the Federal partners in the industry
 portfolio.
- Special initiatives conducted with the Ontario Centre for Environment Technology Advancement (OCETA): Sustainable Development; Canadian Plastics Industry Association (CPIA): Technical Information on selected plastics technologies; Agriculture Technology Information Services (AgTIS): value-added information on the agriculture and related industries; Design Exchange: Feasibility Design Studies; Canadian Association of Management Consultants (CAMC): advice on business related issues; Information Technology Association of Canada (ITAC): Y2K Awareness, Canadian Innovation Centre (CIC): Market Preview Plus; and Info-fairs.

IRAP Québec

The past year has been very active for IRAP Québec. Many efforts were aimed at maintaining and improving the relationships with regional partners in the innovation system.

Activities for 1999-2000 included:

- Assembling and maintaining a strong team of experts in Sustainable Development in a continuation of IRAP Québec's leadership role in this area.
- Continued integration of the IRAP-TPC program to IRAP Quebec with participation from all Industrial Technology Advisors for the delivery of this program.
- Many activities, particularly related to IRAP-TPC, have been dedicated to harmonizing the interventions of IRAP Quebec and Dévelopment Économique Canada (DEC), an important regional innovation partner. Last year, 17 IRAP-TPC projects were approved.
- Activities in SD were mainly on helping firms to make diagnostic to improve the eco-efficiency. Two training sessions were delivered to ITAs. About 250 visits to clients were done on SD projects in eco-efficiency.
- More than 340 linkages were realized with SMEs and innovation players. ITAs responded to more than 500 requests for information and patent search.

• Establishment through CTN of a group of private service providers. The CTN, the best unifier of Quebec innovation players, has gained an important recognition and credibility within the overall region.

IRAP Maritimes

Project demand in the Maritimes in 1999-2000 far outstretched the contribution budget available, given high budget commitment level at year opening. The Regional Director worked closely with the national office to deal with both client concerns and political inquiries. The region continued to excel in developing the IRAP-TPC program (\$1.9M).

In 1999-2000, joint projects established a close team relationship between advisors from IRAP and CTN. Of the Region's total funded projects, 70 per cent involved CTN advisors; 56 per cent involved resources outside the region; and 50 per cent involved joint IRAP/CTN team meetings with the client.

Activities in 1999-2000 included:

- Joint projects between Regional Director (RD) of IRAP Maritimes and the Directeur General of the Institute for Marine Biosciences (IMB) involving aquaculture and nutraceuticals.
- An annual IRAP/CTN network conference in Charlottetown with more than 100 participants, including most Maritime universities, technology centres, and key Federal and Provincial Departments.
- Continued initiatives of Quality Assurance (QA) and Business Process Improvement (BPI). New efforts such as the Costing Guidelines were launched.
- Two round table consultations in New Brunswick on informatics, Premier-level meetings, plan and budget requirements, and funding. The Cap Breton initiative culminated with a presentation of a formal proposal for an IT centre.
- RD took on NRC leadership in Provincial priority initiative, working with Dalhousie Medical and InNOVAcorp Life Sciences Initiative with respect to a potential Medical Imaging Technology (MRI) cluster in Halifax.
- RD supported the activities of InNOVAcorp to assist the Institute for Marine Biosciences (IMB), Memorial University of Newfoundland (MUN), Dalhousie University (DAL) and University of New Brunswick (UNB) in preparing succesful submission for a Genome Canada Centre in Halifax.

IRAP Newfoundland / Labrador

1999/2000 was a year of challenge, great opportunity and increasing involvement with SME clients. Much was accomplished in industry sectors, aquaculture, biotechnology, Information Technology (IT), food/fisheries, and materials. Very close ties also exist with the Maritime Region especially in the areas of aquaculture, IT and business assistance.

Both IMD and IRAP worked with partner organizations to enhance NRC's Community Innovation system in Newfoundland and Labrador. IRAP Newfoundland and Labrador also were involved with key partners Atlantic Canada Opportunities Agency (ACOA), Department of Industry, Trade and Technology (DITT), and the Memorial University of Newfoundland (MUN) in the development of a St. John's cluster initiative in oceans technology. In addition, a "think tank " session was held with MUN (IRAP & MUN) on youth entrepreneurship and innovation.

Activities in 1999-2000 included:

- Involvement in a Canadian International development Agency (CIDA) /NRC project on CTN in Indonesia.
- Continued integration of IRAP, CTN, CISTI (NIC Information Centre) and Institute for Marine Dynamics (IMD).
- Discussions with the Provincial Department of Development and Rural Renewal (DDRR) on Community Innovation in Newfoundland. The province has produced a strategy on "Small Scale manufacturing" particularly emphasizing rural areas of Newfoundland.
- Continued network building by CTN, with IRAP and NIC St. John's, including the start up of CTN advisor positions at all campuses of the College of the North Atlantic (CNA), a CTN member.

3.3 Linkages with Innovation Players

IRAP builds a network of collaborative partnerships within and beyond government to support the infrastructure needed to improve existing practices, inspire new methods and eliminate unnecessary and costly duplication.

3.3.1 Network Member Organizations

IRAP maintains a vital and growing network that includes more than 100 of Canada's leading public and private research and technology-based organizations.

• Internationally recognized as one of the best programs of its kind in the world, IRAP Network Members extend and complement NRC's innovation services as well provide Canadian SMEs with easy access to the full range of resources and expertise available within Canada's innovation system

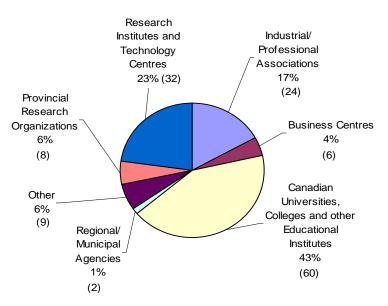


Figure 8: IRAP's Network Member Composition by Type of Organization

The Network Member organizations provide innovation services to SMEs with financial support from NRC's IRAP. In most cases, this means offering the services of one or more Industrial Technology Advisors (ITAs), who deliver IRAP innovation services directly to Canadian firms. Some member organizations offer other services, such as technical information and analysis, diagnostic services, technology visits and events.

Last year statistics show that 76 per cent of IRAP Network members were also CTN members.

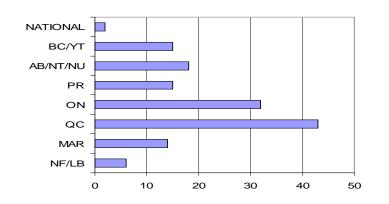


Figure 9: IRAP's Network Member Composition by Region (Total: 145 as of December 1999)

⁽A full list of IRAP's Network Members in 1999-2000 is found in Annex 10)

Through its extended network, IRAP can tap into multiple sources of knowledge and expertise to help its SME clients meet their technical needs. This network's decentralized structure gives IRAP the breadth to pursue important national priorities that benefit SMEs and the flexibility to respond to changing local needs and opportunities.

In 1999-2000, IRAP Management continued to work with Network Members to enhance communications at the regional and national level.

Activities include:

- regional Network Member meetings;
- development of business card standards for Network Member ITAs;
- electronic communiqués to Network Members from the Director-General IRAP;
- finalization of a list of desirable Network Member attributes to clarify expectations of its member organizations and to provide a tool to evaluate their contribution to the Network.
- development of a Network Information Package for dissemination.

3.3.2 IRAP Clients Linkages with NRC Institutes

Regional offices of IRAP maintain strong relationships with NRC Research Institutes, participating in a number of successful collaborative projects. IRAP ITAs are very active in establishing contacts through organized visits, often with groups of companies,

and have established an even greater collaborative relationship with NRC Business Development Officers (BDO). As a result, ITAs are better able to help institutes find appropriate Canadian receptors for NRC's technologies.

(For a better understanding of the type of projects between IRAP clients and NRC, a partial list of collaborative projects and initiatives is available in Annex 7.)

3.3.3 Canadian Universities and Community and Technical Colleges

University research is recognized as an important element of the Canadian innovation system. In 1999, the Advisory Council on Science and Technology (ACST), an Expert Panel on the Commercialization of University Research, recommended to Government the establishment of a strategy to maximize the economic and social returns to Canada from public investment in university research.

IRAP has a long history of supporting Canada's SMEs in the spin-off of university research as well as in their collaborative efforts to develop and commercialize university research.

IRAP has a prominent presence at Canadian universities and community colleges, with 20 NRC ITAs and 40 Network Member ITAs located on university campuses across Canada and an additional 30 ITAs in community or technical colleges. Eighteen other agreements provide funds to support universities in their innovation.

Through its innovation support activities, IRAP projects each year involve as many as 400 undergraduate students through core IRAP youth programs to Canadian SMEs, as well as 250 professors in IRAP-funded projects, in 1999-2000 another 643 graduate students were supported through IRAP youth employment initiatives.

IRAP also plays an important role in helping organizations and committees that assess university research proposals, including several key NSERC committees. (See Annex 11 for a list of committees).

In September 1999, IRAP organized a two-day roundtable in Winnipeg of ITAs from across Canada to explore ways of increasing the commercialization capabilities of universities. Two parallel strategies emerged from the conference: enhancing the pathfinding role of IRAP as both a source of innovative solutions for universities as well as a bridge to the appropriate SME receptor; and improving the infrastructure through the exchange of information, promotion and efforts to break down commercialization barriers.

3.3.4 Collaborations with Government Departments and Agencies

Federal Partners in Technology Transfer (FPTT)

Affiliated with IRAP since 1998, the Federal Partners in Technology Transfer (FPTT) is a federal initiative that plays a key role in the building of a network of partnerships and collaborations that support national technology and knowledge transfer, foster innovation, respond to national strategic issues and bolster the development of Canada's professional S&T capacity. FPTT's Executive Office has been housed at and supported by NRC since its creation in 1996.

Since 1997, FPTT has recognized technological innovators and their Canadian private sector partners for outstanding achievements in the development, transfer and commercialization of in-house government research at its annual Awards ceremony. (See Annex 12 for a list of FPTT award winners)

The following table provides examples of FPTT activities and the benefits to IRAP clients as a result of the cooperative relationship between IRAP and FPTT.

FPTT activities with IRAP	Benefits to IRAP clients
Providing information and/or feedback to ITAs on issues relating to technology transfer and commercialization	Enhanced intellectual property management services and a better understanding of issues relative to IP management, licensing, collaborative research, etc. within a government environment
Providing ITAs with access to the full spectrum of expertise, programs, services, technologies and facilities within the federal science-based departments and agencies	Increased SMEs access to world-class laboratories
Participation of ITAs at FPTT annual workshop and awards banquet	Improved exchanges on model practices in S&T and increased professional relationships with other practitioners of technology transfer and commercialization
Participation of regional ITAs at FPTT meetings	Increased flow of knowledge between the scientific research community
FPTT Regional Outreach Program was inaugurated with the Quebec chapter in 1997. With IRAP's help, the beginnings of an Alberta and British Columbia connection were developed.	Enhanced regional contacts
FPTT's Executive Office established a closer link with the Innovation Management Association of Canada (IMAC), a multisectoral association of Canadian research, technology management and innovation leaders.	Enhanced network, especially large industry

3.3.5 Collaboration with Other Government Departments, Agencies, Others

IRAP participated in collaborative initiatives with national and regional key actors. These are a few examples of this wide collaboration. Additional initiatives are presented in Annex 6.

Etobicoke (and other) Manufacturers' Alliance, Ontario. In 1997, an ITA formed the Etobicoke Manufacturers' Alliance, a grouping of some 50 local manufacturers. This was in response to the IRAP clients' concern that there was no forum for manufacturers to network and to discuss issues of mutual interest. Well-structured meetings took place every couple of months, with participation of local Business Development Group, local MPP and MP. These meetings were hosted by various members of the group, or on occasion, by special invitation by one of the hi-tech Magna plants in the area. The feedback has been very positive, with a lot of connections being made. This program was continued in 1999/2000. Among guests to these meetings were ITAs from Mississauga, who organized similar events in Mississauga, in cooperation with the Mississauga Business Development and the Erindale campus of the University of Toronto during 1999/2000. These organizations have increased the ability of manufacturers to find sources of products, services, partners, etc., among local manufacturers.

Aquaculture Development Program: IRAP participated in two roundtables sponsored by the Secretary of State for Agriculture, Fisheries and Oceans on the creation of an Aquaculture Development Program. The initiative included the participation of 97 national stakeholders from industry, aboriginal groups, academia, environmental and conservation organizations and provincial and territorial governments. IRAP also participated in a working group that advised the Department of Fisheries and Oceans (DFO) on the technology aspect of such a program, as well as its relationship to other government programs.

Cancer Vaccine Network: IRAP ITAs made presentations on eight collaborations at the first Cancer Vaccine Network Symposium, sponsored by Aventis Pasteur. IRAP was a member of the TPC team that reviewed the progress of the \$60 million TPC project.

Canadian Climate Change Initiative: IRAP's SD group is working closely with the CCAF interdepartmental committee, Technology Early Action Measures (TEAM) as one of the delivery agencies for the climate change initiative. Every project supported by CCAF/IRAP has a degree of collaborative link to Natural Resources anada's activities. Some have led to a Memoranda of Understanding, such as the OCETA project, while others result in less formal partnerships.

Sustainable Development: IRAP continues to collaborate with Economic Development Canada, specifically in its Eco-Club initiative in Quebec and with CETAC-West workshops, to foster better strategic management in the promotion of sustainable development. IRAP's network of ITAs help SMEs pursue concrete initiatives that emerge from the sessions and workshops. **Energy Issues:** IRAP is working with strategic partners on a number of environmental and energy-related fronts. Collaborative initiatives with NRCan, BDC and OCETA for example, are the basis of good long-term relationships that will profit IRAP clients. One climate change project with the Heating, Refrigeration and Air Conditioning Institute of Canada and NRCan, for instance, is designed to develop the next generation of advanced heating systems. Another climate change project with Global Thermoelectric produced a leading-edge fuel cell technology that improves the operating performance and offers considerable potential as a cleaner energy source for the future. In a second, \$19-million fuel cell project, with NRCan and Ontario Power Technologies, IRAP is helping SMEs develop a "balance system costs" for a fuel cell power generation system.

3.3.6 International Organizations - Contribution agreement

In 1999-2000, a number of activities were initiated to enhance IRAP's international linkages. Through these connections, IRAP can provide Canadian firms with greater access to foreign sources of technology and expertise, as well as enhance IRAP's strategic intelligence capabilities and increase the program's ability to match Canadian SMEs with partners in other parts of the world. IRAP's main international focus in 1999-2000 was to Asia, and Europe.

IRAP International activities in 1999-2000 include:

Countries and Cities Visited	Number of SME Participants
China: Shanghai and Beijing (May 1999)	8
Singapore (June 1999)	11
Singapore (August 1999)	4
China: Beijing and Shanghai (September 1999)	14
Japan: Tokyo (March 2000)	8
Total	45

Italian Mission: In November, 1999, an NRC/IRAP-organized technical mission from Italy involving SMEs and regional laboratories led to a proposed collaboration with Integrated Manufacturing Technology Institute (IMTI). A return mission to Italy with Canadian SMEs is expected in late 2000.

IRAP International Collaboration with NRC: IRAP is linked to 5 of the 36 NRC Memoranda of Understanding. These agreements are:

- Association nationale de valorisation de la recherche (ANVAR), France: In June 1999, a four- member delegation from IRAP and ANVAR participated in a software and telecommunications conference in France. Due to a re-organization at ANVAR, there were few joint activities in 1999. The arrival of the new ANVAR manager and a visit to IRAP in April 2000 revitalized the IRAP-ANVAR agreement in 2000. Evaluation of previous technology missions began in Spring 2000.
- Canada Indonesia Technology Network (CITN), Indonesia: IRAP led a discussion on CTN, Phase II in Indonesia. Due to a shortage of CIDA funding in 2000-2001, the IRAP support was ended in March 2000. Some ongoing work on CTN will continue in Indonesia.
- **Canadian Israel Industrial Research Foundation (CIIRDF), Israel:** Technology missions (with SMEs) in photonics and greenhouses are being planned for Fall 2000.
- Intelligence Manufacturing Systems (IMS): NRC assumed responsibility for IMS from Industry Canada in 1999. IMS is co-located at NRC and an ex-ITA is managing the program. One objective is to develop as many as three joint projects with seven countries.
- Industry Technology Advisory Program (ITAP), Thailand: IRAP is helping to prepare a training program to expand the Industry Technology Advisory Program (ITAP). Implementation of the program, expected by Fall 2000, is subject to Thailand securing funding.

3.4 Contributions to the Development of Highly Trained Personnel – Youth Initiatives

One of the most pressing challenges facing SMEs today is dealing with a shortage of highly qualified personnel. To address this shortage, IRAP manages two youth internship programs on behalf of Human Resources Development Canada (HRDC). Firms and graduates both benefit from these programs: firms receive up to \$9,800 in support to hire recent college and university graduates, and graduates gain valuable work experience that will help them secure future employment.

The Science Collaborative Research Internships Program: committed \$117,000 in supporting 15 recent graduates to work with various institutes and SMEs. Because participation was lower than expected in 1999-2000, part of the balance was reprofiled to support additional internships in the Science and Technology Internships Program with SMEs.

The Science and Technology Internships Program with SMEs: supported 628 recent graduates to work with SMEs in 1999-2000. As the result of a greater than expected demand, and as a result of the money reprofiled from the Science Collaborative Research Internships Program, the Science and Technology Internships Program with SMEs invested \$4.76 million to support recent graduates.

3.5 Knowledge Sharing and Dissemination of S&T Information to Industry

3.5.1 Technology Visits Program and Innovation Insights (TVP/ii)

Technology Visits Program and Innovation Insights are joint programs of NRC/IRAP and the Alliance of Manufacturers & Exporters Canada (AMEC). These programs are designed to promote best manufacturing practices and peer-to-peer exchange of experiences of managers who have successfully introduced innovation and new technology into their operations with those who wish to do so.

"It's good to see other companies involved in product development at this level. It was a good chance to learn some different technological initiatives that can be used at my company." - Douglas Hill of S & C Electric Ltd., at an 'ii' event in Ontario (AlliedSignal)

Although the overall objectives are the same, the two programs are very different in content and approach. TVP acquaints senior executives with the benefits of innovation, while *ii* instructs operating managers in what to do and how to do it. While the majority of these events occur within Canada, the programs also include international visits.

TVP is focused primarily on larger companies that can accommodate larger groups. Visitors typically are from a wide range of industry sectors with varying interests. Events last up to 3 hours and include as many as 40 participants.

Innovation Insights involve generally smaller groups and programs that focus more narrowly on specific new technologies and innovation topics, with a high level of interaction between the host and visitors. All participants are practitioners who are keenly interested in learning how to introduce the innovation in question into their own companies. Attendance is normally limited to a maximum of 15 participants. Events last 5 or 6 hours and include a networking lunch.

"The ii program is very informative. Anytime you can observe a successful process in action, you can pull ideas for your own situation." - Pierre Wuessels, Mac Chain Company Limited

Table 8: Technology Visits Program and Innovation Insights Participants

TVP		1998-1999	1999-2000
	SME Hosts	40	37
	SME Participants	830	900
ii			
	SME Hosts	30	68
	SME Participants	800	1300*

* Does include participants who attended 12 *ii* international visits

Program performance for both programs is surveyed annually by an independent research organization. Results of the 1999/2000 review indicate these events are of great benefit to Canadian SMEs' in introducing innovation and new technology into their operations. Respondents enthusiastically support the continuation of the programs. (See Annex 13 for a sampling of survey findings.)

3.5.2 Workshops and conferences

Workshops and conferences are critical tools in the exchange of information and expertise. The annual series of events also offers IRAP with an opportunity to showcase its array of services and programs. In 1999-2000, IRAP organized more than 350 information-sharing activities. This includes participation to conferences, workshops, Fora, and roundtables (see Annex 9 for examples of regional participation).

In 1999-2000, IRAP groups hosted or participated in a number of events that raised the visibility of its own operations and provided vital new links to its growing network.

Examples of information-sharing activities:

The Technology Networking (TN) group: TN participated in two major conferences in 1999-2000. In November 1999, the Biotechnology forum held at Mount Sinai in Toronto attracted more than 200 representatives from biotechnology SMEs, IRAP, NRC, OGD and academia. With a theme of "The Canadian Biotechnology Sector—Emerging Trends and Technologies and the Impact of Genomics," the conference included presentations from SMEs and several universities. In February 2000, the IRAP Manufacturing Aerospace Sector Group was among more than 125 participants of the Canadian Aerospace Supplier's Workshop "Innovate to Grow" in Ottawa.

The workshop brought together representatives from the entire spectrum of the Canadian aerospace industry to exchange views on the role of suppliers in the aerospace sector and ways in which SMEs might enter the supply chain. Particular emphasis was laid on emerging R&D requirements and opportunities in the industry.

BayBytes Rural Technology Forum: Organized by the Newfoundland region of the Canadian Technology Network in partnership with the College of the North Atlantic, the BayBytes forum attracted 170 delegates from across Canada. The forum offers people from rural communities the opportunity to discover and promote what is taking place in their areas.

CTN Maritimes All Members Meeting: More than 100 delegates attended sessions in Charlottetown that included presentations on confidentiality issues, entrepreneurial challenges, financing issues, competitive intelligence and, at the conclusion of the meeting, how to create successful teams and companies.

3.5.3 Competitive Intelligence Initiatives

The **Canadian Institute for Market Intelligence** (CIMI), initiated in British Columbia in 1998, provides competitive and business intelligence services to IRAP's ITAs, management, and client base. The Institute receives funding from the CTN, support from CISTI, and special arrangements with Douglas College in BC.

In 1999-2000, CIMI assisted approximately 275 clients, most of them in British Columbia. CIMI provided competitive intelligence services and strategic advice to about half of these clients. CIMI also provided competitive intelligence to IRAP ITAs as part of the due diligence process for RDA and IRAP-TPC applications.

CTN Competitive Intelligence Workshops: Four workshops on Technology Forecasting (TF) and Competitive Intelligence (CI) were held across the country in four regions: Prairies, Quebec, Maritimes-Newfoundland, and Alberta-NWT-Nunavut. The objectives were to enhance awareness and understanding of CTN members relative to the merits and best practices of TF and CI, and to learn about SMEs TF and CI needs and practices. A total of 239 CTN members attended workshops designed with flexible formats and tailored to each region's objectives and level of experience with the two topics.

4.0 Management

4.1 Collaboration and Synergy within NRC

IRAP is an active participant of NRC's committees (see Annex 1) and working groups. IRAP also creates linkages with potential receptors of technologies developed at the NRC's research Institutes (see Annex 7). In addition, IRAP ITAs are often asked by Research Institutes to participate in various strategic planning exercises. For instance, IRAP actively participates in the following major committees through the National Initiatives group:

The *Business Development Committee* plays a leading role in the alignment of NRC's business functions and ensures that NRC's discoveries and technologies are commercially exploited. The major project in 1999-2000 was the organization of a NRC-Wide Spin-Off workshop, held in Magog in March 2000.

As part of its mandate, the BDC will identify means of optimizing working relations between Institutes and IRAP. It will also work on success stories linking BDOs with IRAP ITAs so that best practices can be identified.

The Commercialization and Spin-Off Committee, was created in June 1999 to examine ways of promoting and encouraging spin-offs, and to make spinning-off a natural way of transferring technology at NRC. The Director General of IRAP participates in the committee and ITAs participate in a small working group that supports the committee. IRAP assists new firms in advice on R&D programs and services and financial assistance.

The NRC High Performance Computing User Group coordinates the internal NRC use of High Performance Computing (HPC) facilities and promotes HPC use in Canadian industry. IRAP is part of the committee to ensure ITAs are aware of what resources and services for HPC are available at NRC, potentially to make such resources available to IRAP clients. The HPC User Group has identified Linux Clusters as an area of special interest to the NRC Research Community.

The Aluminium Roadmap Initiative: In 1999-2000, an ITA from the TN group provided guidance and advice in the development of an Aluminium Roadmap initiative in Chicoutimi involving several federal departments and agencies as well as local and national proponents, including the Aluminium Association of Canada. The initiative focuses on the creation of a *"Centre Canadien des technologies de fabrication de l'aluminium"* in the Chicoutimi region. Because of its SME focus, this activity is an important means of gathering and relaying intelligence and opportunities in this sector to regional ITAs and their SME clients.

NRC-Manufacturing Technology Group (MTG): As part of the Planning Core Group for the Manufacturing Technology Group's Strategic Planning Exercise, IRAP was involved in preliminary discussions defining the proposed process for four regional consultations designed to obtain input from industry, including feedback from IRAP's clients. Sector Group ITAs were involved in the Working Groups that analysed and integrated the outcomes from the consultations, producing recommendations for follow-up actions.

One sequel to the consultations has been the creation of a small IRAP task force led by National Initiatives to provide IRAP's response to the MTG Strategic Plan and some timely suggestions for the MTG Action Plan which is currently under development.

NRC-CANARIE: Working with a team of representatives from NRC-Institute for Information Technology (IIT) and NRC-IMSB, IRAP helped to consolidate support within the Ottawa region to locate the third generation CANet*3 point of presence, GigaPOP, at NRC's Montreal Road campus. A Memorandum of Understanding between NRC, the Communications Research Centre and CANARIE is now in effect. The Director General of IIT will lead the Steering Committee to develop and implement initiatives under this agreement.

4.2 Auditor General Review

As part of a review of the federal government's Industry Portfolio in 1999, the Auditor General (AG) was mandated to perform an audit of IRAP. The report of the audit was tabled in the House of Commons on November 30, 1999. NRC has noted with satisfaction the Auditor General's observation that "IRAP has contributed to the technological development of many SMEs."

At the same time, the report states that improvements are needed. The project selection and approval processes are not consistent across the program and the information management systems and processes do not adequately support the operations of IRAP. It should be noted however, that the scope of the audit included records as far back as five years, and much has changed since then.

NRC and IRAP agreed with the Auditor General's recommendations and are acting to respond to AG concerns and improve due diligence relating to decision making and measurement of IRAP's performance. IRAP will provide its staff and managers with improved tools and information to make quality decisions, report on performance and manage the program more effectively. Indeed, in keeping with IRAP's commitment to constantly improve the program, some of these changes were already under development at the time of the audit. Measures in progress include performance framework, quality assurance process, business process improvement, and enhanced information management system. (See Annex 14 for the list of actions taken and progress to date)

As part of its normal assessment schedule, NRC is planning to undertake an evaluation of IRAP which will include addressing questions in the Auditor General's Report.

4.3 Effective Leadership and Management

4.3.1 Information Management, Quality Assurance, Program Performance Framework & Business Process Improvement

IRAP management and ITAs require efficient tools and information to make quality decisions, report on performance and manage the program effectively. To achieve this, IRAP has established cross-regional multi-disciplinary teams dedicated to the development of tools and processes for a better understanding of IRAP's role in the innovation system, expected benefits to clients, quality assurance issues and best management approaches to obtain high performance level for the delivery of its services.

Highlights of achievements from the four teams:

Information Management Team: The Information Management Unit is responsible for Information Management / Information Technology (IM/IT) issues throughout IRAP. Additionally, IRAP has full time equivalent positions responsible for Information Technology support in the seven IRAP regions. In 1999-2000, approximately \$700,000 was expended to renew IRAP's computing infrastructure.

Activities in 1999-2000 included:

- Development of a comprehensive multi-year Information Management/Information Technology Strategy based upon IRAP's Business Process Review initiative, to guide IRAP's IM/IT developments and expenditures. Approximately 100 stakeholders were consulted in seven regional focus groups preceding the development of an RFP. A new Client Management System is expected online in fiscal year 2000/2001.
- Ensuring that IRAP systems were Y2K compliant.
- Consultations with the NRC executive group on its needs for a Client Management System.
- Co-sponsorship of an Electronic Document Management System (EDMS) feasibility study with the Records Management Section of NRC/ASPM.

Quality Assurance Team: The Quality Assurance Process examines how well IRAP serves its clients and provides feedback on potential improvements to its processes. In 1999-2000, IRAP's Quality Assurance process focussed on the "funded project assistance" component of the ITA/client relationship.

Activities in 1999-2000 included:

 Implementation by IRAP's National and Regional QA Teams in April 1999 of new processes and documentation to facilitate the consistent review and assessment of the documentation supporting ITA/Team decisions to provide IRAP project funding assistance to clients.

- Development of a QA "feedback process" to provide ITAs/Teams, as well as IRAP Management, with information on successful practices and those areas needing improvement.
- Development of a guideline to assist ITAs/Teams in the preparation of the "Project Recommendation" Identification to further improve the documentation ITAs/Teams generate to support project funding decisions. The guideline is now part of the funded project decision process.
- Launched an initiative to develop a common understanding of several "definition" issues as well as a new national training initiative, in response to results of the QA process.

Performance Framework Team: In 1999-2000, the performance framework team achieved remarkable progress in the identification of indicators for the measurement of IRAP performance in strengthening innovation capabilities of firms.

Activities in 1999-2000 included:

- Through case studies, a better understanding of IRAP's role and expected benefits to clients were illustrated.
- Two workshops were held during which performance indicators and data collection systems were identified and defined. Close relationships with the Business Process improvement and Information teams were maintained. The implementation of new business processes and an information management system will facilitate the appropriate implementation of the framework.
- Presentations of the new framework were done through regions with positive feedback from ITAs and management.

Business Process Improvement Team: Following the adoption of the To Be model in 1998-1999, a new team was formed in 1999-2000. The team is now ready to begin the implementation phase for 2000-2001.

4.3.2 Advisory Board

IRAP has established a strong relationship with its advisory board, whose membership reflects a cross-section of Canadian stakeholders. In 1999, Laurent Nadeau of Québec and Tony Melli of British Columbia joined the Board. Three meetings were held, one in Calgary, one in Montréal, and one in Ottawa, to seek advice on strategic issues. IRAP has also improved the management of meetings with new communications tools and a new delivery approach. (See Annex 15 for membership)

The consultation process with the Board has provided recommendations on important issues such as:

- IRAP future strategic directions
- IRAP national priorities for 2000-01
- Alignment of the CTN with IRAP
- Audit of the Auditor General
- Regional innovation strategies
- IRAP performance framework
- IRAP strategic plan update

The Director General of IRAP has increased the linkages with the Board and other NRC Institutes. Invitations to Directors General of research institutes to outline their role with SMEs at each meeting provides the Board with a better understanding of the relationship between NRC and IRAP.

4.4 Productive, Satisfied, Representative Workforce

4.4.1 Admin Workshop

An administrative staff workshop involving 65 personnel from across Canada was held in Montreal in May 1999. The objective of the workshop was to provide an opportunity to administrative personnel to network and exchange on work-related issues as well as prepare for BPR changes. The workshop focused on four modules that dealt with Career Management, Stress Management, Communications, Performance Planning and Review, and some specific IRAP issues.

4.4.2 Performance Bonus

A Performance Bonus Committee was formed to help implement a pilot program to offer performance bonuses in recognition of exceptional achievements by NRC staff. A Performance Bonus Review Team recommended a total of 30 IRAP employees, representing 19 per cent of total NRC personnel, as the first recipients of the awards.

4.4.3 Admin Review

A review of the function and classifications of administrative assistant positions across IRAP regions was one the national priority initiatives in 1999-2000. Began through the Business Process Review (BPR), and recommended by the Network Advisory Group (NAG) in September 1998, the administrative review set new responsibilities for administrative personnel in IRAP-client interactions. These new responsibilities will complement and support the role of ITAs, while enriching the functions of administrative personnel. This is a collaborative initiative among IRAP administrative personnel, management team and NRC Human Resource's classification experts. An implementation phase will run from April to September 2000.

4.4.4 Network Advisory Group

The Network Advisory Group (NAG) was formed in 1997 with a mandate to identify operational issues related to the delivery of IRAP and present possible solutions to the IRAP Management Committee. It also assists in the planning and implementation of internal initiatives affecting the network's operations.

NAG committee is comprised of a total of 16 members representing all regions and directorates. Regular teleconferences are held to exchange information and to address issues.

Agenda in 1999-2000 included:

- Planning of an administrative assistant workshop held in Montreal (May 1999).
- Review and recognition of Administrative assistants' role
- Disparity of Network Member ITAs and NRC ITAs salaries and benefits
- Identification of a need for a national IRAP training plan initiative
- Bonus Plan recommendations for Network Members to be included.
- Performance Planning and Review looking at ways to achieve results and getting the message to the IRAP Staff that this is a tool to be used for training.
- ITA Workload ways to lessen the burden

Annexes

		PAGE
Annex 1:	National Initiatives Participation on Committees	45
	Strategic Alliances Committee Memberships	49
Annex 2:	Table C1- IRAP Financial Information	50
	Table C3 -IRAP Contribution to Innovation and Application of Technology	51
	Table C4 - IRAP Contribution to Innovation Systems Support	51
Annex 3:	Technology Sector Groups Membership and Sponsorship	52
Annex 4:	Strategic Alliances Presentations List	54
Annex 5:	IRAP Success Stories	56
Annex 6:	Regional Participation in Collaborative Initiatives with Regional Innovation Players	60
Annex 7:	IRAP Client Linkages with NRC Research Institutes	66
Annex 8:	Regional Participation in Workshops/Foras/Seminars	70
Annex 9:	IRAP Staff Awards	77
Annex 10:	IRAP Network Member Organizations 1999-2000	78
Annex 11:	Participation of IRAP on NSERC's Committees	81
Annex 12:	FPTT Awards 1999	82
Annex 13:	Technology Visits Program/ii - 1999-2000 Survey	83
Annex 14:	IRAP's Action Plan and Checklist for Follow-up to Auditor General Recommendation	84
Annex 15:	IRAP Advisory Board Membership List	88
Annex 16:	Acronyms	89

National Initiatives Participation on Committees

	Chair	IRAP NI	Mtgs. per Year	IRAP Alternates or 2nd Member	Descriptor
NRC - Outside IRAP	·			÷	
NRC-CANARIE Steering Committee	Woodsworth	Palmer		Colley	
Commercialisation & Spin-off Committee: Working Group	T. Lefeuvre	Bell	2		Promote spinoffs and support institutes, best practices
Technology Group Forum - Biotechnology	Desrochers	Bell	2	Reichert	
Federal Partners in Technology Transfer	Caloz	Palmer	5	Bell	
Technology Forum: Manufacturing	Capes	Dupont	1	Spiller	Forum including IMI, IMTI, ICPET, Innovation Centre & IRAP to promote initiatives in the manufacturing sector.
Animal Care Committee	Neil	Rollefson	3	Fraser	
Business Development Committee	Hughes	Bell	3		Networking among BDOs; sharing best practices
Research Ethics Board	Huston	Fraser	8		Advisory body reviewing NRC projects involving human subjects
Special Initiative: SKN	Dumouchel	Deluca	,	Wong	
Special Initiative: Aerospace	Wallace	Dupont		Hitchmough	NRC initiative including IAR, AIAC and IRAP to promote collaborative projects with SMEs
High Performance Computing (HPC) User Committee	Tse	Colley	4		To promote HPC use and coordinate facility use for NRC
IDEAList	Roland Pleger (DLR)	Colley	-	Girard (IC)	This is not a "Committee", it is an International Contact Network which shares awareness of international collaboration opportunities and assists in forming multi-country consortia for 5th Framework activities.
IPF Steering Committee	Ledoux	Palmer	8		
Corporate Stewardship interdepartmental Committee		Rollefson	6		
Other Government Departments					

	Chair	IRAP NI	Mtgs. per Year	IRAP Alternates or 2nd Member	Descriptor
INDUSTRY CANADA		_	-		
Aluminum Roadmap	J. Lyrette	Dupont			Initiative involving local proponents from Chicoutimi and provincial and federal agncies to establish a technical network for R&D and value-added activities in the aluminum sector.
International Life Sciences Investment Group	C. Nymark/A. Poole	Cooper	2	Bell	
TPC projects	M. Lofthouse	Isabelle	postal		
TPC Committee Interdepartmental	B. Deacon	Isabelle		Fraser	
Jobs & Growth Initiative, Youth	D.J. Smith (IC)	Isabelle	2	Brizard	
National Sector Team - Health	C. Nymark	Reichert	3	Bell	
Canadian Biotechnology Strategy	N. Burlington	Bell	4		interdepartmental committee of SBDAs w biotech activities
Strategic Growth Sectors	Yanofsky	Bell; Deluca;		Dupont; Rollefson	
Innovation in Canada	Cowan	Rota	ad hoc		A project to build a portal providing SMEs with access to services, expertise & knowledge to support innovation in Canada (http://www.nrc.ca/innov/
NRCAN	т				
Canadian Light Materials Research Initiative (CLiMRI)	Jackman	Fraser	4		Collaborative projects to develop technologies reducing weight of vehicles
NSERC			-		
TPP Management Committee	Latour	NID	2		
TPP Project Committee	Paradis	Reichert	4		
CRD-Universities-Industry	Latour	Dupont	4	TN	Interdepartmental committee reviewing collaborative R&D proposals between industry & universities
Company Eligibility Review - IRF/USRA	Houston	Bell	mail	TN	
IRF - Engineering & Physical Sciences	Houston	Colley	4	TN	Applications from industry to employ recent PhDs in research

	Chair	IRAP NI	Mtgs. per Year	IRAP Alternates or 2nd Member	Descriptor
IRF - Life, Sciences, Env, Misc	Houston	Fraser	4	TN	Applications from industry to employ recent PhDs in research
PWGSC					
Procurement Strategy Committee (PSC)	Carruthers	Colley	2	Scott (Coord)	Review of procurements in support of national and regional objectives
HRDC					
S&T Youth Committee	MacIsaac	Isabelle	4	Brizard	
Youth Program Evaluation Committee	Kingwell	Brizard	1	Isabelle	
AGRICULTURE/AGRIFOOD CANADA			-	ч. 	
Canadian Agricultural New Uses Committee	Pender	Reichert	4		
Expert Committee on Plant Products	Murray	Reichert	2		
CANADIAN SPACE AGENCY					
Technology Diffusion Program Review Board	Auger	Fraser	4		Selection committee for CSA-supported marketing proposals in sectors other than space.
DEPARTMENT OF NATIONAL DEFENCE					
DIRP	Macmillan	Deluca	6	Colley	
FISHERIES & OCEANS	·				
Interdepartmental Aquaculture Steering Committee	Hessian	Bell	3		
CLIMATE CHANGE INITIATIVE					
TEAM Management Committee		Rollefson	10		
TEAM Industry Working Group	Dolenko	Fraser	14	Rollefson	Selection committee for projects to cut down on greenhouse gas emissions
Outside Government					
ALLIANCE OF MANUFACTURERS & EXPORT	ERS OF CAN				
S&T Network	Cornell	Montgomer y	3	Dupont	General policy-setting for national S&T

	Chair	IRAP NI	Mtgs. per Year	IRAP Alternates or 2nd Member	Descriptor
Business Opportunities Sub-Committee of S&T Network	Cornell	Dupont	1		Development of Strategic Alliances, networking and business opportunities
Canadian Wheat Board Rapid Instumental Objective Testing	Worden	Reichert	8		
PRECARN		Palmer			
Economic Generators Initiative, Microelectronics Cluster Working Group	Bryden/ Chiarelli	Palmer			

Strategic Alliances Committee Memberships

Strategic Alliances Committee Memberships	Chair	IRAP Links	Mtgs. per Year	IRAP Alternates or 2nd Member
NRC - Outside IRAP				
International Relations Network (IRN)	L. Lapointe	D. Cooper	2	M. Mirota
Interdepartmental Science Capacity Working Group	Steve Lucas NRCan	D. Cooper	6	S. Grimley
	(Rob James NRC - delegate)			
Women Engineers in Science (WES) - Asia	L. Lapointe	M. Mirota		
Committee on Safety & Health (COSH)	Joanne McIlhinney	D. Cooper (rep. Mngt.)	12	
Other Government Departments				
DFAIT				
PEMD - I Tier II	John Garrow	D. Cooper	4	
INDUSTRY CANADA				
International Life Sciences Investment Group	C. Nymark	D. Cooper	1	K. Bell
World Trade Organization (WTO /GATT)	K. Dawson / N. Guillemette	D. Cooper	2	S. Grimley
European Union (EU) Materials Working Group	Hamid Mostaghaci	D. Cooper		
NSERC CRD-Universities-Industry	P. Latour	D. Cooper ex- officio	6	G. Dupont, G. Fraser & K. Bell
REVENUE CANADA				
Interdepartmental Advisory Committee on Tax Credits	K. Miedzybrodzka	D. Cooper / S. Grimley	3	S. Palmer
Outside Government		-		
IMS Canada (Advisory Committee)	Martel/Lyrette	D. Cooper	3	9 ITAs
Alliance of Manufacturers & Exporters of Canada	D. Turnbull	D. Cooper	2	

Table C1 **Financial Information**

	1995-96	1996-97	1997-98	1998-99	1999-2000
Budget Allocation	\$98,127,000	\$94,584,000	\$96,745,000	\$108,645,000	\$116,569,000
Direct Cash Contributions to Firms*	\$60,268,000	\$61,923,000	\$65,983,000	\$80,579,000	\$70 581 000
Contributions to PA Projects	N/A	N/A	N/A	\$3,824,970	\$19 265 557**
Expenditures on the Provision of Technical Advisory Services	-	\$28,000,000	\$28,000,000	\$29,000,000	\$33 606 475
Total Contribution to Network Members	\$18,975,000	\$20,882,000	\$21,483,000	\$23,954,000	\$26 611 000
Total Expenditures	\$91,741,000	\$96,631,000	\$100,899,000	\$119,607,000	\$113 798 000
Total Level of Activity***	\$91,741,000	\$96,670,000	\$100,950,000	\$124,496,000	\$135 379 000
Total Number of ITAs	239	240	245	260	262
% of NRC ITAs ****	30	30	30	30	30
FTEs	122	136	136	154	175
% Staff Continuing	96.12	86.21	85.61	81.46	75.00
% Staff Term	3.88	13.79	14.39	18.54	25.00

*

Includes Youth Employment Initiatives Expenditures Includes Payables at Year End (PAYE) for 1998-1999 reported in 1999-2000 **

*** Includes Precommercialization Assistance Projects and Financial Agreements with OGDs

**** Average is 30%

Table C3Contribution to Innovation and Application of Technology

	1995-96	1996-97	1997-98	1998-99	1999-2000
Number of Firms that Received Assistance (Funding and Advice)	10,000	10,000	12,000	12,000	12,000*
Number of New Client Firms	3,000	3,300	3,000	3,000	2,128**
Number of Firms that Received Funding Only	3,475	3,018	3,300	3,800	3,359
Total Number of Projects	-	3,558	4,139	4,694	4,343
Number of Firms with a PA Project	N/A	N/A	N/A	40	68

* Includes Precommercialization Assistance

Table C4Contribution to Innovation Systems Support

	1995-96	1996-97	1997-98	1998-99	1999-2000
Number of IRAP Network Members	140	125	130	131	138
Number of Canadian Technology Network Members	300	600	880	1,022	1,015
Participation in Seminars, Fora, Workshops*					350
Number of Technology Mission	N/A	N/A	N/A	6	4
Number of Youth Placed through the Youth Employment Strategy	N/A	N/A	628	592	643
Number of Firms participating in the Youth Employment Strategy	N/A	N/A	561	559	571

 IRAP has been very active in this area for the past five years, however, from 1995-96 to 1998-99 no system was in place to collect data. Data for 1999-2000 is an approximation based on regional feedback

Sector Group	Agri-Food	Biotechnology	Communications	Construction	Electronics & Signal Processing
Coordinators	Maureen Hatanaka	Bill Dobson	Al DeLuca	Michael Alldritt	Al DeLuca
Sponsor	Dave Healey	Bill Smith	Claude Attendu	Andy Gilliland	Diane Isabelle
BC	Maureen Hatanaka Jan Langton Warren Nagata	Joe Mueller	Nick Fong	Alan Toon Michael Alldritt	Graham North
AB	Terry Rachuk	Eric Swanson		Vic Prystawa	Brian Moore
Prairies	Janet Panford Vivian Sullivan Bernie Zuk	Wayne Craig Landis Henry	Lakkavally Chandramohan	Edgar Lach	John Sher
ON	Frank Holmes Roland Kilpatrick Nick Pisano	Bill Dobson Dan Lynch	Raj Mathur	Roger Willoughby	Angelo Del Duca Don Snedden Ken Hitchmough
TN	Kevin Bell R. Reichert	Kevin Bell R. Reichert	Doug Colley		
QC	Alexandre Blais Pamela Presley	Pierre Bourassa Georges Lagacé	Philippe Marquette Gilles Jolivet	Patrice Audet-Lapointe Denis Méthot	Raymond Guay Yves Plourde
NB			William Langley	Robert Allore	
NS	Don MacAuley Steve Owen	Don Douglas	Glen Isenor	Robert Gascoigne	
PE	Dave Fletcher			Alan Brown	
NF		Ronda Dillon	Kevin Skinner	David Bailey	
CISTI	Dianne Pammett	Bonnie Bullock	Diana Schmidt	Mike Culhane	Diana Schmidt
NRC/OGD	Royal Hinther (PBI)		Jeet Hothi (CRC)	Michael Rich	

Technology Sector Groups Membership and Sponsorship (First Half)

Sector Group	Sustainable Development	Chemical Processing	Manufacturing Aerospace	Manufacturing Integrated Technologies	Manufacturing Material Processing	Software
Coordinators	Jim Rollefson	George Fraser	Ken Hitchmough	Gilles Dupont	Kashmir Gill	Doug Colley
Sponsor	Steve Palmer	Dave Rideout	Jean-Pierre Lemieux	Roy Crew	Roy Crew	Bruce Pridmore
BC	Vernon Rogers	Olga Kargina James Wilkin	Tony Edgar Bill Sturrock	Tony Edgar	Christine Taggart	Jerome Kashetsky
AB	Alex Dickson Craig D'Entremont Rolf Stokhuyzen	Eddie Polukoshko		Robert Faulder	Kashmir Gill	Ken Gamble
Prairies	Dennis Belliveau Robert Quirk	Nur Gurak	Allan Bergman	Allan Bergman	Dennis Deley	
ON	Richard Abbott Steve Guerin Jay Perry Bruce Sutherland	Ramesh Gupta Som Khanna	Ken Hitchmough Adrian Spiller Richard Abbott	Adrian Spiller	Gopala Gowda Magda Batky	Sandra Kodis Hugh McGrory
TN			Gilles Dupont		Gilles Dupont	
QC	Pierre Désilets Serge Lessard Pierre Lamarre Richard Mercure Denis Morrissette	Jacques Boucher Monique Talbot	Bernard Morin Claude Morasse	Jean-Claude Brisson	Rene Fugère Simon Gosselin	Eric Holdrinet
NB	Jean Léger		Brian Hatchett	Phill Reece	Dick Canavan	William Langley
NS					John Marshall	Gary Bustin
PE		Jim Murray		Alan Brown		
NF	Gary Savage	Geoffrey Freeman	David Bailey	Johnny Clarke	Carl King	
CISTI	Eveline Landa	Alison Ball		Susan Salo	Susan Salo	Ursula Rapp
NRC/OGD		Kevin Jonasson (ICPET) Lise Hughes (SIMS)	Peter Trau (AIAC-IAR)			

Technology Sector Groups Membership and Sponsorship (Second Half)

Date	Presenter/ Attendee	Audience / Organization	Торіс	Location	Number of attendees
Feb 1-4/99	D. Cooper	Taiwan Workshop	Orientation	Ottawa	60
Feb 5/99	D. Cooper	Sweden Delegation	IRAP	Ottawa	18
Feb 22/99	D. Cooper	Paris / ISE	IRAP	Ottawa	10
Feb 26/99	D. Cooper	Sweden Delegation	IRAP	Ottawa	35
Apr 26/99	D. Cooper	S&T Wealth - Irap Management	IRAP	Ottawa	20
Jun-18	D. Cooper	SWEDEN Univ. R&D	IRAP	Stockholm	55
July 99	DC/MW	Chalmers University Goteborg	Growth of Bio Co. in Cnd	Stockholm	35
July 99	D. Cooper	UK S&T counselor	Bio Financing & GMO	United Kingdom	5
Aug 3/99	D. Cooper	Ukraine delegation	IRAP - Strat. Alliances	York Univ London, ON	50
Aug 26/99	D. Cooper	Alberta Regional Mtg.	IRAP - Strat. Alliances	Red Deer, Alberta	33
Sept 20/99	D. Cooper	Workshop on University - IRAP Linkages	IRAP - Strat. Alliances	Winnipeg, Manitoba	18
Oct 4/99	D. Cooper	South African Delegation	IRAP - PA	Ottawa	3
Oct 12-15	D. Cooper	Exhibitor at 26th Int'l Small Bus. Congress (ISBC '99)	IRAP / CTN	Toronto	180
Oct 26/99	D. Cooper	IRAP Advisory Board	S.A. International - WTO	Montreal	18
Oct 29/99	D. Cooper	Philippines Delegation	IRAP	Ottawa	9
Nov 8/99	D. Cooper	Australian Bio Tech. Group	IRAP / CTN / BIO Financing	Ottawa	12
Nov 22-25	W. Langley	Attend IST'99 Conference	Software Conference	Helsinki, Finland	150
Nov 30 – 1 Dec/99	D. Cooper	Italian Delegation	S.A. International	Ottawa	18
Dec 8/99	D. Cooper	FPTT group	S.A. WTO - R&D Subsidies	Ottawa	26
Dec 16/99	D. Cooper	VP TIS & Directors General	S.A. WTO - R&D Subsidies	Ottawa	12
Dec 16/99	D. Cooper	U-61 Uplands - Aerospace Inst.	S.A. International	Uplands Airport U-61	12

Strategic Alliances Presentations List (First Half)

	Presenter/		_ .		Number of
Date	Attendee	Audience / Organization	Торіс	Location	attendees
Jan 20/00	DC & MDM	Chinese Delegation	High Tech Investments, IRAP Links and Bio Finances	Ottawa	16
Jan 26/00	DC & MDM	Attended Briefing at DFAIT	Revised S&T Directions	Ottawa	5
Jan 27/00	D. Cooper	Attended Revenue Canada Info. Session	New Tax Policies	Montreal	240
Feb 1/00	D. Cooper	IRAP Management Mtg.	Strategic Alliances - Business Plan	Winnipeg, Manitoba	24
Feb 4/00	DC & MDM	DFAIT - Foreign Service Officers	IRAP Links, Bio Finances & Alliances	Toronto	35
Feb 10/00	D. Cooper	Network Members Meeting	WTO - R&D Subsidies	Ottawa	16
Feb 10/00	D. Cooper	ACST Expert Panel Dr. Simard & A. Bichon	IRAP - WTO - R&D Subsidies	Ottawa	8
Feb 18/00	D. Cooper	Dr. A. Larrson - Astra Zeneca	IRAP / CTN & Bio Financing	Ottawa	15
Feb 11-26	D. Rideout	Attend CITN, ITAP & Trade Comm.Mtgs	Meetings	Jakarta & Bangkok	100
Feb 24/00	D. Cooper	IRAP Sector Group - Aerospace	IRAP S.A. ITAs Inter'l EU - WTO	Ottawa	20
Feb 25/00	DC & MDM	DFAIT - TDOs & STCs	IRAP - Strat. Alliances	Ottawa	34
Mar 3/00	D. Cooper	Korean Delegation & SMIPC US Office	IRAP - SMEs	Ottawa	8
Mar 7/00	DC & MDM	Inter'l Relations Office - NRC	S.A IRAP	Ottawa	16
Mar 14/00	D. Cooper	Chilian Delegation	IRAP International	Ottawa	6
Mar 29/00	DC/MDM & DR	Chinese Delegation - Shandong Prov.	NRC / IRAP / CTN	Ottawa	22

Strategic Alliances Presentations List (Second Half)

IRAP Success Stories

Company and Technology involved	IRAP's role	Impact/ results on firm and on Canadian innovation system				
Regional - National - International						
Whitstone Farms, B.C. <i>Medicinal herb industry</i>	 Feasibility study Research for identification of brokers, wholesalers, and distributors in north America Data on market competitiveness and risks Formed a pilot team to help growers to make the transition to the herb market Arranged meetings and site visits with experts in the field 	 A conference was hosted in March 1998 where a 120-page report was distributed to 200 growers A new value-added industry to the region with emergence of new partnerships leading to new companies and alliances Emergence of a new niche area in the farm industry A database of expertise and industry contacts was formed New medicinal herb industry promises to pour millions of dollars into the local economy A new processing plant being constructed for medicinal extracts 				
Genics Inc. (Formerly Genics Can Inc.) Spruce Grove Alberta Processes to manufacture patented wood preservatives (to prolong the life of wood electrical utility poles)	 Assisted firms with 2 early projects in 1994-96 Encouraged and enabled the firm to hire highly technical professionals in the area of software, process control and packaging Established linkages in Canada and elsewhere 	 Enhanced its core technical competencies through reducing the number of processing steps, developing sensors, and automating its assembly operation, and understanding and implemented glass forming technologies Developed novel chemical formulations Increased revenues from \$150K in 1994 to \$4M in 1999. Increased number of employees from 2 in 1994 to 45 in 1999 Increased its manufacturing space from 3,000 sq. ft to 29,000sq.ft Continues R&D for the development of new products 				
Star Egg, Saskatchewan Primary processing of raw eggs	 Provided technical advice Provided financial support Helped develop and implement a HACCP³ program Helped firm obtain a CFIA HACCP certificate (Canadian Food Inspection Agency) 	 Improved its process Invested in R&D by hiring expert and new graduate Was issued a HACCP certificate by the CFIA in August 1999, first of its kind in Canada in this sector of the food industry Was able to retain its customers Became a leader supplier for major grocery chains in the Prairies and largest egg facility in Saskatchewan with 23 employees, 53,000 eggs processed per day, and \$20M annual sales Increased market share by 15% and sales risen by \$500k in one year 				

³ HACCP: Hazard Analysis Critical Control Points

Company and	IRAP's role	Impact/ results on firm and on
Technology involved		Canadian innovation system
Doepker Industries Limited (DIL), Anaheim, Saskatchewan Manufacturing of highway trailers- productivity improvement project	 Identification of several problem areas in the manufacturing facilities Helped implementation of remedial measures Helped automation of financial management Helped improve inventory management Helped reduce costs and standardization on purchasing 	 Enhanced its process through evaluation and installment of a new design software to improve its productivity Realized important savings as a result of its improvement process: saved \$1M as a result of inventory management, and reached 15% of savings on \$25M of annual purchases Realized reduced costs and increased sales (respectively \$4M in cost saving and \$7M in increased sales) Increased its level of operation with over \$40M in sales Firm moving toward e-commerce applications
Robertson Technologies, Wellington Polymer Technologies Ontario Incorporate hazardous materials for an advanced plastic wood (Develop a strong and stable material with low-cost input materials to replace wood in some applications)	 Provided valuable technical advice since 1996 Provided financial support Helped examine the market for simulated cedar shakes (at which point, the firm began developing a product for a specific market) 	 Developed a new base material from "waste" plastic materials and wood powder, and a new product for the roofing market. Raised private investment capital Increased number of employees from 1 in 1996 to 7 in 1999 A new company was formed Implemented a technical process (compounding raw materials into a pellet form) Received funds to build a compounding facility to palletize mixtures if the appropriate raw materials. Company continues to raise capital for a production facility to address part of the large residential roofing market Continues to invest in R&D (other potential applications being investigated)
Royal Mat Inc. Beauceville, Quebec Use of recycled tires (rubber) for soundproofing panels	 Provide financial support in 2 phases Feasibility study of project Linked company to technical expertise (NRC and CRIQ, Univ. of Saskatoon) Helped reaching standard norms set by Health Canada for non-toxic product major step towards commercialization 	 Implemented a new method for the production of acoustical panels (NEUTRA-PHONE) Obtained validity product from Health Canada as a non-toxic product Increased its sales from \$4M in 1996 to \$10M in 2000, and expected to be \$18M in 2001 Increased number of employees to 75 Company continues to invest in automation and plant extension Plans to improve product through more R&D

Company and Technology involved	IRAP's role	Impact/ results on firm and on Canadian innovation system			
T. E. Boyle Farm and Forestry, NS Worm composting of clean pulp sludge	 Provided initial guidance to the farm-based company Linked to technical expertise Provided financial support Supported experimental work Linked firm with a large commercial greenhouse and compost operation in Kelowna, BC – site visits 	 Increased its technical competencies and knowledge by learning the biology related to the project Potential of becoming expert in vermiculture and worm composting Environment impact: 150,00 tons of pulp waste from landfill per year to be converted into both worms and organic soil amendment Increased R&D as firm is proposing a phase II for the project (unique and efficient harvest technology for worms and worm castings) 			
	Non-funded examples of success story				
Etobicoke (and other) Manufacturers' Alliance Manufacturing industry	 Initiated the Etobicoke Manufacturers' Alliance in 1997 with a forum organization. A grouping of 50 local manufacturers 	 Increased number of connections Increased the ability of manufacturers to find sources of products, services, partners, etc. within the local community 			

Re	gional Participation in Collaborative Initiatives with Regional Innovation Players
Region	Collaborative Initiative with Regional Innovation Players
BC and Yukon	 FERIC, PAPRICAN AND FORNITECK:, BC forest sector clients are referred to a specific scientific staff member within these organizations for direct answers to technical inquiries. Technology Entrepreneurs Network: An initiative to form a Technology Entrepreneurs Network. The goal of the network is to help existing technology companies grow and to provide support and resources to new technology entrepreneurs. The Technology Assistance Program (TAP) and the Market Assessment of Research and Technology Program (MART): Tap and MART are Provincial industrial assistance programs funded by the BC Government's Information, Science, and Technology Agency (ISTA).
	IRAP BC/Yukon also funds the MART program. These programs are delivered by IRAP BC ITAs and administered through Pace Technologies Inc. Simon Fraser University: There have been five successful MART applications this last year. MART continues to be a good tool for the University Industrial Liaison Office and their spin-off clients. UBC Faculty of Agricultural Sciences: Agricultural Sciences has a mandate to undertake industrial research and place graduates in industry. A collaborative agreement with IRAP has facilitated these objectives
	 Alliance BC: Linked clients with a series of local companies that are Alliance BC members. Kootenay Product Development Fund: A partnership between NRC and Kootenay Association for Science and Technology (KAST) exists whereby ITA Bruce Hardy delivers the \$500K Kootenay Product Development Fund (KPDF) to SMEs in the Columbia Basin Region Canada Customs and Revenue Agency: ITA Graham Parkes worked to help IRAP clients make successful SR&ED (Scientific Research and Experimental Development) claims. A pilot program, the Pre-claim Project Review (PCPR) process, was initiated. It set out to work with a few IRAP clients that were in the process of developing a RDA proposal.

Alberta,	Alberta Business Council (ARC):
Nunavut and NWT	The ARC Business Unit is pursuing the opportunity for a joint NRC/ARC
	fuel cell centre in AB. Under consideration are in-home co-generation,
	natural gas powered diesel conversion and Solid Oxide Fuel Cell auxiliary
	power units.
	Microsystems Research Institute and Biotools:
	The region worked with the Microsystems Research Institute (MSTRI) and
	Biotools as part of NRC's Genomics Initiative
	An Alberta ITA has been working to locate a Magnetic Resonance Imaging
	(MRI) scanning facility in Calgary
	Banff Centre:
	IRAP Alberta/Northwest Territories/Nunavut worked to establish close
	linkages with the Banff Centre and their multimedia department, in 1999-
	2000 Several ITAs visited and attended seminars and encouraged client
	activities with the Banff Centre
	The region has a close relationship and is very active with the following
	organizations :
	Calgary Council of Advanced Technology and the Edmonton Council of
	Advanced Technology, Trade TEAM Alberta, CDNX Exchange, University
	of Calgary's CCIT group, University of Alberta's MISTRI and UAEM groups
	and the Mining Industry Wear Materials Group, the Central Alberta
	Economic Development Region, Nunavut Research Institute and Canadian
	Association of Management Consultants.
Prairies	University of Regina, City of Regina and Government of
	Saskatchewan:
	Worked to create a strategy for the demonstration of integrated
	environmental information management systems for Canadian
	municipalities;
	Saskatchewan Construction Association:
	Worked to establish an electronic file room which demonstrates the use of
	internet access to electronic versions of blueprints and tenders - the first
	use of e-business for the construction industry
	Manitoba Alliance of Manufacturers and Exporters, Industrial
	Technology Center, Western Economic Diversification, University of
	Manitoba:
	Worked to create a strategy for the development of the next generation of
	entrepreneurs and innovators in manufacturing. A first step focused on the
	development of a virtual reality center in Manitoba, linked to IMTI.
	Science Teacher Associations, Manitoba and Saskatchewan:
	Worked to create a program that links science and computer science
	teachers to innovative SMEs.
	NRC and the Government of Saskatchewan:
	Supported the work of a Shad Valley student to examine how it could play a
	more active and effective role in the 1998 NRC-Government of
	Saskatchewan's Innovation Blueprint.
	Saskatchewan Economic and Co-operative Development department,
	the Manitoba Department of Industry, Trade and Mines and Western
	Economic Diversification:
	Worked to identify specific initiatives in support of the region's innovation
	infrastructure
	Prairie Agricultural Manufacturing Institute, Prairie Implement
	Manufacturers Association:
	Involved in a study of future technology opportunities for farm machinery
	and manufacturing.

Prairies (continued)	University of Manitoba Asper Center for Entrepreneurship and the Food Development Center: Examined specific competitive opportunities for the processing of poultry blood.
Ontario	TOPTECH: Introduced Toptech to Sheridan College and the two have formed a partnership to deliver this training in Ontario. A Toptech employee will be located at Sheridan in Brampton later this year
	Department of Foreign Affairs and International Trade (DFAIT) and Industry Canada:Participated in the organization of capacity building course in biotechnology for 30 commercialization officers from around the world. 11 IRAP biotechnology clients gave presentations on their business activities. To date one client has indicated that follow-up conversations have taken place which may lead to new trade opportunities.Business Development Bank of Canada (BDC):
	BDC and IRAP Ontario launched a printed program to "enhance the technological strategy, planning, management and performance of SMEs"
	Canada Israel Industrial Research Foundation (CIIRDF): Assisted Rainer Anderson with a number of contacts in the Ontario Horticulture/Floriculture Greenhouse industry Visited Essex County to determine the possibility of linkages with Israeli companies in the Greenhouse sector Made linkages including MOSAID, and SNA
	Ontario Centre for Environment Technology Advancement (OCETA): The Eco-Efficiency Innovation (EEI) Program is providing Ontario manufacturers with energy and eco-efficient audit. Eligible manufacturers can receive a contribution from IRAP to cover 50% of the audit cost, and access financing from the dedicated EEI Credit Facility to pay for capital investement improvement projects. The program is operated by OCETA in partnership with IRAP/NRC and other federal agencies.
Quebec	Investissement-Quebec: Participated in the formation of and alliance between IRAP and Investissement Quebec.
	National Science and Engineering Research Council (NSERC): An IRAP-Quebec ITA presided over the strategic project selection committee of NSERC An ITA was named as an evaluator of an NSERC research project.
	 Conseil Consultatif de L'Ecole Polytechnique (COGEP): An ITA has assumed the role of executive president of COGEP for a two-year term. In 1999-2000 an IRAP-Quebec ITA was the president of the electrical and informational engineering at COGEP. This committee produced an annual report that highlighted a series of recommendations to the departmental director. PharmaVision:
	For the year 2000, P. Bourassa was named president of a network-synergy committee for PhamaVision. This organization brings together people in the field of pharmaceuticals.
	Canadian Space Agency: Started preliminary meetings and discussion with the Canadian Space Agency and its European counterpart about technology transfer and the control and technologies relating to financial contributions. Also being discussed is technical document research services by their research departments.

Quebec	Development Economique Canada (DEC):
(continued)	The region took part in meetings with DEC in part to streamline IRAP's
, ,	precommercialization assistance program and DEC's repayable aid
	services.
	Industry Canada :
	Examined the possibiliy of enlarging the partnership between Industry
	Canada and IRAP for the benefit of SMEs. Organized meetings between
	Industry Canada agents (sector groups) and ITAs which has lead to
	numerous interactions between them.
	Business Development Bank of Canada (BDC):
	Discussed the Force Technologie (or Techno Strategie) program and
	IRAP's potential role.
	Helped SMEs benefit from BDC's strategic accompaniment program.
Maritimes	Canadian Food Inspection Agency:
	Assists food industry clients who have food safety or other related issues.
	Those clients are referred to the ITA who then helps these firms with the
	assistance of CIFT technical staff.
	Nova Scotia Community College:
	Maintains contact with the campuses in Shelburne and Yarmouth.
	Agriculture and Agri-Food Canada:
	Worked with the research staff to assist clients who may be looking at
	issues related to food processing and other food industry issues.
	Provincial Agricultural Representative:
	Worked to further investigations into alternate technologies in agriculture or
	more specifically in assisting small food business start-ups.
	CIFT:
	The Technical Assistance contribution, which NRC-IRAP provides to CIFT
	has allowed for excellent technical help to SMEs who could not otherwise
	afford or access such advice. In many cases the assistance provided is
	unique as the expertise of the CIFT staff is somewhat seafood and food
	safety focused.Without the IRAP support in place this help would be
	unavailable to these SMEs.
	Regional Development Organizations:
	Worked with the regional development organizations in Yarmouth, Digby,
	Halifax and Antigonish. Most work is food related and half of the time
	involves an individual firm with the other half involving more community-
	based organizations.
	Economic Development Council for Manitoba Bilingual Municipalities:
	Responded to a question on fish silage posted on the CTN from Winnipeg.
	Provided technical information and explained the various options for using
	discarded fish and fish processing by-products
	University of New Brunswick:
	Assisted the interchange between the University of NB and local SMEs,
	which has markedly increased. A number of IRAP projects have had
	specific subcontract or consulting arrangements with the Information
	Technology Center (ITC) designed to serve industry. This works well as a
	technology transfer mechanism. The linkages were facilitated by IRAP.
	content in this subject matter now better serves the needs of local SMEs in
	the IT sector. The ITC has taken a lead role in building a Software Process
	Improvement Network (SPIN) which will promote Software Engineering
	concepts and raise awareness in this regard with the SME community.

Newfoundland and	Newfoundland and Labrador Organization of Women Entreprenuers:
Labrador	Provided support to Newfoundland and Labrador Organization of Women
	Entrepreneurs (NLOWE)
	Hungarian Aquaculture Linkage:
	Assisting the aquaculture industry in locating relatively cheap and effective
	methods and technologies to increase their production, as well as finding
	international expertise.
	Assisting the industry in establishing a working relationship and technology
	transfer with Hungarian Aquaculture and other International Aquaculture
	institutions and corporations working in intensive trout culture. Newfoundland Genomics:
	Arranged for Newfoundland Genomics to gain a better insight into Industry
	Canada's TPC (Technology Partnership Canada) program by facilitating a
	face-to-face meeting with TPC representative(s) from Ottawa. The ITA has
	made the Client aware of the program given the Client's financial requirements. Also, assisted the co-founder of Genimi Holdings in the
	United Kingdom, by providing a link to the funding sources in Newfoundland
	and Canada, namely, ACOA (BDP), TPC, HRDC, DITT (EDGE program)
	and IRAP (PA program).
	Nutraceutical Committee, Memorial University of Newfoundland:
	Linked the Nutraceutical Committee with Memorial University of
	Newfoundland. Introduced two individuals to the Committee as resource
	experts within the University. Both have since done analysis of
	Nutraceuticals and have provided guidance to the industry committee.
	Atlantic Canada Opportunities Agency (ACOA):
	Advised Evernew Tea of ACOA's and Department of Development and
	Rural Renewal's programs of which Evernew Tea has initiated discussions
	and secured funding from ACOA for a market assessment.
	United Nations Educational, Scientific and Cultural Organization
	(UNESCO):
	As a result of the involvement of a speaker from UNESCO at our
	BayBYTES 3 Conference in September (organized by CTN), the province
	of Newfoundland and Labrador and UNESCO are working on a MOU to
	access Newfoundland expertise. UNESCO will also co-sponsor BayBYTES
	2000.
	Mobile (Wireless) Home Care Platform Project:
	The Mobile (Wireless) Home Care Platform Project has been awarded to a
	Newfoundland Consortium of Companies. The Mobile (Wireless) Home
	Care Platform Project will combine innovative technologies and software
	applications to improve the quality of medical services delivered to patients
	in their homes in Newfoundland and Labrador and across Canada. Partner
	companies in the Newfoundland Consortium are: Collaborative Network
	Technologies; Computers and Communications Limited; and Siemans. The
	supporting partners in this project are: Mobility Canada Member
	Companies; CANARIE Inc.; National Research Council of Canada; and
	Operation ONLINE Inc.
	Atlantic Canada Technology Innovation Program (ACTIP):
	Dave Rideout (IRAP) and Tom Lefeuvre (IMD) participated in a working
	group on NRCan's proposed Atlantic Canada Technology Innovation
	Program (ACTIP) in St. John's. The program will focus on the oil and gas
	industry. It will compliment IRAP.

Other Collaborative Activities		
National Office	Heating, Refrigeration and Air Conditioning Institute of Canada and NRCan:	
	The team's objective is to develop the next generation of advanced heating systems to meet the combined need for ventilation and space and water heating. Seven IRAP clients have formed strategic alliances to develop the systems with technological support from NRCan's Advanced Combustion Technologies Laboratories. The IRAP projects will be tested at the Canadian Centre for Housing Technology followed by an extensive field trial program. The project systematically addresses a series of market barriers by developing and validating such activities as performance evaluation, rating systems and safety certification programs. The project structure is well	
	developed and the first two IRAP technology development projects were	
	initiated in 1999-2000.	
	Local economic development organizations: National Initiatives group has been closely involved in the Ottawa Economic Development corporation. The initiative called the Economic Generators promotes growth in the Ottawa region business community in a variety of sectors, ranging from the high tech industry to tourism. The Microelectronics Cluster is part of the initiative looking at developing the microelectronics industry in the Ottawa area by encouraging early stage microelectronics companies, linking them to venture capital, marketing Ottawa firms and ensuring that an infrastructure exists to support further growth of the sector.	
	Alliance of Manufacturers and Exporters of Canada:	
	Increasing awareness by providing the network of the Alliance of Manufacturers and Exporters of Canada with information about IRAP and identifying opportunities for collaboration, IRAP has 2 representatives on the Science & Technology Network of the Alliance of Manufacturers & Exporters of Canada. One collaborative outcome will involve adapting elements of the Next Generation of Manufacturing (NGM) Tool developed under the Alliance's NGM Initiative to a suite of Diagnostic and Benchmarking Tools for IRAP.	
	Technology Diffusion Program, Canadian Space Agency:	
	IRAP is part of the Review Board for the Technology Diffusion program who meets quarterly and approves around 10 projects this year for a total of \$500K.	
	Canadian Light-weight Materials Research Initiative (CLiMRI), Project Selection Committee (NRCAN):	
	IRAP has also a representative in the Canadian Light-weight Materials Research Initiative (CLiMRI) project selection Committee (NRCAN). The Canadian Light-weight Materials Research Initiative (CLiMRI) funds projects aimed at developing and implementing the use of light-weight high-strength materials in transportation applications in order to reduce greenhouse gas emissions through improved vehicle efficiency. The projects will also improve the competitive position of Canadian primary metals, automotive, truck, rail car, and aircraft manufacturing industries and their	
	associated parts suppliers. Each project has an industrial participant collaborating with one or more federal laboratories - NRCAN, NRC, and Transport Canada. The budget for the current year is \$1.8 M; twelve projects were approved in FY 1999/2000.	

IRAP Client Linkages with NRC Research Institutes		
Region	NRC Institute	Projects - Company
BC/Yukon	IAR	The region has sponsored seven companies to visit NRC/IAR and familiarize themselves with the Institutes capabilities: Companies: CJ Roberts and Associates; Outback Aviation; Discovery Aerospace; Profile Composites; S – Matrix; McNeal & Associates Ltd.
	IMB	Kinetek Pharmaceuticals Inc: visited IMB/ Halifax to learn about NRC's genomics capabilities resulting in a collaborative agreement.
	IBS	Chemokine Pharmaceuticals Inc: visited IBS/ Ottawa (neurodegenerative disease group) resulting in a contract to NRC.
	ΙΜΤΙ	TDS Technologies Inc visited IMTI to become acquainted with the NRC facilities and capabilities. IMTI followed up with a feasibility study for the company, related to a new application of their laser cutting technology. Pure Logic The overall objective of this project was to adapt Deneb software, currently in use at NRC's IMTI Western Laboratory, for the development of a three-dimensional design- engineering and process flow simulation for a sawmill operation. Optimil Machinery Inc.
		A follow-up to previous project in collaboration with NRC/IMTI Western Laboratory, this client has extended development work on a Linear Positioning Controller by hiring a student to continue research work with George Wang's group at IMTI.
	NRC Innovation Centre	A team of specialist ITAs was formed and together with the Robotics Dept. of NRC's Innovation Centre, a joint project to develop a sophisticated, vision-assisted robotic clerical workcell was begun in November 1999. The ITA team, together with the NRC Institute specialists, was able to help define the project parameters and the actual design requirements of the workcell. The software and some of the hardware are currently being developed at the Innovation Centre. The project is estimated to be complete within one year.
	IIT	AT Conservator Systems Ltd. was referred to the NRC Institute for Information Technology for help in 3D rendering of their IRAP project developinga database/expert system to provide conservation management for cultural artifacts.

Alberta, Nunavut and NWT	IBD	YN project with Metabolic Modulators a heart reprofusion MMRL to study Acidosis using NMR in reprofused hearts with and without proprietary treatments. The project is ongoing and the region has links within MMRL and IBD.
	IBS	Linked Cytovax Inc. on technology on bacteria attachment plus models in Candida albicans. Linked Isotechnika Inc. with IBS on apoptosis and cancer therapy project.
	Innovation Centre – BC	Facilitated linkages to the NRC/Syncrude mining initiative. Six major companies are working on developing wear materials for mining application. The consortium of companies is working on developing the supplier network.
	Innovation Centre – BC	Facilitated five AB companies (Wed-Tech, Plasti-Fab, L&L Tool & Injection, G-Cad Design and Polymont) through the Canadian Plastics Industry Association, to visit IMI. One of the outcomes will be that Plasti-Fab will join the Foam- Tech special interest group. Wed-Tech was also interested in the twin screw extrusion compounding capability.
	IMI	Linked Weatherford Canada to the Institute to discuss thermal spraying for downhole tools. It was a technical success and the company is reviewing their engineering economics of process.
Prairies	CISTI	Following from a CISTI initiative to study the state of competitive intelligence practices in Canada and a CTN presentation on this topic in Manitoba, The region put into place three competitive intelligence pilot projects. One involved working with the Saskatchewan Nutraceuticals Network and CISTI to study research and technology opportunities for a selected number of nutraceuticals.
	IBS, IBD, PBI	The Region supported a number of NRC Institute spin-off firms or helped Prairies' SMEs establish partnerships with NRC Institutes - the Plant Biotechnology Institute, the Institute for Biosciences and the Institute for Biodiagnostics.
	ΙΜΤΙ	The Region worked with individual Institutes as part of our regional innovation initiatives. IMTI is a central partner in the development of a strategy to create a Manitoba manufacturing cluster and has been active in its planning.
	IRC	IRC has participated in development of the region's supported Saskatchewan Construction Association electronic file room
	ICPET	ICPET is working with the region to promote the sustainable Regina initiative
Ontario	IMTI	IMTI and Rotoflex International have signed a collaborative research agreement to work together to adapt IMTI's laser consolidation technology to the manufacturing of rotory cutting dies. IMTI will work as a subcontractor on the D2 research project which is supported by IRAP.
	IBS, SIMS	An Ontario ITA coordinated a fact finding mission to determine the feasibility of a national initiative in biochip and genomic-related technologies for NRC and other potential stakeholders.

-		
IIT,IMIinstitutes. Of these linkages 30% were wIRC,IRBand 13% with IRC. Linkages were also cand IRB.		
	IMI	Participated in a strategic planning session for IMI. The regional director and both ITAs and clients attended this session.
	CISTI, IMI, IRB	The region performed about fifty information searches on behalf of SMEs involving CISTI, IMI and IRB.
Maritimes	CRC	Wireless Island – CRC
	IMB	Sea Urchin Aquaculture Research Corporation (SUARC), Ingomar NS and Shur Gain, Truro NS and NRC IMB An ITA's suggestion of a collaboration of this Firm undertaking an IRAP project for sea urchin roe enhancement with a feed company Shur Gain and NRC IMB has potentially led to success. The new feed developed with the assistance of NRC IMB supported by Shur Gain and tested by SUARC promotes sea urchin roe enhancement and results in high quality flavourful roe of good colour Connors Bros Ltd. has been linked with NRC IMB where,
		over, the last 2 years significant progress has been made in the culture of haddock. Plans to commercialize the technology in 2001.
	IBS	Ocean Nutrition Canada Limited, Bedford and Mulgrave, NS In 1999 an ITA introduced an NRC BDO to discuss NRC IBS- developed technology for altering properties of lipids. The firm is in the early stages of negotiation with IBS for the use of technologies for possible application to its line of lipid- based nutraceuticals.
	ICPET	ICPET and inVentures Technologies Inc. were linked with the specific purpose of investigating the performance of their hollow fiber technology in obtaining significant increase of dissolved gases in liquids. This relationship has been on going over the past 3 years.
	IIT	William Langley made a key contribution to the NRC IIT E-Business Initiative. IRAP has taken a lead in making E-Business investments in the Province with SMEs since 1994. This has provided a good basis for the IIT to pursue the E-Business agenda in NB. A considerable list of local SMEs interested in participating in this initiative has been built up from an informal poll of the IRAP client base. Through the IRAP efforts several direct linkages to SMEs in NB and across the region have occurred with researchers in the context of specific projects. This includes VisionMD, Gridlink, Romulin, Cynaptek, Novation, and Internav.

Newfound- land and Labrador	IMD	IRAP is working with local boat builders and designers to utilize the facilities of the Institute for Marine Dynamics and its personnel to assist with development of effective, safe and efficient boats for the fishing and other industries in the Province. Two projects currently under development involve a local harvesting operation, Simmonds Seafood with the design and testing of a bulbous bow to be installed on one of their vessels and the other involves Sea Serpent Boats, a local boat builder, assess the functionality of two different roll stablization systems to be fitted on their new 55' design.
	IBS	Linked Terra Nova Biotechnology, a monoclonal diagnostic company, with NRC IBS in Ottawa to explore business opportunities with respect to making and distributing monoclonal antibodies produced and maintained by NRC IBS. Discussions are ongoing.
	BRI	Facilitated a linkage between Guigne Int. and NRC BRI (Dr. Mirek Cygler) with regards to the protein crystallization research. A YN was initiated but conflicting schedules prevented the project from commencing. BRI will add value via its in-house expertise and is a member of the IRAP team for a recently approved RDA project.

	Regional Participation in Workshops/Fo	oras/Seminars	
Region	Workshop /Fora/Seminar		
BC/Yukon	CIMI started BC Interior MI/CI Awareness Sessions with the an ITA. The presentation was given to researchers from the Okanagan Kootenay Section and to food processors.	Institute of Food Sciences and Technology -	
	A BC ITA initiated, organized and moderated a 2-day Symposium with the BC Landscape & Nursery Association . The Symposium was attended by approximately 200 industry producers, university scien business consultants, and government agents. The program was designed to identify new opportunitie problems associated with environmental practices. It included a "Think Tank" session to set research priorities for the IRAP-funded Industry Research Council, and seminars presented by various scientists other speakers who addressed environmental and biotechnology issues.		
	A workshop called Probiotic Solutions: Alternatives for Disea 1999), was held at Malaspina University College sponsored	ase Control in Aquaculture Systems (Dec 10-11,	
	CTN participated in a number of events in 1999/2000. At the majority of these events, display purchased and one or more people attended on behalf of CTN/IRAP. At several of these even space (and costs thereof) was shared with another CTN Member organization. A list of specific includes: the Technology Centres' Annual Meeting in Prince George, the Aquaculture Confermation.		
plus Small Business Info-Fairs in Smithers and in Whitehorse.An ITA participated in 11 regional innovation events. At six of these he presented on IRAP ar Product Development Fund at the request of the Kootenay Association of Science and Te (KAST), Science and Technology Association of the Rockies, Community Futures Dev Corporation of Trail, Trail Chamber of Commerce and the Kootenay Graphic Designers A BC ITA is a MISTIC (Mid Island Science & Technology Innovation Council) board member committee member. During this last year MISTIC has sponsored: Mushroom Workshop (Oct Probiotics Workshop (Dec 10-11), and SRED Workshop (April, Feb).ITA Attendance at Info Fairs/Workshops focused on the Aboriginal Community:		of these he presented on IRAP and the Kootenay Association of Science and Technology ckies, Community Futures Development	
		novation Council) board member and executive ored: Mushroom Workshop (Oct 22-24),	
		riginal Community:	
	Oyster Growing Workshop – Tofino Terrace Info Fair Port Alberni Info Fair Indian and Northern Affairs Partnering Conference – North Vancouver	Hemp Conference - Hazelton Business at the Summit 99 – Vancouver, networking event for Aboriginal business community. National Aboriginal Career Symposium – NRC/CASEA sponsored event, Ottawa	

Alberta, Nunavut and NWT	IRAP , CTN and the Innovation Centre hosted Technology for Success '99 on November 1999 in Edmonton, attended by approx. 500 people. This was an open forum applying to high technology companies to push them to use their information technology into E-commerce and other leading edge technologies.
	A workshop was hosted by NRC/IRAP and the University of Alberta Advanced Engineering Materials Centre on Bonded Repairs for Life Extension Using Fibre Composite Materials in November 1999 in Edmonton. The workshop was attended by approx. 50 people comprised of Northern Alberta Institute of Technology students and SMEs who are involved in the fibreglass/composites area. Potential impact was to educate the SMEs in some of the new materials that are being used and to expose them to carbon fibres for composites structures.
	An ITA assisted five companies from the dairy and ethnic foods sector to travel to Dusseldorf, Germany to look at possible new equipment to be purchased from Germany and set up in Canada to enable them to increase their production.
	NRC/IRAP helped to host Partners in Technology (Time to Market/Time in Market) in February 2000 in Calgary attended by approx. 200 people. This was an open forum geared to SMEs who deal in high tech manufacturing. The workshop was to raise awareness of the short time frames in which to market their products and the short market timeframes.
	A Competitive Intelligence Workshop Technology Forecasting was hosted by the CTN in February 2000 in Edmonton and attended by approx. 53 people. The workshop was targeted to a broad sector of industry to introduce the topic and hear a presenter from the Canadian Institute of Competitive Intelligence as well as a brainstorming session for further activities. The workshop has resulted in agreed collaboration with the Alberta Government and other organizations.
	NRC/IRAP and the Consulting Engineers of Alberta hosted an Infrastructure Renewal Workshop March, 2000 in Edmonton, targeting construction and rehabilitation contractors, supplies, consulting engineering firms, provincial and municipal officials and university academia. Potential impact was to raise awareness of the technology available for rehabilitation of infrastructure from NRC/IRC, local consulting community and regional universities
	Facilitated a TIP to the UK for three companies from the Whole Meal Replacement market to raise awareness of the UK distribution, production and marketing of WMR foods .
	An IRAP ITA accompanied three wear material/steel-making companies to Dusseldorf, Germany in June. Resulting benefits were that one company has located new technology for their continuous casting process and the other two companies have linked up with some German expertise to produce wear resistant materials. There has also been some technology inflow from Germany as well

Prairies	In May 1999, IRAP-Prairies (with support from IRAP-Quebec), the Prairie Implement Manufacturers
T Tairies	Association and the Saskatchewan Economic and Co-operative Development Department organized
	and sponsored a technology visit to Ontario and Quebec manufacturers. The focus was on metal fabrication
	technologies. Over 30 firms and officials visited such firms as, Bombardier, Pratt and Whitney, as well as
	such research institutions as NRC's IMTI and IMI. The visit was an outstanding success with participating
	firms establishing contacts with a number of Ontario and Quebec technologies and firms. Already two
	collaborative projects have been created between Quebec and Saskatchewan firms.
	In November 1999, IRAP, CTN and the Saskatchewan Research Council organized a presentation on
	strategies and technologies for productivity improvement. More than 40 SMEs attended this session. It was
	repeated in March 2000 in Regina to another 50 firms.
	In February and March 2000, IRAP, CTN and the Saskatoon Regional Economic Development Authority
	organized two workshops for SMEs on strategies for the launch of new products and on technology
	investments.
	In March 2000, IRAP, the Saskatoon and Regina Regional Development Authorities, Saskatchewan
	Economic and Co-operative Development Department and the Saskatchewan Research Council
	sponsored a program focused on world class and lean manufacturing. More that 100 SMEs in Regina and
	Saskatoon attended these two presentations. An immediate result has been several SMEs calling IRAP for
	advice and information on how these concepts can help them become more competitive.
	In March 2000, CETAC- West with IRAP support and involvement organized and held a 5-day executive
	repeat, entitled from Entrepreneur to CEO. Twenty SME executives and government officials spent 5 days
	on specific ways to create business and technology strategies within the context of sustainable development
	challenges. As one participant stated,
	"By going through real examples, I was able to see what my firm was doing wrong and right. This workshop
	just might have saved my business."
Ontario	A Northern Ontario "Think Tank" was held in the Scarborough Office on November 30. The purpose of the
	session was to identify ways of improving the delivery of CTN services in the North. Participants included
	IRAP Management, ITAs, CTN Advisors and Development Officers. An action plan was developed and
	many items are in process.
	CTN participated in the Regional IRAP Meeting in February at Erindale College in Mississauga. Guest CTN
	Advisors were from Consulting Engineers of Ontario and the Canadian Association of Management
	Consultants.

Ontario	Industry Canada Infofairs, Etobicoke, Pembroke, Sarnia, Belleville
(continued)	BDC and IRAP Ontario launched a print program to "enhance the technological strategy, planning,
	management and performance of SMEs".
	Two sessions have been conducted with SME attendance at 9 locations and two more locations are under development.
	The program involves seminars and in-plant consultations.
	NRC/IRAP Biotechnology Forum – Organized by the biotech sector group, the forum attracted about 210 registrants from industry (about 55 biotech SMEs), NRC institutes, academia, OGDs and IRAP staff (about 60 ITAs and Management including 28 ITAs from Ontario). Initial feedback from the attendees has been very positive.
	 Industry Canada's Aerospace and Defence branch, in partnership with IRAP, delivered a second free seminar this year to the aerospace community in Ontario. This seminar, entItled "Lean Manufacturing" was kicked off by the president of Messier Dowty and included speakers from Boeing, Sheridan College, Toptech Inc., Broan-Nutone, the Office of Collaborative Development and the High Performance Manufacturing Consortium. The seminar, held at the University of Toronto Institute for Aerospace Studies, attracted over 100 registrants from 37 companies. Its goals were: To acquaint aerospace companies with the changes occuring in supply chain management that are affecting their ability to compete and win business. (based on the Price-Waterhouse-Coopers study entitled "Strategy for Change"). To show the companies how lean manufacturing can be used as part of the solution to this challenge.
	 To provide the attendees with incentive, direction and information sources that will enable them to take the first steps.
	Initial reviews of feedback forms show that these three goals were met. Discussion is now taking place with Industry Canada to potentially take this seminar to other locations in Canada
	Ottawa Technology Showcase – March 30/99, Corel Centre, Ottawa: IRAP took part in the Ottawa Technology Showcase which was presented by the Ottawa Centre for Research and Innovation (OCRI). Over 200 local technology and related firms exhibited their products and services.
	DFAIT and Industry Canada : An ITA was asked by both DFAIT and Industry Canada to participate in the organization and presentation of a week long capacity building course in biotechnology for 30 commercialization officers from around the world. This program was developed with support from the
	Canadian Biotechnology Strategy and served as the pilot session for four additional courses planned in Halifax, Montreal, Saskatoon and Vancouver over the next 18 months. During the program, 11 IRAP
	biotechnology clients gave presentations on their business activities and needs in the ag-biotech, health care and diagnostics sectors. As a result of these discussions, one client to-date has indicated that follow-up conversations have taken place which most likely will lead to new trade opportunities for their diagnostic test for folic acid

Quebec	 The region ,in conjunction with DEC, gave a information session on taxation credits for research offered by Revenue Canada. At the same session an ITA presented IRAP programs to 75 SME managers from Drommondville. An ITA organized a seminar of technologies in the utilization of concrete at l'Université de Sherbrooke. This seminar was geared towards technologies used in residencial construction. 		
	Six ITAs were invited to the annual meeting of the Canadian Institute for Telecommunications Research. This meeting was attended by over 200 participants, many form the United States who informed the group of trends in their field.		
	IRAP patricipated in four information fairs across the region., at one, in St-Felicien, three clients were invited to give testimonials in which they empasized the role of IRAP.		
	Three ITAs assisted at TRANS-AL 99, a symposium on technology related to the care and tranformation of aluminum. TRANS-AL 99 was organized by the Centre Québécois de Recherche et de Développement de l'Aluminium (CQRDA) of Chicoutimi and the Centre Technique des Industries de la Fonderie (CTIF) from France.		
	An ITA made a presentation on IRAP at a conference of the Canadian Meteorological and Oceanographic Society to 20 participants from the private sector.		
	An Quebec ITA attended a conference regarding the Stage-Gate method of managing R&D projects, which was organized by Royal Bank .		
	An ITA represented NRC/IRAP at a course on the tax credits associated with RS & DE/. This course was administered to regional businesses by the Centre de Haute Technologie de Jonquière (CHT), who had invited many government agencies such as, IRAP, DEC and Revenue Canada		
Maritimes	GIS-GPS conference for Forestry and Agriculture: Allowed the ITA to evaluate the world-wide state of the art and provide input for a clients novel proposal for integration of the internet and precision farming intelligent management system.		
	CIFT annually provides a Seafood Technology short course to the food industry. It has had very good success at attracting domestic and international participation. The course always provides a forum for the CIFT ITA to speak and talk about IRAP. This has often led to increased interaction with other segments of the food industry for IRAP.		
	Information on CATA/Globetech, Java Training to software clients. - Lean Manufacturing Technology Seminar - Presented the DFE web tool at the Atlantic Canada Environmental & Business Expo.		

Newfoundland and Labrador	Golden Commercial Opportunities from the Sea: Utilization of Marine By-Products . Held in Gander, NF, January 30 – Feb. 1, 2000. The conference focussed on the business opportunities created by adding value to marine waste such as producing chitin from shrimp and crab shells, and silage, fish oils and proteins from fish frames. Approximately 240 attendees including some international participants attended; Industrial Sector – Fishery and falls under sustainable development. Several clients have forwarded proposals to the Provincial Department of Fisheries and Aquaculture for the business of marine by-product utilization.
	Nutraceuticals 2000 Conference : Understanding the Production, Processing and Business Aspects of Nutraceuticals, March 6-7, 2000. Organized by the Marine Institute - Office of Industrial Assistance NRC/IRAP. The event was broadcasted on several CBC radio shows and CBC television. A nutraceutical broker, who was a guest speaker at the conference, has approached several growers about possible collaborations from the US.
	Apparel Industry Technology Workshop : IRAP recently sponsored a workshop to transfer technology in the garment industry in the Province. There are over 50 firms producing in this field ranging from one person operations to factories with over 150 employees. The workshop was held at the University Faculty of Engineering, Manufacturing Technology Center (MTC) over a two-day period. Experts from specialized centres were brought in to give presentations on the use of technology in clothing manufacturing and the MTC delivered presentations on how its expertise could be transferred and used by the local industry companies.
	Newfoundland IRAP and CTN has participated with Alliance of Manufacturers & Exporters Newfoundland (AMEC) in conducting information sessions at workshops across the province and in Labrador. The workshops focussed on best practices in manufacturing and supports for their implementation in the province.
	IRAP and CTN Newfoundland organized in conjunction with CITN (CIDA sponsored project in Indonesia) and Canada ASEAN Centre (Singapore) a very successful workshop in Denpasar, Indonesia. The workshop entitled "Technology-based Innovation, Small Business and Regional Collaboration" had representatives from the SME communities of Indonesia, Thailand, Singapore Malaysia, Vietnam, Brunei, Philippines and Canada.
	Participated in two workshops presented by the Alliance of Manufacturers of Newfoundland and Labrador as a presenter for the IRAP program. One workshop was held in Corner Brook and one was held in Plum Point.
	Small Business Week Expo and Open House Attended the Association of Manufacturers and Exporters of Newfoundland and Labrador (AMEN) exhibition and trade show in St. John's.

Newfoundland and Labrador (continued)	Participated in the Department of Development and Rural Renewal's (DDRR) annual Small Business Exposition in St. John's.		
	C-CORE attended; the Forum on Geology of Industrial Minerals, May 3-7, 1999, Salt Lake City, Utah; Particle Reduction and Classification Course, May 10-14, 1999, in New Brunswick, New Jersey; Telemin Conference, June 13-17, 1999, Sudbury, Ontario		
	DDRR working with the Blueberry Industry Development Initiative in Central Newfoundland lead a series of information workshops across the province (and in Labrador) with IRAP, CTN, CISTI, IMD, on the IRAP program and other assistance to SMEs		
	CTN co-sponsored with NATI a Youth Technology event (160 p	participants), entitled Digital Echo.	
	A summary of visits made to the Halibut culturing industry in Scotland and Norway, was presented to the local Halibut culturing industry, Newfoundland Aqua Ventures, Atlantic Halibut Farms, Ocean Sciences Centre (MUN), and Vinland		
	Some of the more major events attended in 99-00 by Marine In	stitute ITAs:	
	Oct. 22/99 - Aquaculture Association of Canada Conference, Victoria, BC Nov. 24/99 - Exports Development Workshop, CornerBrook, NF	Feb. 3/00 - Fish Feed Management Workshop - Bay d'Espoir, NF Mar. 6 – Mar. 7/00 - Nutraceuticals Conference, St. John's, NF	
	Nov. 25/99 - Alliance of Manufacturers and Exporters Trade show, CornerBrook, NF Jan. 30 – Feb. 1/00 - Waste Utilisation Conference, Gander, NF	Mar. 13/00 - Fish Health Workshop, Bay d'Espoir, NF Mar. 28/00 - Shellfish Management Workshop, Gander, NF	
	Feb. 2/00 - Atlantic Canada Economic Renewal Agreement - Aquaculture Component Annual Meeting, Gander, NF	Mar. 29 – Mar. 31/00 - Newfoundland Aquaculture Association Conference and Trade show	
	A roundtable discussion involving the Newfoundland funding ag was facilitated for Murray's Horticultre and subsequently, result for Murray's to investigate the opportunity of expanding its oper	ted in the acquisition of financial assistance	

IRAP Staff Awards		
Region	Award	
BC and Yukon	Desmond Mullan received an NRC Outstanding Achievement Award	
Alberta, Nunavut and NWT	Victor Prystawa and Nikki Ma received the IRAP AB Outstanding Achievement Award for their excellent work in delivering services to clients and their consistent efforts on behalf of IRAP. Two AB IRAP clients were presented with the NRC/ASTech Innovation in Industrial Research Prize. They are Oncolytics Biotech Inc., which developed cancer targeting viruses, and Biotools Inc. who developed a new MRD (Magnetic Resonance Diagnostic) instrument to simultaneous diagnosis biofluids for multiple disease states.	
Ontario	IRAP Ontario Merit Awards – Brian Dos Ramos, Dan Lynch, Christel Caligiuri, Terry Reid (Network Member admin staff), Bud Gilchrist, Sandra Kodis. IRAP Ontario Merit Award – presented to Roy Crew by his colleagues; Roy also received a "Certificate of Appreciation for Patience, Perseverance, and Maintaining a Stiff Upper Lip" by the south-western Ontario group of ITAs ITA Liza Medek received the UNESCO Distinguished Service Award – International Institute for Advanced Studies in Systems Research and Cybernetics in Cupertino with the United National Organization on Education, Science and Culture, in Germany.	
Quebec	Two ITAs received awards for the quality and quantity of their projects. This was done to show ITAs the importance, benefit and impact of their interventions. A service award was given to a member of the technical	
	support group for their service to IRAP employees	
Maritimes	Public Service Excellence Award for PEI Andy Woyewoda received the FPTT Award for its contribution to the Development of a strategy and protocol to significantly enhance the sea urchin industry in Nova Scotia with the Department of Fisheries and Oceans / Halifax County Sea Urchin Harvesters Association / Ian Barkhouse / National Research Council Canada IRAP staff on PEI were awarded the 1999 Canada-PEI Public Service Excellence Award from a consortium of the Federal- PEI Regional Council and the Federation of Prince Edward Island Municipalities.	
Newfoundland and Labrador	Dick Whitaker (part-time NRC ITA) received a 1999 Freshwater Fisheries Conservation Award from DFO (Minister Dhaliwal)	

IRAP Network Member Organizations 1999-2000

British Columbia			
	Billion		
Alliance of Manufacturers & Exporters of Canada	Vancouver	New Media B.C.	Vancouver
British Columbia Institute of Technology	Burnaby	Pace Technologies Inc.	Vancouver
Camosun College	Victoria	Selkirk College	Castlegar
Canadian Institute for Market Intelligence	Coquitlam	University College of the Cariboo	Kamloops
Forintek Canada Corporation	Vancouver	University of British Columbia	Vancouver
Kwantlen University College	Surrey	University of Northern British Columbia	Prince George
Malaspina University College	Nanaimo	Vancouver Island Advanced Technology Centre	Victoria
	Yukon	Territory	-
Yukan Economic Development Office	Whitehorse	· · · · · · · · ·	
Yukon Economic Development Office	VVIILEIIUISE		
	Alb	erta	-
Alberta Food Processors Association	Edmonton	Consulting Engineers of Alberta	St. Albert
Alberta Microelectronic Corporation	Edmonton	Forest Industry Suppliers Association of Alberta	Edmonton
Alberta Research Council	Edmonton	Lethbridge Community College	Lethbridge
Alliance of Manufacturers & Exporters of Canada	Edmonton	Northern Alberta Institute of Technology	Edmonton
Calgary Innovation Centre	Calgary	Petroleum Services Association of Canada	Calgary
Canadian Innovation Centre	Waterloo	Red Deer College	Red Deer
Capital Region Innovation Centre, Economic Development Edmonton	Edmonton	Southern Alberta Institute of Technology	Calgary
CETAC WEST	Calgary	TR Labs	Edmonton
University of Alberta	Edmonton		
	-	-	-
	Northwest	Territories	
Aurora Research Institute	Inuvik / Fort Smith		
	Saakat	chewan	
			Casketaar
CETAC WEST	Saskatoon	Saskatchewan Research Council	Saskatoon
Consulting Engineers of Saskatchewan Saskatchewan Construction Association	Regina Regina	University of Regina University of Saskatchewan	Regina Saskatoon
Inc.			
	Man	itoba	
Canadian Innovation Centre	Waterloo	University of Manitoba	Winnipeg
Food Development Centre	Portage la Prairie	Winnipeg Construction Association	Winnipeg
Industrial Technology Centre	Winnipeg		

Applied Arts &	Brantford / Hamilton
ng (1987) Ltd.	Sudbury
esearch &	Kanata
	Kingston
y of York	Newmarket
University	Toronto
lied Arts &	Sault Ste. Marie
Applied Arts &	Oakville / Brampton
g College of hology	Peterborough
Association	Richmond Hill
	Guelph
1	Toronto / Mississauga
n Ontario	London
r	Windsor
rsity	Waterloo
	North York
r	

	(QUEBEC	-
Alliance des manufacturiers et exportateurs du Québec	Montreal	École québécoise du meuble et du bois ouvré	Victoriaville
Association canadienne de l'industrie des plastiques	Montreal	École supérieure de la mode, Université du Québec à Montréal	Montreal
Association des ingénieurs conseils du Québec	Montreal	Enviro Access	Sherbrooke
Association provinciale des constructeurs d'habitations du Québec Inc.	Anjou	Fondation des Gouverneurs	Quebec
Cegep Édouard Montpetit, Centre technologique en aérospatiale	St.Hubert	Forintek Canada Corporation (Division de l'est)	Ste Foy
Cegep de Jonquière, Centre de production automatisée	Jonquiere	Inforex Inc.	Laval
Cegep de Lévis Lauzon,Centre de robotique industrielle	Levis Lauzon	Institut canadien de recherches en génie forestier	Montreal
Cegep de Trois Rivières, Centre de métallurgie du Québec	Trois Rivieres	Institut de recherche en santé et sécurité du travail du Québec	Montreal
Centre de développement d'entreprises technologiques	Hull	Institut des communications graphiques du Québec	Montreal
Centre d'expertise et de recherche en infrastructures urbaines	Montreal	Institut de soudage du Québec	Otterburn Park
Centre de recherche industrielle du Québec	Ste Foy	Institut national de la recherche scientifique, Énergie et matériaux, Université du Québec	Varennes

Alliance of Manufacturers & Exporters Canada	Mississauga	Canada Israel Industrial Research and Development Foundation	Ottawa
	N	ATIONAL	
		Business Studies	
College of the North Atlantic	Stephenville	Newfoundland P.J. Gardiner Institute for Small Rusiness Studies	St. John's
Centre for Cold Ocean Resources Engineering	St. John's	Fisheries and Marine Institute of Memorial University of	St. John's
Canadian Innovation Centre	Waterloo	Department of Development and Rural Renewal	St. John's
	Newfound	and and Labrador	
	Charlottetown Charlottetown	University of Prince Edward Island	Charlottetown
		Edward Island	
Construction Technology Centre Atlantic Inc.	Fredericton		
Atlantic Industrial Research Institute		Daltech Dalhousie University	Dartmouth
	No	va Scotia	-
Construction Technology Centre Atlantic Inc.	Fredriction		
Centre de recherche sur les aliments, Université de Moncton	Fredericton Fredriction	Research & Productivity Council	Fredericton
développement de la tourbe Inc.	Shippagan	Huntsman Marine Science Centre	St. Andrews
• • • •		Brunswick	
École Polytechnique de Montréal	Montreal	Université Laval	Ste Foy
Concordia University	Montreal	Université du Québec en Abitibi Témiscamingue	Rouyn
	Montreal	Université du Québec à Trois Rivières	Trois Rivières
Centre Microtech, Collège de Sherbrooke	St Georges de Beauce	Université du Québec à Rimouski	Rimouski
Centre intégré de mécanique industrielle de la Chaudière	Sherbrooke	Université du Québec à Montréal	Montreal
Centre francophone de recherche en informatisation des organisations	Quebec	Université de Sherbrooke	Sherbrooke
	St Hyacinthe	Sous traitance industrielle Québec Inc.	Montreal
	Thetford Mines	McGill University, McDonald College	Montreal
Centre de technologies des systèmes ordinés Inc.	Ste Foy	Institut national d'optique	Ste Foy
Centre de recherche informatique de Montreal	Montreal	Institut national de la recherche scientifique, Institut Armand Frappier	Laval

Participation of IRAP in NSERC Committees

The NSERC University-Industry Research Partnership Grants Program

encompasses a number of grant types that promote closer collaboration between the university research community and industry. IRAP's has been on the Industrial Research Fellowship Selection Committee for Engineering, Computing and Physical Sciences for several year, and has now an ex-officio member to NRSERC's Advisory Committee. The Advisory Committee on University-Industry Grants (ACUIG) specifically addresses the large program elements such as the Collaborative Research and Development (CRD) Grants, and Industrial Research Chair (IRC) Grants. On average, the ACUIG reviews 60-70 applications for a total spending of \$30-32M.

The Technology Partnerships Program... assists researchers develop university ideas and inventions for exposure to SMEs.

NSERC Industrial Fellowships Program ... has also 2 IRAP representatives on IRF Committee for Engineering, Computing and Physical Sciences, and IRF Life Sciences Committee. This year saw 115 submissions to the IRF, with 83 awards approved for a budget of \$3.9 M. (See Annex 1 for committee memberships)

FPTT Awards 1999

Organization	Project	Recipients
Department of Fisheries and Oceans/ ASL Environmental Sciences Limited	Successful transfer and commercialization of a space- time acoustic scintillation technique for the measurement of water flow	David Farmer, Institute of Ocean Studies, DFO David Lemon, ASL Environmental Sciences Limited
Department of Fisheries and Oceans / Brooke Ocean Technology Limited	Development and transfer of the Moving Vessel Profiler that allows oceans to be sampled from a ship while it s underway at full speed	Brian Beanlands, Bedford Institute of Oceanography, DFO Edward Phillips, Bedford Institute of Oceanography, DFO Scott Young, Bedford Institute of Oceanography, DFO Jean-Guy Dessureault, Brooke Ocean Technology Limited
Department of Fisheries and Oceans / Halifax County Sea Urchin Harvesters Association / Ian Barkhouse / National Research Council Canada	Development of a strategy and protocol to significantly enhance the sea urchin industry in Nova Scotia	Robert MillarBedford Institute of Oceanography, DFOAllen Baker,Halifax County Sea Urchin HarvestersAssociationIan BarkhouseBiologistAndy Woyewoda,Industrial Research Assistance Program,NRC
Department of National Defence / Fullerton Sherwood Division of Carleton Life Support Technologies Limited	Conception, development, transfer and commercialization of diving life-support equipment technology	David Eaton, Defence and Civil Institute of Environmental Medicine, DND Ron Nishi, Defence and Civil Institute of Environmental Medicine, DND David Fullerton, Fullerton Sherwood Division, Carleton Life Support Technologies Limited John Sherwood, Fullerton Sherwood Division, Carleton Life Support Technologies Limited
Natural Resources Canada / PCI Geomatics	Development and transfer of algorithms and methods for the mapping applications of remote sensing and the commercialization of 3D rectification and visualization software of satellite images	Theirry Toutin, Canada Centre for Remote Sensing, NRCan Philip Cheng, PCI Geomatics David Stanley, PCI Geomatics
	1999 FPTT Innovator Awa	ard
		scientific contribution to marine plant
commercialization in Canada and to the development of Nova Scotia's aquaculture industry		
James Craigie, Institute for Marine Dynamics, National Research Council		

Technology Visits Program / ii – 1999-2000 Survey

Samples of Program Performance findings:

- an average of 9 out of 10 in each event say they were satisfied with the event;
- the vast majority of participants said they would like to visit other host companies and would recommend participation in the program to other companies;
- most participants are SMEs with less than 300 employees (ii 67 per cent; TVP 63 per cent);
- 93 per cent of host companies indicate that the TVP/ii event was of value to their company
- all of those surveyed said they would recommend becoming a host company to other SMEs.

IRAP's Action Plan and Checklist for Follow-up to Auditor General Recommendation

Project objectives	Deliverables	Activities	Timeframe	Completed
To complete the Program performance framework	Definition of incrementality	 Workshop of external experts to develop understanding of incrementality 	Workshop October 1999	1
approved in 1998-99 by providing: a model to understand IRAP's role in the innovation process;		 Position paper on incrementality with definition approach for IRAP use in project approval 	February 2000	~
data collection instruments, definition of incrementality;		 Internal discussion of position paper with BPI and QA team 		V
and plans to capture performance information.		 Information to be included in ITA Guidelines and QA Recommendation Guidelines 	June 2000	
			Fall 2000	
	Model to understand IRAP role in	Team establish with representatives from	September 1999	1
	the innovation process	all regions		\checkmark
		Cases studies selected and being analysed	December 1999	\checkmark
		 Workshop to discuss results with program performance team and recommend appropriate indicators, process and instruments for collecting information 	February 2000	
	Data collection instruments and plans to capture information	 Process designed and included in Client Centered Management Process 	Fall 2000	
	Training	 Process implemented as part of IRAP Information Management System 		
			Fall 2000	
An upgraded quality assurance process to improve due diligence in	Quality Assurance Process	 Process in place across the county with first reviews undertaken and second reviews planned for 1999-2000 	April 1999	√
the project decision-making process		Preliminary results presented to IRAP Management Committee and	September 1999	N .
		recommendations approved		l √
		 National Team review and recommendations 	November 1999	\checkmark
		Action Plan developped		
		Follow-up defined	November 1999	
			Fall 2000	

Project objectives	Deliverables	Activities	Timeframe	Completed
An upgraded quality assurance process to improve due diligence in the project decision-making process (continued)	Quality Assurance tools including project recommendation form, project recommendation guidelines and position papers	 Project recommendation form to be revised to take into account AG and QA findings Recommendation guidelines being revised to reflect findings of initial reviews 	April 2000 April 2000	1
A major client business process improvement effort to enable the best use of information to support decision-making close to clients, enhance collaboration, encourage sharing and learning, as well as measure impact and results.	Client Centered Management To BE Process and Vision CCM information support system Appropriate tools for clients	 To Be Model approved User requirements for Information System based on CCM defined National leadership of CCM team and project to be identified CA Guide for firms 	August 1999 January 2000 September 2000	۲ ۲
An information management plan and strategy to guide the refinement and development of IRAP's IM/IT systems.	Information Management Plan and Strategy including Information Technology Plan Client Management System	 Project leaders appointed Draft IM plan and strategy discussed with IRAP Management Committee User requirements completed Request for Proposal for Client Management Systems in process Evaluation of proposals and recommendation for acquisition of system for IRAP use Final IM plan and strategy for IRAP Management Committee approval Client Management System implemented and training initiated 	September 1999 November 1999 August 1999 December 1999 May 2000 June 2000 April 2000	

Project objectives	Deliverables	Activities	Timeframe	Completed
A Change Management Framework will be developed to facilitate	Change Management Framework and Action Plan	Workshop with internal change agents to identify change issues, and begin development of action plan	December 1999	1
effective change efforts		Prepare governance model and configuration management plan	Summer 2000	
		Establish Integration and Coordination team to ensure effective coordination of change effors	Summer 2000	V
		Action plan to be presented to IRAP Management including resourcing, training and communication	Fall 2000	
A Change Management	Training to address issues and	National Training Coordinator appointed	November 1999	\checkmark
Framework will be developed to facilitate	findings from QA as well as other material including CCM, IM/IT, AG,	National Training Committee formed; mandate being defined.	December 1999	√
effective change efforts	PA, Financial Audit Findings, etc.	mandate being definedTraining plan to be developped	April May 2000	\checkmark
(continued)		Training plan to be developped Training implemented	April-May 2000 October -	
		 Contribution Agreement to Firms Guidelines for ITAs 	ongoing May 2000	
	Communication plan and products	Internal communication plan and products identified	March 2000	1
		Products developed and implemented	April 2000 ongoing	
NRC to undertake an	Evaluation Plan	Identify issues, methodologies and costs	June 2001	
evaluation of IRAP taking into account all evaluation		Coordinate with IRAP for Strategic Planning input		
issues (i.e. rationale, organization design, results		Undertake evaluation		
and alternative service		Prepare report		
delivery)		Present to Council	November 2001	
	Evaluation Report	Initiate study	November 2001	
		Report on findings and recommendations	March 2002	
		Present to NRC Council	June 2002	<u> </u>

Project objectives	Deliverables	Activities	Timeframe	Completed
NRC to undertake strategic planning process	Strategic Plan 2001-2006	 Intiate process Undertake consultations and studies Draft plan Report to Council 	November 1999 February 2000 February 2001 September 2001	
IRAP to update strategic plan	IRAP Strategic Plan Update 1996- 2003	 Appoint project manager Confirm strategic directions Undertake trend analysis Consult with NRC and NM Prepare Strategic Plan update to 2003 	February 2000 February 2000 Summer 2000 Spring 2000 October 2000	
IRAP to undertake strategic planning process	IRAP Strategic Plan 2003-2008	 Identify project plan and resources Appoint team leader Initiate studies Undertake consultations Draft plan Obtain Advisory Board approval Obtain Council approval 	February 2001 February 2001 Summer 2001 Summer 2001 February 2002 Fall 2002 Fall 2002	

IRAP ADVISORY BOARD/COMMISSION CONSULTATIVE DU PARI

Name	Address	Name	Address
Moe Barakat	President InfoMagnetics Technologies Corporation 11-1329 Niakwa Road East Winnipeg, MB R2J 3T4	Jack Kidikian	President Hyplast Inc. 225 Limestone Crescent North York, ON M3J 2R1
Elizabeth Cannon	The University of Calgary Department of Geomatics Engineering 2500 University Drive N.W. Calgary, Alberta T2N 1N4	Jacques Lyrette (Ex-Officio)	Vice-President Technology and Industry Support/NRC Bldg., M-55, Montreal Rd. Ottawa, Ontario K1A 0R6
Gordon Cummer	Chief Executive Officer CIC Innovation Consultants Inc. 156 Columbia St. West Waterloo, ON N2L 3L3	Tony Melli	Director - Beacon Hill Systems Inc. 1218 Faithful Street Victoria, British Colombia V8V 2R7
David Demers	President and CEO Westport Research 1691 West 75th Avenue Vancouver, BC V6P 6P2	Margot Montgomery (Ex-Officio)	Director General, IRAP National Research Council Canada Bldg. M-55, Montreal Road Ottawa, Ontario K1A 0R6
Isabelle Deschamps	Vice-présidente, Dévelopment de l'entrepreneurship Technologique Inno-centre 550, rue Sherbrooke Ouest, Bureau 200 Montréal, Québec H3A 1B9	Laurent Nadeau	Consultant 2500 Pierre Dupuy, Suite 505 Montreal, QC H3C 4L1
Gaylen Duncan	President and CEO Information Technology Association of Canada 2800 Skymark Avenue, Suite 402 Mississauga, ON L4W 5A6	Harvey Silverstein	Director – Consulting Concentrics Communications Canada 800 Windmill Rd. suite 110 Darthmouth, Nova Scotia B3B 1L1
Jocelyn Ghent Mallett	President Rippon Associates 580 Prospect Avenue Ottawa, ON K1M 0X7	Barbara Stanley	President Canadian Cable Systems Alliance P.O. Box 4643, 55 Malisett Drive Rothesay, NB E2E 5X4
Louise Guay	Présidente-fondatrice Public Technologies Multimédia Inc. 1001 Sherbrooke est, bureau 700 Montréal, Québec H2L 1L3	Judith A. Whittick	President and CEO C-CORE Centre for Cold Ocean Resources Memorial University of Nfld. Bartlett Building St. John's, NF A1B 3X5
Jacques Yves Guigné	Chief Executive Officer Guigné International Ltd. 685 St. Thomas Line, Site 21 Box 13, RR1 Paradise, NF A1L 1C1	Ron Woodward	President, Red Deer College Box 5005 Red Deer, Alberta T4N 5H5
Denise Guillemette (Secretariat)	Program Support/IRAP Bldg. M-55, Montreal Rd. Ottawa, Ontario K1A 0R6		As of December 1999

MEMBERSHIP LIST/ LISTE DES MEMBRES

Acronyms

Acronym	Term
ACOA	Atlantic Canada Opportunities Agency
ACST	Advisory Council on Science and Technology
AgTIS	Agriculture Technology Information Services
AIMS	Advancement Integrated Mechanical Systems
AMEC	Alliance of Manufacturers and Exporters Canada
ANVAR	Association Nationale de Valorisation de la Recherche
ARC	Alberta Research Council
ARD	Associate Regional Director
BDC	Business Development Bank of Canada
BDO	Business Development Officer
BPI	Business Process Improvement
BPR	Business Process Review
BRI	Biotechnology Research Institute
CAMC	Canadian Association of Management Consultants
CANARIE	Canadian Network for the Advancement of Research, Industry and Education
CCAF	Climate Change Action Fund
CED	Canada Economic Development
CETAC	The Canadian Environmental Technology Advancement Corporation
CI	Competitive Intelligence
CIC	Canadian Innovation Centre
CIDA	Canadian International Development Agency
CIIRDF	Canadian Israel Industrial Research Foundation
CIMI	Canadian Institute for Market Intelligence
CISTI	Canada Institute for Scientific and Technical Information
CITN	Canada Indonesia Technology Network
CNA	College of the North Atlantic
CPIA	Canadian Plastics Industry Association
CPO	Client Project Outline
CRD	Collaborative Research And Development
CRS	Client Reporting System
CTN	Canadian Technology Network
DAL	Dalhousie University
DDRR	Department of Development and Rural Renewal
DEC	Development Economique Canada
DFAIT	Department of Foreign Affairs and International Trade
DfE	Design for Environment
DFO	Department of Fisheries and Oceans
DIRP	Director Industrial Research Programs
DITT	Department of Industry, Trade and Technology

Acronym	Term
DND	Department of National Defense
ECIBN	Emerging Canadian Industrial Biotechnology Niches
EU	European Union
FPTT	Federal Partners in Technology Transfer
FTE	Full-time Employee
HPC	High Performance Computing
HRDC	Human Resources Development Canada
IAR	Institute for Aerospace Research
IBD	Institute for Biodiagnostics
IBS	Institute for Biological Sciences
ICPET	Institute for Chemical Process and Environmental Technology
IERT	Institute for Environmental Research and Technology
ii	Innovation Insights
IIT	Institute for Information Technology
IM/IT	Information Management/Information Technology
IMAC	Innovation Management Association of Canada
IMB	Institute for Marine Biosciences
IMD	Institute for Marine Dynamics
IMI	Industrial Materials Institute
IMR	Institute for Machinery Research
IMS	Institute for Microstructural Sciences
IMS	Intelligence Manufacturing Systems
IMSB	Information Management Services Branch
IMTI	Integrated Manufacturing Technologies Institute
INMS	Institute for National Measurement Standards
IPF	Industrial Partnership Facility
IRAP	Industrial Research Assistance Program
IRC	Institute for Research in Construction
IRF	Industrial Research Fellowship Program
IRO	NRC International Relations Office
ITA	Industrial Technology Advisor
ITAC	Information Technology Association of Canada
ITAP	Industry Technology Advisory Program
LOU	Letter Of Understanding
MART	Market Assessment of Research and Technology Program
MEST	Ministry of Energy, Science and Technology
MOU	Memorandum Of Understanding
MRI	Magnetic Resonance Imaging
MSTRI	Microsystems Research Institute
MTC	Manufacturing Technology Centre
MUN	Memorial University of Newfoundland

Acronym	Term
NAG	Network Advisory Group
NATI	Newfoundland & Labrador Alliance of Technical Industries
NI	National Initiatives
NIC	NRC Information Centre
NM	Network Member
NRC	National Research Council
NRCan	Natural Resources Canada
NSERC	Natural Sciences and Engineering Research Council
OCETA	Ontario Centre for Environment Technology Advancement
OGD	Other Government Department
PA	Precommercialization Assistance
PBI	Plant Biotechnology Institute
PEMD	Program for Export Market Development
PS	Program Support
PWGSC	Public Works and Government Services Canada
QA	Quality Assurance
RD	Regional Director
RDA	Research Development Adaptation
SA	Strategic Alliance
SD	Sustainable Development
SIMS	Steacie Institute for Molecular Sciences
SKN	Scientific Knowledge Network
SME	Small or Medium-Sized Enterprise
TAP	Technology Assistance Program
TDO	Technology Development Officer
TE	Technology Enhancement
TEAM	Technology Early Action Measures
TF	Technology Forcasting
TIP	Technology Inflow Program
TN	Technology Network
TPC	Technology Partnerships Canada
TPP	Technology Partnerships Program
TVP	Technology Visits Program
UNB	University of New Brunswick
UNESCO	United Nations Educational, Scientific and Cultural Organization
UQTR	Université du Québec à Trois-Rivières
USRA	Undergraduate Student Research Award
WED	Western Economic Diversification
WTO	World Trade Organization
Υ	Youth initiatives
YES	Youth Employment Strategy

IRAP REGIONAL OFFICES

IRAP NEWFOUNDLAND

& LABRADOR National Research Council Canada Kerwin Place and Arctic Avenue Memorial University Campus P.O. Box 12093 St. John's, NF A1B 3T5 Telephone: (709) 772-5228 Facsimile: (709) 772 5067

IRAP MARITIMES Nova Scotia

National Research Council Canada 1411 Oxford Street Halifax, NS B3H 3Z1 Telephone: (902) 426-3138 Facsimile: (902) 426-1624

New Brunswick

National Research Council Canada P.O. Box 5678, Station W Fredericton, NB E3B 5G4 Telephone: (506) 452-3831 Facsimile: (506) 627-2158

Prince Edward Island

National Research Council Canada 80 Watts Avenue Charlottetown, PE C1E 2B9 Telephone: (902) 566-7640 Facsimile: (902) 566-7641

IRAP QUEBEC

National Research Council Canada 75 de Mortagne Blvd. Suite P-101 Boucherville, QC J4B 6Y4 Telephone: (450) 641-5300 Facsimile: (450) 641-5301

IRAP ONTARIO

National Research Council Canada 200 Town Centre Court Suite 1101 Scarborough, ON M1P 4X8 Telephone: (416) 973-4484 Facsimile: (416) 973-4303

IRAP PRAIRIES Manitoba

National Research Council Canada 435 Ellice Avenue Winnipeg, MB R3B 1Y6 Telephone: (204) 984-6478 Facsimile: (204) 983-8835

Saskatchewan

National Research Council Canada 110 Gymnasium Place Saskatoon, SK S7N 0W9 Telephone: (306) 975-4748 Facsimile: (306) 975-4717

IRAP ALBERTA, N.W.T. & NUNAVUT

National Research Council Canada 250 Karl Clark Road Edmonton, AB T6N 1E4 Telephone: (780) 495-6509 Facsimile: (780) 495-6510

IRAP BRITISH COLUMBIA & YUKON

National Research Council Canada 3250 East Mall Vancouver, BC V6T 1W5 Telephone: (604) 221-3100 Facsimile: (604) 221-3101

нттр://nrcirap.com 1-877-994-4727

