THE ROLE OF BUSINESS NETWORKS IN ENHANCING THE COMPETITIVENESS OF SMALL- AND MEDIUM-SIZE ENTERPRISES (SMEs)

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EXECUTIVE SUMMARY

Business networks are emerging as a new form of industrial organization to enhance the competitiveness of small- and medium-size enterprises (SMEs). A business network is the co-operation and collaboration of a number of SMEs to achieve critical mass, to achieve the competitive advantages of scale, scope and speed, to compete as a larger firm by undertaking projects-in-common, such as joint R&D, joint manufacturing or joint marketing.

SMEs are recognized as an engine of growth for the "new economy", and business networks are seen as the vehicle to assist these SMEs to become the new economy. The report is exploratory in nature and serves only as a first step to understanding the nature, extent, and effects of business network formation in Canada.

This study had four specific objectives.

1. To gain a better understanding of Canada's experience with business networks and network hubs by documenting and profiling eleven business networks and five network hubs from various industry sectors across the country.

2. To assess their critical success factors and progress to date.

3. To extract lessons learned from these experiences.

4. To recommend policy initiatives to support business networks and network hubs for SMEs in Canada.

The major findings of this study are offered below.

1. **The Canadian Status** - Most of Canadian industry is at the early awareness-building and growing interest stage about business networks as a new form of industrial organization. This study identified eleven business networks and five network hubs to document nationally. There are no national models, guidelines or other reference points, and thus a wide range of characteristics in practice.

2. **The Drivers** - The globalization of the marketplace means "everybody competes everywhere". SMEs are quickly becoming aware that they must find new ways to co-operate and collaborate in order to compete and survive in the global marketplace. Government programs to fund business networks including information programs, business roundtables, training network brokers, and identifying industry champions, and providing challenge grantes are also key catalysts for the successful formation of business networks.

3. **The Structure** - The majority of business networks are **horizontal networks** and tend to be made up of firms from a single sector and usually, from one province. Business networks with a national sectoral make-up are less common and tend to emerge when the industrial sector is smaller in size and establishing critical mass necessitates national membership. **Vertical networks**, linking smaller suppliers to larger manufacturers, are rare in Canada. The notion of linking suppliers, manufacturers, distributors, and customers for the purpose of collaboration on initiatives to increase overall competitiveness within a value chain is not fully recognized yet. The more creative **cross-sectoral networks**, which have been successful in Denmark, are rare in Canada. The model of the **virtual corporation** offers an example of larger corporations collaborating, which should inspire SMEs to form similarly-focussed business networks.

4. **The Nature of Collaboration** - Collaboration permits SMEs to achieve **scale, scope** and **speed**, all critical competitiveness factors. The purposes for collaboration very much reflect the kinds of market conditions particular industries face. The focus for production networks in the high-tech community tend to be related to pre-competitive R&D, and joint product development in order to compete in global markets. Firms in the older, more established industries which are currently experiencing very soft domestic markets are trying to develop new business through international marketing networks which can include new product development initiatives. Specific examples of business networks should continue to be documented as success stories for further analysis and national sharing for competitive learning on the nature of collaboration.

5. **The Network Hubs** - Network hubs are resource centres which support the formation and growth of business networks. The concept and practice of network hubs is underdeveloped in Canada. Regional economic development commissions represent the most potent focal points for creating network hubs.

6. **The Assessment** - Business networks are a new form of industrial organization and a new platform for international competitiveness, and as such, will require considerable learning and adjustment before the full range of their potential benefits are realized by the participating SMEs. Given the early stage of business network formation in Canada, the true impact on the competitive capabilities of SMEs cannot yet be fully assessed. We do know that business networks have had a beneficial impact in many other countries. International expertise should be brought in to consult on the experiences of other countries, and to assist in the formative strategic planning for a business networks initiative in Canada. Niels Christian Nielsen of Denmark, and Stuart Rosenfeld of the United States of America should be consulted in particular.

In conclusion, this study found few well-developed examples of business networks and network hubs, likely because there has no national initiative to promote business networks as in Europe. It is clear that there is tremendous potential for business networks to be used in all economic sectors and geographic sectors in Canada. This would require a partnership of business and government over a five to ten year period. The overall objective should be to use business networks to build a competitive industrial and economic base, "the new economy", for the twenty-first century.

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AN OVERVIEW OF THE STUDY

Introduction

Canada's future prosperity and standard of living depend on the country's international competitiveness. The slippage in Canada's world competitiveness performance has captured national attention and has spurred considerable interest in developing strategies to reverse the trend. The recent Prosperity Initiative and the commissioning of Porter's assessment and recommendations reflect this emphasis on enhancing Canada's competitiveness.

Competitiveness can be viewed from three related perspectives: (1) individual companies, (2) industrial sectors or clusters and networks, and (3) the country as a whole. The World Competitiveness Report (1991) outlines eight principal factors contributing to a country's competitiveness based on over three hundred criteria. The eight factors are: (i) domestic economic strength, (ii) internationalization, (iii) government impact, (iv) financial markets, (v) infrastructure, (vi) management, (vii) science and technology, and (viii) people. In addition to these the perceptions of managers and opinion leaders on the economic climate are used in assessing a country's relative competitiveness.

Porter (1991) utilized his "diamond" framework to assess Canada's competitiveness on both a national and industry sector basis. His framework of demand conditions, related and supporting industries, aggressive local suppliers, and firm strategy, structure, and rivalry offers a useful means for assessing the requisite infrastructure for competitiveness.

It seems clear, that while policy makers can take measures to enhance the infrastructure for competitiveness, it will be industry which will drive Canada's competitiveness. In a recent study, D'Cruz and Rugman (1992) recommended that "flagship" firms in key strategic clusters lead the charge by forming "networks" or strategic relationships with carefully selected suppliers, customers, competitors, and organizations from the non-business infrastructure. Their competitiveness framework is anchored around the leadership role of large Canadian firms.

SMEs are a major and integral part of Canada's industrial make-up. For example, in 1989, over 90% of the 932,396 businesses in Canada had 100 or fewer employees. These businesses accounted for approximately 47% of all employment and for over 80% of the net jobs created in the private sector. (Reference Handbook on Small Business Statistics, ISTC 1991.) The strategic importance of SMEs as employment generators, as suppliers to major firms, as exporters, as having the potential to grow into major firms, and as part of the strength and diversity of strong mixed economies has been recognized in Canada and in most countries around the world. Leveraging and enhancing the capabilities of SMEs would constitute a critical step towards improving Canada's competitiveness.

The strengths of SMEs are their entrepreneurial spirit, flexibility, innovation, and responsiveness. These advantages tend to be countered somewhat with limited management capabilities, constrained financial resources, poor information systems, underdeveloped marketing infrastructures, and severe time pressures. The challenge in making these firms more competitive is to remedy their weaknesses while at the same time leveraging their strengths. Business networks are a vehicle or process for enhancing the growth and development of SMEs. Business networks are gathering significant momentum in developing countries around the world as governments focus

on them as a vehicle of industrial development to build the "new economy" for the twenty-first century.

Definitions

A **business network** is a group of SMEs (usually three or more) which come together to form a **critical mass** and compete as a larger **virtual corporation** which no member of the network could do independently.

This **critical mass** allows the members of the network to achieve **scale** (share complementarities and reduce costs), realize **scope** (identify and capitalize on new market opportunities), and increase **speed** (time is an essential factor in competitiveness). The essence of a business network is **co-operation** and **collaboration** to enhance **competitiveness.**

Business network initiatives can be complemented and accelerated by community-based infrastructure called network hubs. A **network hub** is a support centre, often affiliated with a **regional economic development commission**, and composed of key stakeholders such as scientific research institutes, educational institutions, government agencies, economic development offices, development banks, venture capitalists, labour unions, business associations, major firms as mentors, entrepreneurship centres, centres of excellence, etc., which help initiate and support business networks as well as individual SME initiatives.

Objectives

This study had four specific objectives.

1. To gain a better understanding of Canada's experience with business networks and network hubs by documenting and profiling eleven business networks and five network hubs from various industry sectors across the country.

2. To assess their critical success factors and progress to date.

3. To extract lessons learned from these experiences.

4. To recommend policy initiatives to support business networks and network hubs for SMEs in Canada.

Methodology

With no formal policy or program direction in Canada, business network and network hub activity is not systematically tracked or profiled in any centralized information base. This created a challenge when trying to determine what networks and hubs existed, and which ones to include in the study. The resulting methodology can be described as follows:

1. A broad network of personal contracts (e.g., economic development offices, ISTC representatives, and other government representatives) and secondary research was utilized to generate a list of potential business network and network hub candidates for further data gathering analysis.

2. Telephone interviews were then used to screen candidates; the intent was to find working examples of "hard" or more commercially oriented networks from various industrial sectors across the country.

3. Personal interviews were then conducted with representatives of those business networks and network hubs which came closest to meeting the above criteria.

Because of the unsystematic nature of the sample selection, the business networks and network hubs profiled in this report should not be viewed as being necessarily representative of all business network related activity in Canada. The methodology employed constrains the discussion of the findings to explanatory and descriptive comments as opposed to a more statistical interpretation. The profiles of both the eleven business networks and five network hubs with significant success follow this overview. It should be noted that these are larger business networks than

we anticipated finding, and the result of sector initiatives by various government agencies, as opposed to independent initiatives undertaken by smaller network of SMEs.

Findings

Briefly, the major findings are that there are few developed business networks and network hubs in Canada, probably due to the lack of national models, guidelines or other reference points, and thus a rather wide range of applied practices. Certainly Canada could learn from other countries' successful national business network programs, with Denmark and Norway as good models.

POLICY CONSIDERATIONS

Many leading industrial countries and economic blocks, e.g., U.S.A., European Community (notably Denmark, Italy, Finland, Norway, Sweden, Germany, Spain, Portugal, Holland), Japan, Australia and New Zealand are aggressively utilizing business networks and network hubs as a platform for enhancing the international competitiveness of their SMEs. For example, the Danish government has committed to investing $80 million (Can) over five years to stimulate business networks in the manufacturing, tourism, and environmental services sectors, and was highly successful in forming 500 business networks in just three years with just $30 million (Can.).

The critical success element of the Danish national business networks program was the strategy of a massive, top-down, joint government-business intervention, which succeeded in changing the national business culture and thus in re-establishing the Danish economy to international competitiveness status.

Businesses and government will have to co-operate as joint partners to stimulate business networks in Canada. Industry will have to play the major role in making business networks a successful vehicle for enhancing the competitiveness of Canadian SMEs. Governments will also have to provide support and serve as effective catalysts for the adoption and successful implementation of this new form of industrial organization. Many governments in other parts of the world are beginning to or are already aggressively pursuing business networks as a strategy for SME competitiveness. In comparison, Canada is still at a very early stage of the process. While various elements of current government policy initiatives in Canada are having indirect effects on network formation, there is no comparable formal commitment to

supporting the formation and development of business networks. As a result, Canada's experience with business networks lack the momentum evident in some of the other countries around the world.

This exploratory study was not intended to provide the scientific evidence necessary for making a policy commitment to business network formation in Canada. However, the study's findings do offer some impetus and direction for policy initiatives which would accelerate the adoption and effective utilization of business networks as a vehicle for enhancing SME competitiveness. Policy initiatives that are developed should reflect the following considerations:

1. The industrial, political, cultural, and geographic make-up of Canada is unique. Models and policies from other countries dealing with business networks should be tested and modified before being fully implemented to the Canadian context.

2. The interplay between business networks and network hubs is critical to enhancing SMEs competitiveness. Policy initiatives are needed on both fronts; to encourage and facilitate the formation of business networks and to provide "one-stop" supportive infrastructure for their growth and development at network hubs.

3. The potential for redundancy and wasting resources is considerable given the existing multiple layers of government in Canada. Policy initiatives should focus on coordinating and leveraging the various levels of governmental initiatives to reap the synergy potential in encouraging and supporting business networks and network hubs. Regional economic development commissions may be a unique and valuable base for developing network hubs and for growing business networks.

The potential policy initiatives which governments could undertake vis-à-vis business networks and network hubs are:

1. Link business network initiatives to national and regional economic/industrial development and trade policies.

2. Provide catalytic and start-up support for business networks and network hubs (e.g., information, training, and seed funding).

3. Develop a national resource base of network hubs, located in the economic development commissions in the top one hundred population centres across Canada, using existing components and resources, at no additional cost.

4. Develop an information support infrastructure for developing, monitoring, and benchmarking business network activity in Canada.

5. Encourage national/horizontal business associations and sectoral/vertical business associations to form business networks among members.

6. Modify and leverage existing federal government programs to support business network activity.

7. Facilitate the formation of capital resources for business network and SME growth through modification of existing federal government programs.

8. Coordinate the business network related policies at the federal, provincial, regional and municipal levels of government.

9. Foster supportive bilateral and multilateral policies to facilitate and encourage continental and intercontinental development of business networks.

10. Focus the synergistic efforts of business networks and network hubs, of all four levels of government, and of business associations to build a strongly competitive new industrial and economic base for the twenty-first century.

In summary, Canada could re-build its economic and industrial heartland, in all economic sectors, from coast to coast, by undertaking a comprehensive economic and development strategy over a decade. This would be done by creating a large number of competitive business networks from existing and new SMEs, leading to innovation, new products and services, increased quality and productivity, export development, permanent new jobs, new business and capital formation, and sustained prosperity.

CONCLUSIONS

Business networks and network hubs are creative industrial organizational designs, which if carefully drafted and effectively managed, could significantly enhance the competitiveness of Canadian SMEs, and help to grow a competitive new industrial base for the twenty-first century. While industry must ultimately be the key driver of any industrial competitiveness and organizational transformation, government policy makers must play important supportive and catalytic roles in diffusing this potentially potent innovation. In other countries where business network programs have been successful, the role of government has been as a knowledge leader and innovator, a catalytic and leveraged funder to initiate business network programs, followed by planned sunsetting after three to five years, and transfer of the program to industry leaderships and funding.

While we recognize business networking as a broad set of economic activities whose aim is to enhance SMEs competitiveness, we also emphasize that networking is not a right solution for everyone. Forming a business network requires a series of logical steps that must be undertaken in sequence. This starts from finding elements of common resources and mutual complementarity and ends with devising ways to evaluate the performance and contribution effectively. In Denmark, and elsewhere, business networking is evolving the business culture to become highly flexible, mutually supportive collaboration among SMEs in all economic sectors, including manufacturing, tourism, services, environmental sciences, etc. There appear to be no limits to the potential for such cooperation and growth of SMEs.

From our review of the existing programs in other countries, it is apparent that the four levels of Canadian governments should collaborate to create and fund a national nusiness networks program for SMEs as a part of a national competitiveness strategy. These business networks will be essential for the competitiveness of Canadian SMEs, for new business and employment growth, and in order to establish a world-class industrial base, "the new economy", for Canada for the twenty-first century.

PROFILES OF NETWORKS AND NETWORK HUBS

In this study we considered 11 networks and 5 network hubs. Their profiles are presented in the following pages.

List of Network Hubs Profiled:

1. B.C. Advanced Systems Institute (ASI)
2. Business Advisory Centre of Hamilton - Wentworth
3. Canada's Technology Triangle (CTT)
4. Ottawa-Carleton Economic Development Corporation
5. Saskatchewan Research Council (SRO)

List of Business Networks Profiled:

1. B. C. Wood Specialties Group
2. Canadian Institute of Biotechnology
3. Groupement Québécois d'Entreprises (GQE)
4. Islander Fasion Co-op
5. Joint Planning and Development Committee
   Ontario Furniture Manufacturers Association
6. Mechanical and Chemimichanical Woodpulps Network
7. Plastic Wire Consortium Ltd
8. REMAT Total Quality Management (TQM) Network
9 SPIRIT Subsea Systems Corporation
10. Strategic Microelectronic Consortium
11. Waterloo Region Shoe Manufacturers Limited

DESCRIPTIVE CORE DATA

NETWORK HUB

NAME OF NETWORK HUB: B. C. Advanced Systems Institute (ASI)

CONTACT INFORMATION:

Dennis Connor, Executive Director
Elmer Sum, Consultant
310 - 3700 Gilmore Way
Burnaby, BC V5G 4M1
Tel: 604-435-0551 Fax: 604-435-1173

MANDATE/MISSION: To foster economic development in B.C. through the creation and application of advanced systems technologies - telecommunications, robotics, artificial intelligence, computer science and microelectronics. ASI works by building three-way relationships among technology developers (usually university researchers), suppliers (information technology companies), and customers (typically B.C. based primary industries).

SPECIFIC OBJECTIVES:

1. To provide funding assistance for commercialization of new products.

2. To secure access to technological expertise through funding of chairs, fellowships, and graduate scholarships at the three universities.

3. To assist with contacts and foster consortia among members.

4. To act as an advisor in areas of technology, management, and partnering.

FUNDING:

- **FINANCIAL COMMITMENT:** Goal is to have a funding base which is 50% private, 50% government. Currently major funding comes from B.C. Ministry of Advanced Education, Training and Technology (2.25 million) and memberships (from $900 - $5,000 per year per company). They presently have 35 affiliate members (see attached list). Total funding is approximately $2.3 million per year.

- **IN-KIND RESOURCES:** Not major

ORGANIZATION:

- **BOARD OF DIRECTORS:** Yes, made up of representatives from Federal and Provincial government, 3 universities, and industry membership.

- **DIRECTOR:** Yes, Dennis Connor

- **PROFESSIONAL RESOURCES:** Consultants (tend to be technically trained professionals with industry experience) on staff plus utilize resources of universities and member firms.

STAKEHOLDERS:

o	Federal Government:	Science and technology subagreement of Economic Regional Development Agreement.
o	Provincial Government:	B.C. Ministry of Advanced Education, Training and Technology.
o	University Faculty:	The main ones being: (i) Centre for Systems Science - Simon Fraser University, (ii) Centre for Integrated Computer Systems Research - University of British Columbia, (iii) Laboratory for Automation, Communication and Information Systems Research - University of Victoria. As well, members of scientific advisory board include: McGill University, Princeton University, University of Western Ontario and University of California, Berkeley.
o	Research Institutes	Linkages with National R&D organizations such as Institute for Robotics and Intelligent Systems (IRIS), Telecommunications Research Institute on Ontario (TRIO)
o	Companies:	A number of companies are affiliate members (see attached list).

SUBJECT MATTER DEALT WITH:

o	Research & Development:	Support is offered for chairs and fellowships at universities - 25 fellows.
o	New Products:	Through their product development support they provide up to $100,000 for technical development of products/processes - funds are conditionally repayable as royalties on sales.
o	Diffusion of New Science and Technology:	Through the ASI Journal they keep members and the broader community informed about technological developments.

o	Total Quality Management:	ASI provides educational initiatives on TQM.
o	Human Resource Development	Broader developmental support is provided to enhance the management capabilities of the firms.
o	Marketing Development	Marketing activities are enhanced by linking customers (users) with developers of technology.

ACTIVITIES UNDERTAKEN:

Network Related Activities:

o	Business network research:	ASI promotes industry consortia and has developed a process for setting up consortia to offer process assistance.
o	Facilitating greater connectivity of networks and sector firms clusters (Porter model):	Linkages have been established between industrial customers in the resource industry (forest, mining, and environment) and technology developers.

ECONOMIC BENEFITS ACHIEVED:

1. ASI has "spawned" SPIRIT, a development network, and is also working on one in the forestry industry.

2. Approximately 25 research fellows are working on projects which relate to the technology development needs of member firms.

CRITICAL SUCCESS FACTORS:

1. ASI has"Industry Driven".

2. Private sector equity reflects commitment and helps in securing other private sector support and public sector funding.

3. ASI has received and offers access to a network of technical expertise which can advise and solve problems.

4. The network " SPIRIT" is a working example of ASI's ability to facilitate industry collaboration.

CHALLENGES/IMPEDIMENTS:

1. Pooling the required expertise and establishing a credible and workable linkage between academia and industry are major hurdles.

2. Establishing the institute's position and role among the various constituents is key.

INSIGHTS GAINED:

1. Networks can be spawned and nurtured by an organization like ASI.

2. There is a role for an organization to bridge the gap between research conducted in university centres and product development and commercialization by industry.

3. Linking customers with suppliers in a consortia or network framework can be an effective vehicle for commercializing technology.

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INDUSTRY AFFILIATES
COMPANY PROFILES

BC ADVANCED SYSTEMS INSTITUTE

Acquired Intelligence Inc.

Acquired Intelligence Inc. (AI Inc.) specializes in Artificial Intelligence products and services particularly in the area of knowledge acquisition. AI Inc. addresses problems requiring expert system, machine learning and intelligent tutoring system solutions.

Ballard Power Systems

Ballard Power Systems, a Canadian Corporation, is involved in the manufacturing of Lithium Sulphur Dioxide non-rechargeable batteries for the Canadian and US military markets. Ballard Power Systems is also the world's leading developer of the Solid Polymer Fuel Cell technology, which is considered to be the leading candidate to replace internal cumbustion engines for future power needs.

Daniels Electronics Ltd.

Specializing in the design and manufacture of high reliability UHF-VHF low distortion, solar powered mountain top radio repeater systems; and high frequency SSB radiotelephone equipment.

DynaMotive Canada Corporation

DynaMotive has acquired a fundamentally new technology from the technical University of Berlin, that directly converts electrical energy into linear motion utilizing a magnetostrictive, rare earth alloy. Applications are robotics, inustrial automation, replacement of hydraulic cylinders and high force, ultra high precision actuators.

Forintek Canada Corporation

Forintek Canada Corp. is a private, not-for-profit corporation dedicated to developing and transferring technology for the advancement of Canada's solid wood products industry. The corporation is funded and advised by a partnership comprising industry members, and supporters in the federal and provincial governments.

Altec Design Group Ltd.

Computer Software developer and publisher specializing in productivity software for the Macintosh and IBM/MS DOS personal computing market

CDD Expert Software Inc.

CDD is the developer of Bridgesoft software, a state-of-the-art engineering design software that fullly automates the analysis, design and drafting process in the production of contract drawings for all commonly build highway bridges.

Dynamic Signal Analysis Corporation

DSA provides total systems solutions to vibration analysis and monitoring needs of machinery users. Using state of the art instrumentation, automated diagnostic software and analysis tools, DSA assists clients to achieve their machinery and performance objectives.

Dynapro Systems Inc.

With over 160 employees, Dynapro Systems Inc. is one of British Columbia's fastest growing and most innovative designers and manufacturers of hardware and software products for the industrial control market.

Glen Cooper and Assoc. Ltd.

Glen Cooper & Associates Ltd. specializes in logic programming and expert systems applications, mainly for the Medical industry. Current products include Nurse Scheduler (spreadsheet style interactive shift scheduling) and ISCN Expert (Medical Genetics expert system).

Suite 310
3700 Gilmore Way
Burnaby
British Columbia

Telephone:
(604) 435-0551

Facsimile:

INDUSTRY AFFILIATES
COMPANY PROFILES

Richmond Technologies & Software Inc.

Richmond Technologies & Software is a Vancouver based software company specializing in developing and marketing contact management software solutions since 1988. Our award winning Maximizer is sold extensively in the U.S. and Canada. We also have distributors in Europe, Africa, the Far East and Australia. Since 1988, over 60,000 Maximizers have been sold.

Rydex Industries Corp.

Rydex develops and markets innovative communications technology specializing in telephony, fax and electronic mail applications.

Softwords Research Int. Ltd.

Softwords specializes in computer-based training.

Telepresence Research Inc.

TRI Telepresence Research Inc. is a leader in advanced telepresence technology - 3D real time video image systems, head tracking, pan and tilt and image processing systems. These systems give the human operator the sensory information required to feel, work in and access remote, hostile environments through the safety of teleoperated machines.

Virtual Access Corp.

Virtual Access designs and develops cost effective tools for personal and business communications needs.

Western Subsea Technology Ltd.

Specializing in both surface and subsea technologies, Western Subsea has developed the "FISHCHART" electronic charting systems for use by the commmercial fishing industry. The company also owns and operates remote underwater vehicles for subsea search and location.

RSI Research Ltd.

RSI provides systems integration services and products in the area of advanced automation and robotics, with a specialty in telerobotic products for use in the subsea and resource industries.

Softouch Scheduling Services

Softtouch Scheduling Services is a Vancouver based, custom software development company. The products have been designed to address the complex challenges of crew scheduling within the airline industry.

Stone Manufacturing Inc.

Stone Manufacturing designs and manufactures underwater communicating devices.

The ARA Consulting Group Inc.

VITRON Systems Inc.

Vitron Systems Inc. (VSI) provides consulting and engineering services to the subsea and resource industries in BC. VSI specializes in project management and systems integration work for these industries.

For Additional Information Please Contact:

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#310-9700 Gilmore Way
Burnaby, BC
V5G 4M1

Telephone:
(604) 435-0551
Facsimile:
(604) 435-1173

Industry Affiliates Company Profiles

Infrascan Incorporated

Infrascan is a multiple product development and marketing organization whose strength is state of the art computer vision in software and hardware applications targeted for the industrial, medical, scientific, research and development, agriculture and primary resource industries.

Intertech Systems Inc.

ISI manufactures and markets a Laser Direct Write System (ISI 2000 Series) for the fabrication of semi-custom integrated circuits with a one-day turn around.

Kinetic Sciences Inc.

Kinetic Sciences Inc. provides research services and product development in the field of advanced robotics. KSI is currently developing for the Canadian government a robotic hand for handling hazardous materials and technology for autonomous control of robots on NASA's "Space Station Freedom."

MacMillan Bloedel Research

MacMillan Bloedel is a fully integrated international forest products company. Research areas include land use, silviculture, wood harvesting, building materials, and pulp and paper.

Mindflight Technology Inc.

Mindflight markets hardware and software products with a particular focus on Microcomputer security products.

MPR Teltech Ltd.

MPR Teltech carries out R&D for new services, products, and strategic technologies on behalf of the BC Tel Group as well as contract R&D for government agencies and external companies. With a staff of over 400 providing a broad range of communications expertise, MPR develops new products and technologies and solicits opportunities to commercialize these through partnering with companies having proven capability to carry out manufacturing and marketing.

Offshore Systems Ltd.

Offshore Systems Ltd. (OSL) develops integrated navigation and computer graphics systems. OSL has extensive expertise in real-time precise vessel positioning, colour electronic charts, radar positioning, radar overlay, and digitizing chart data base.

Range Vision Inc.

RVI manufactures range-imaging hardware and machine-vision software. A range-image is a 3D CAD model scanned from something in the real world. Machine-vision software analyses data in range-images and extracts features and objects. RVI specializes in scanning large objects at very high precision--e.g. resolution of 1 centimetre at a distance of 50 meters. Markets for RVI's systems are surveying, the mining industry, manufacturing quality assurance, and robotics.

DESCRIPTIVE CORE DATA

NETWORK HUB

NAME OF NETWORK HUB: Business Advisory Centre (BAC) of Hamilton - Wentworth

CONTACT INFORMATION:

Ron Wallace, Executive Director, BAC
P O Box 910
1 James Street South
7th Floor
Hamilton, Ontario L8N 3V9
Tel: 416-577-6606 Fax: 416-528-8725

MANDATE/MISSION: To facilitate the growth of small to medium-sized firms primarily through business mentoring (up to 200 mentors are available each year).

SPECIFIC OBJECTIVES:

1. To establish a pool of volunteer consultants from business, academia and the professions.

2. To co-ordinate resources and needs through volunteer consultants and through referral to existing sources.

3. To develop an information referral index, utilizing libraries (academic, corporate and public), professional and trade associations, publications and other pertinent material.

FUNDING:

- **FINANCIAL COMMITMENT:** MITT, Regional Municipality of Hamilton-Wentworth (supports Director, Business Development Officer and reception). Other support is on a project by project basis through existing programs. (See "Economic Benefits Achieved.") Annual budget - approximately $175,000; 50% from Regional government, 50% from MITT.

- **IN-KIND RESOURCES: ADVICE** from ISTC, NRC, MITT, Environment Canada, etc. Donations of mentor - consultant time, other in-kind services from local businesses.

ORGANIZATION:

- **BOARD OF DIRECTORS:** Yes, broad industry sectoral representation. Nominations Committee. 17 members, representing industry, the professions (C.A., lawyers), labour, government agencies, post secondary education and SME's.

- **DIRECTOR:** Ron Wallace

- **PROFESSIONAL RESOURCES:** Executive Director, Manager (Business Development), Administrative Assistant.

STAKEHOLDERS:

o	Federal Government:	Contributor-in-kind. Advice, proposal preparation, consultation from ISTC, NRC, CEI).
o	Provincial/Territorial Government:	Co-funder. MITT supports similar small businesses.
o	Regional Government	Co-funder. Partnership in funding small business development functions.
o	University Faculty:	Contributor-in-kind. Consultation of faculty, participation on committees.
o	Technical Institute:	Contributor-in-kind. Consultation of faculty, participation on committees.
o	Community College:	Contributor-in-kind. Consultation of faculty, participation on committees plus collaboration on trades training..
o	Labour Unions:	The Labour Council is a Contributor-in-kind.
o	Business, Trade or Industry Associations:	Contributor-in-kind. Volunteer mentors.
o	Chamber of Commerce or Board of Trade:	Contributor-in-kind. Participation on committees, publicity.
o	Financial Institutions:	The Royal Bank is a contributor-in-kind.
o	Major Business Firms:	30 different larger firms are contributors-in-kind (time of their professional and management staff as mentors to SMEs).

SUBJECT MATTER DEALT WITH:

o	Innovation:	Identification of market needs.
o	Research and Development:	Seminars in-funding etc. for R&D.
o	New Product(s):	Assisting inventor in start-ups.
o	High Technology Manufacturing:	Leading the technology engine process in this area (e.g., hosting technology engine conference initiated by Science Council of Canada).
o	Diffusion of New Science and Technology:	Development of a Technology Transfer Unit for Hamilton area.
o	Productivity Improvement:	Mentoring. Mentoring refers to the matching of professional advisors provided by the community's larger firms as free consulting resources to SMEs.
o	Total Quality Management:	Mentoring.
o	Human Resource Development:	Participation in Labour Force Development Coalition.
o	Marketing Development:	Mentoring.
o	Export Trade Development:	Through mentoring program.
o	New Business Formation:	Starting business seminars and one on one counselling in business plans.
o	Business Incubators:	Greater Hamilton Technology Enterprise Centre being built.

ACTIVITIES UNDERTAKEN:

1. BAC focusses on "initiatives through interaction", beginning with a commitment to help SMEs by arranging mentors to provide guidance.

2. BAC has developed its notion of a "constellation", which is really a broad but intense brokerage with local government, MITT, ISTC and NRC, the Ministry of Skills

- To identify "real" problems, practical solutions.
- To obtain support from all levels of government and the community.
- To share credit.
- To continually shift networks, depending on problems and opportunities.
- To provide a tireless champion.

CHALLENGES/IMPEDIMENTS:

- Various government groups are concerned and reluctant about working with each other because of overlap.
- Diversity of constituents.
- Not many resources are available.

INSIGHTS GAINED:

- Effective economic development depends upon the existence of a shared vision.
- The vision must be translated into a clear action plan.
- Successful execution of the action plan depends upon the existence of a supportive community climate, trust and credibility, communication and partnerships, partnerships, partnerships.
- The success of BAC was strongly influenced by the presence and persistence of a committed and credible champion, Mr Ray McCormick.
- Each sectoral group has informal leaders who will serve if they are given an opportunity. Consequently, Hub leadership must know the community's resources.
- Federal programs are often too macro to have local impact.
- Networking, brokering, and partnerships are critical.
- The network hub (BAC) must create new initiatives every year.
- To be effective, people in the network hub "must be prepared to step on toes" (i.e., to challenge politicians and government agencies which are not being supportive, etc.).

Development, Canada Employment and Immigration, trade and industry associations, the labour council, education (all levels), local companies (SMEs and larger firms providing mentoring), the public library and others. The BAC identifies partners and assists them in accessing government funding.

3. BAC's activity is, in effect, the operationalization of the Regional government's economic development plan. It is business driven and attributes much of its success to its ability to cut across government levels and agencies. It has been involved in sophisticated studies of needs analysis, infrastructure development, and opportunities in growth areas.

o	Business network research:	Formation of SME Association group.
o	Business network funding:	Obtaining grants and funding for action plans.
o	Business network formation:	Forms new networks as needs identified (e.g., environmental).
o	Facilitating linkages between network hubs:	
	- Nationally:	Through Canadian Association of Business Incubators.

ECONOMIC BENEFITS ACHIEVED:

o Achievements include contribution to 17 million dollars in increased sales in the area, attraction of large amounts of training dollars, 300-350 new jobs, 5,000 persons served directly and a developing culture in the community supportive of self help and risk taking.

o BAC and Hamilton were recognized for their leadership in infrastructure development and were asked by the Science Council of Canada to host the national Technology Engine conference in 1991.

o BAC stimulated a $100,000 technology Transfer and Diffusion study which could lead to a centre in the area.

o. Twenty large companies provide some 200 mentors and 12 hours of consulting from each to SMEs (that amounts to 2400 hours of professional resource!).

CRITICAL SUCCESS FACTORS:

o To provide mentoring support, the mentor vision.

- The network must be entrepreneurial and creative in sourcing its funding.
- Community economic infrastructure is complex; many diverse players must be involved if the network is to be successful.
- The network must be industry driven.
- Success depends upon the network being able to cut across government levels and departments. BAC gets different government agencies working together on projects.
- Many of BAC's lessons were learned by travelling to other jurisdictions which had solved certain kinds of problems.
- The identification of SMEs' needs and matching to the proper mentor resources is a dynamic process which must be monitored constantly because of rapidly changing conditions.
- Many of the resources needed to bring growth and prosperity already exist in the community. The trick is to provide the leadership and the brokering that brings needs and solutions together (e.g., the public library set up a special section for businesses and assigned reference librarians to help!).
- A sectoral approach can be useful.
- Spend time investing in people rather than all the bureaucratic issues. ISTC and NRC were described as being too bureaucratic.
- Must tie economic development to human resource development. This involves labour, market intelligence and strategic training deployment.
- The network hub must be determined to settle for nothing less than action and results. There is already enough talk.
- The network hub must have a working Board, not figureheads or private agendas.
- The charters of the network hub partners need to be revised at least every three years to avoid becoming irrelevant.

The hub must help form networks which focus on real needs and ensure that the group develops specific action plans with due dates ... and that the group be accountable to the community segment it serves by involving them in the planning and in the decision making and implementation.

DESCRIPTIVE CORE DATA

NETWORK HUB

NAME OF NETWORK HUB: Canada's Technology Triangle (CTT)

CONTACT INFORMATION:

Don Eastwood,
Chairman CTT
City of Cambridge
Business Development Department
73 Water St N, Box 669
Cambridge, Ontario N1R 5W8
Tel: 519-740-4536 Fax: 519-740-3011

MANDATE/MISSION: To promote economic development in the 4-city area of Cambridge, Guelph, Kitchener, and Waterloo.

SPECIFIC OBJECTIVES:

1. Achieve economies of scale in promotion external to the communities.
2. Raise profile of economic development locally.
3. Stimulate our strengths in high value-added sectors.
4. Identify innovative potentials.

FUNDING:

- **FINANCIAL COMMITMENT:** There are two kinds of funds required. Specific projects (e.g., hire a consultant to evaluate CTT) are funded on an "as required basis". On-going costs for trade shows, travel, promotional materials and communication are shared equally by the four communities. Four cities fund this out of their economic development budgets. MITT provided seed money for brochures, etc.
- **IN-KIND RESOURCES:** Advice from MITT, resources from universities, and volunteers from business community (e.g., presidents of Electrohome and Zeph Technologies).

ORGANIZATION:

- **BOARD OF DIRECTORS:** The four economic development officials function as a steering committee/Board of Directors. They periodically invite "advisors" to sit with them, depending on the issues being considered. Lack of formalization may reflect the officials' reluctance to create another layer of administration or to lose control.

- **DIRECTOR:** Rotating Chairmanship (from Economic Development Commissioners of Cambridge, Guelph, Kitchener and Waterloo).

- **PROFESSIONAL RESOURCES:** Economic Development Officers use their staff to do the work for the CTT, hire consultants, invite in "volunteers" from business, academia, professions, etc.

STAKEHOLDERS:

o	Provincial Government:	MITT was a co-funder for the first brochure promoting the four cities as a whole (approximately $10,000).
o	Municipal/Local Government:	Cities of Cambridge, Guelph, Kitchener and Waterloo are contributors-in-kind, through their economic development staffs, meeting sites, administrative resources.
o	University Faculty:	Faculty members from University of Guelph, University of Waterloo and Wilfrid Laurier University are contributors-in-kind. Faculty members give their time and expertise in committee service and 1-time presentations, etc.
o	Community College:	Conestoga College is a contributor-in-kind. Faculty members give their time and expertise.
o	Research Institutes:	REMAT provides manpower on a continuing basis, hosts meetings, served as a communications hub.

SUBJECT MATTER DEALT WITH:

o	Research and Development:	Brokering, Encouragement, hosts meetings.
o	High Technology Manufacturing:	By means of promotion of high tech companies in the area globally, brokering, and recruiting new manufacturing companies to the area.
o	Export Trade Development:	Sponsors' and hosts' trade missions as well as doing brokering.

- New Business Formation: Walks through bureaucracy, will steer companies through the proper start-up procedures and will direct towards government agencies such as MITT.
- Business Incubators: In past.

ACTIVITIES UNDERTAKEN:

Highlights:

- CTT hosted the National Technology Policy Roundtable and was a key player in the national simulcast conference "Strategies for Success" held in 1991.
- CTT has established a universities/economic development forum to promote technology transfer and better utilization of university resources by the community.
- CTT has established the CTT Alliance (CTTA), which has a mandate to develop new initiatives to enhance the communities' infrastructure and economic development. Projects to date involve a pilot project on a mini-trading house concept and the exploration of a unique source of financing for small businesses.
- CTT was the driving force behind a major trade show and seminars on export development.
- Community awareness of economic development issues is much higher as a result of CTT activities.
- CTT brokered a consortium in high tech plastics, which is now about to commercialize new resin applications.
- The economic development plans and activities of four municipalities are more or less coordinated because of the existence of the CTT.
- Development and publication of a data base listing high tech firms.
- Business Network formation: The CTT was instrumental in the formation of the Computer Technology Network, and the Environmental Management Network. Both networks were formed similarly. A visitation to Waterloo's businesses by the planning/business development function revealed the presence of a substantial number of firms in each field. Firms were

		invited to lunch at city hall (the city provided lunch) and participants recognized the potential and initiated follow-up meetings themselves.
o	Facilitating greater connectivity of networks and sector firms:	Yes, by means of brokering, information dissemination and data bases and directories.
o	Facilitating linkages between network hubs:	
	Nationally:	Facilitated Strategies for Excellence and hosted the Technology Policy Roundtable.
	Internationally:	Trade missions.
o	Participating in/ hosting national/:	Technology Policy Roundtable.
o	Other	Sponsored first ever trade show in area.
		Sponsored seminars on export development.
		Brokered a consortium in the plastics industry.
		Heightened community awareness of importance of economic development.
		Established CTT Alliance, a think tank with an open mandate.

ECONOMIC BENEFITS ACHIEVED:

- Economies of scale in external promotion.
- Growing strength of 3 networks stimulated by CTT.
- A spin-off group (CTT Alliance), now acting independently, has developed a "trading house" model which would use locally raised funds to finance SME development in the Community. This project is still in the initial stages but has wide buy-in from a range of influential business leaders in the community. A proposal for tax regulation to facilitate establishment of the Community Investment Fund has been presented in Mr. Wilson's office (October 1992).

CRITICAL SUCCESS FACTORS:

1. Clarity of vision. The original vision was simple and focused: save money by combining the efforts of the four cities' economic development offices.

2. Trust between key players (who could have seen themselves as competitors rather than collaborators).

3. An energetic and charismatic Champion: Bill Thompson, formerly Commissioner of Economic Development for the City of Kitchener (now retired).

CHALLENGES/IMPEDIMENTS:

1. Political boundaries do not align with natural economic boundaries.

2. Conflicts in political agendas between cities regarding economic objectives.

3. Much inertia to get to major change, slow response because economic development people must work through political masters.

4. Political masters change and cause changes in the economic development agenda which are political and short term rather than strategic and long term.

5. At CTT became recognized, a broader range of functions were identified which it, as a hub, could facilitate. For a variety of reasons, the four principals were reluctant to allow CTT to become an entity.

6. Converting CTT to entity status is probably necessary in order to staff it and enable it to provide a wider range of services for which these are legitimate and continuing demands (e.g., hosting of trade missions, etc.).

INSIGHTS GAINED:

1. Lots of communication is necessary to plant and grow a network hub.

2. Personal networks of the key players and then brokering are necessary to advance the hub.

3. The risk taking necessary to take advantage of opportunities in a dynamic environment is difficult to orchestrate when the players have to ensure the consensus of four different municipal governments.

4. A loose network may have to convert to a specific entity with committed resources if it is to grow beyond the original vision.

5. Not being an entity has hampered CTT's ability to best serve its communities (e.g., hosting trade missions, more effective brokering, a more explicit strategic plan).

6. A change in one or two of the players can radically change the direction and momentum of the hub. This may be because the loose organization meant that the developing objectives were not sufficiently institutionalized or the norms not shared.

DESCRIPTIVE CORE DATA

NETWORK HUB

NAME OF NETWORK HUB: Ottawa-Carleton Economic Development Corporation

CONTACT INFORMATION:

F Keith McGruer
President and General Manager
OCEDC
111 Lisgar St, 2nd Floor
Ottawa, Ontario K2P 2L7
Tel: 613-236-3500 Fax: 613-236-9496

MANDATE/MISSION: To unite the public and private sectors to promote investment and business growth in Metropolitan Ottawa.

SPECIFIC OBJECTIVES:

- Attract and assist companies, institutions, and associations to establish in Ottawa-Carleton and therefore add to the economic base of the Region.
- Bring companies, capital and technology from outside the Region into partnership with existing companies.
- Work with existing businesses to help them realize their growth potential through investment, trade, and technology.
- Take an active role in issues and needs which impact on the development of the economic base of Region.

FUNDING:

The total operating budget in 1991 was in excess of $1,130,000. There are essentially two sources of fundings:

- **FINANCIAL COMMITMENT:** Partially funded by regional municipality grants and regular membership fees (approximately 450 members which normally range between $150 - $550). There are also 30 sustaining members who contribute a $1,000 membership fee annually,
- **IN-KIND RESOURCES:** Biggest contribution is voluntary time of member companies (this amounted to approximately $270,000 in value in past year).

ORGANIZATION:

- **BOARD OF DIRECTORS:** Yes, made up of representatives primarily from the industry. There are presently 28 members on the board. The current Chairperson is Mr Stephen Markey, Partner, Executive Consultants Limited.
- **PRESIDENT/DIRECTOR:** F. Keith McGruer, President and General Manager.
- **PROFESSIONAL RESOURCES:** There are presently 13 full time staff members (7 in marketing, 2 handling investment projects, 1 membership coordinator, 1 executive and 2 support staff), plus volunteers.

STAKEHOLDERS:

o	Provincial Government:	Ontario Ministry of Housing - Rural Township Development - provides some funding (approximately 30,000).
o	Regional Government:	Yes, provides bulk of funding (sustaining grant of $1.1 Million).
o	Municipal/Local Government:	Yes, 11 municipalities are involved primarily through the Municipal Advisory Committee.
o	Research Institutes:	Yes, Ottawa-Carleton Research Institute (OCRI) is a sister Corporation.
o	Business, Trade or Industry Associations:	Yes, Building Owners and Managers (BOMA) have a seat on the board and engage in cooperative marketing activities.
o	Chamber of Commerce or Board of Trade:	Yes, Ottawa-Carleton Board of Trade and the Chambers of Commerce have seats on the Board. Some overlap in responsibilities but are working at clarifying these to have a unified thrust.
o	Financial Institutions:	Yes, through Memberships - Royal Bank, Royal Trust, Bank of Nova Scotia, Canadian Imperial Bank of Commerce, Metropolitan Life Insurance Company.
o	Major Business Firms:	Yes, 30 sustaining members. (Some are members of the Board of Directors and various sub-committees.)
o	SME Interest Groups:	Yes, very active membership (membership fees and events contributed over $150,000 in 1991).

SUBJECT MATTER DEALT WITH:

o	Innovation:	Yes, indirectly through their sister organization Ottawa-Carleton Research Institute (OCRI).
o	Research and Development:	Yes, they act as a facilitator for locating R&D facilities or matchmaking with existing companies in the Biotechnology, Defence and Aerospace, Microelectronics and Information Technologies sectors.
o	High Technology Manufacturing:	Yes, primarily a supportive role in setting up facilities to help manufacturers (e.g., good manufacturing practices facility for the biosciences).
o	Export Trade Development:	Yes, promote their companies' products and services in and solicit investment from targeted areas in U.S. - Boston, New York, Houston, and South California, as well as Europe and Asia Pacific.
o	New Business Formation:	Yes, have just established the Ottawa-Carleton Entrepreneurship Centre to assist start-up companies. Also trying to establish a mentoring program to help companies through their first two years of operation.
o	Business Incubators:	Yes, will be tied in with the Entrepreneurship Centre. OCRI also provides incubator like support for firms in the high tech area.
o	Other (specify):	Infrastructure support of business-e.g. taking part in Sky Negotiation with U.S. to get better air services for Ottawa. Working on establishing stronger links to the Provincial and Federal Governments and between the private and public sectors.

ACTIVITIES UNDERTAKEN:

o	Business network research:	Publish a number of directories of local companies which facilitates marketing and matchmaking initiatives.

o	Business network formation:	Yes, getting more into that with their matchmaking and marketing activities. Also OCRI their sister organization, engages in network formation (e.g., Strategic Microelectronics Consortium).
o	Business network project facilitation/process consulting:	No, only indirectly through information dissemination on companies and capabilities.
o	Facilitating greater connectivity of networks and sector firms within clusters (Porter model):	Yes, particularly in terms of building a critical mass of firms within their priority sectors; high technology, biotech and life sciences, the environmental technology, and service sectors. Encouraging investment in these sectors, collaboration among existing members and development of supporting infrastructure.
o	Facilitating linkages between network hubs:	
	• Nationally:	Nationally the EDCOs tend to compete versus cooperate.
	• Internationally:	Collaborating with Maryland, Dallas to help companies in the two regions & Ottawa companies to work together in several areas of mutual interest including electronics and environmental technologies. Have also begun to build linkages with other areas around the world - Germany, Britain, Japan, South Korea - in a number of areas including software development, integrated systems and electronic manufacturing.
o	Participating in/or hosting:	
	• National:	Hosts conferences but not on networking.
	• International network conferences:	Hosts conferences but not on networking.

ECONOMIC BENEFITS ACHIEVED:

o Some members do business deals with each other as a result of this network hub.

- Specific Investment Opportunity (SIO) project in particular is the best example of these business matches. Over the last three years a number of new companies and association have located in the area. Some of these include:

  Eight new life science companies (e.g., I-Stat, Ottawa Virology, Cordis Canada and Paladin Hybrids).

  Seven new companies in the Defense and Aerospace sector (e.g., EDS Canada, Questech, and EW Associates).

  Eight new companies in the microelectronics and information technologies sectors (e.g., Dell Computers, Fraser Nash and PC Etcetera).

  Fourteen new national associations (e.g., Industrial Biotechnology Association, BOMA Canada, and Engineering Institute of Canada).

CRITICAL SUCCESS FACTORS:

- One of the key factors is the quality of staff. To make a network hub effective you have to have the staff that recognizes the needs and organize the events to meet the needs of the members.

- There are high level executives from the member companies involved which helps to elevate the stature of the organization.

CHALLENGES/IMPEDIMENTS:

- The hub is very susceptible to federal government decisions which affect the region. (e.g., relocating Farm Credit Corporation to Regina, Natural Energy Board to Calgary, Canada Space Agency to Montreal without any regard to their regional impact).

- Coordinating the various initiatives of the municipalities involved is a major challenge.

- Sorting out turf issues with Chambers of Commerce and Board of Trade.

INSIGHTS GAINED:

- Must educate politicians to become aware and cognizant of the local economy.

- Industry commitment is crucial both in terms of financial and time support.

- A champion with considerable credibility, presence and connectedness should head up the hub organization.

- An organizational infrastructure which can serve to connect the various supportive resources (e.g., governments, universities, financial institutions, transportation, etc.).

DESCRIPTIVE CORE DATA

NETWORK HUB

NAME OF NETWORK HUB: Saskatchewan Research Council (SRC)

CONTACT INFORMATION:

Jim Hutch
President
SRC
15 Innovation Boulevard
Saskatoon, Saskatchewan S7N 2X8
Tel: 306-787-9400 Fax: 306-787-8811

MANDATE/MISSION: The mandate is applied research that leads to effective technology transfer for the benefit of Saskatchewan. This involves the acquisition and development of technology in cooperation with firms and incorporation of that technology by other firms.

SPECIFIC OBJECTIVES: SRC works directly with manufacturing companies to help them with products they are developing and with the utilization of technology to solve specific problems. Examples:

Petroleum Industry - Current projects address technical problems associated with the recovery and processing of heavy oil.

Process Development Division - Development of new processes for the petroleum, mineral, and other industries in Saskatchewan.

Rural Development Division - Develops farming practices and cropping systems that will increase farm net income using energy efficient, environmentally sustainable practices.

There are a number of other divisions - Resources, Technology Transfer, and Operations which have specific objectives for Saskatchewan key industrial sectors.

FUNDING: In the mid-1970s, the Saskatchewan Economic Development Corporation (SEDCO) and the University of Saskatchewan joined forces "to do something in a new way" resulting in the creation of one of Canada's first research and development parks, fittingly named "Innovation Park." SRC which was established independently about 40 years ago is now part of this Alliance.

- **FINANCIAL COMMITMENT:** Their current budget of about $17 million consists of 70 percent contract revenue and 30 percent core research and development funding from the Saskatchewan government.

- **IN-KIND RESOURCES:** Nominal and mostly come from the University of Saskatchewan.

ORGANIZATION:

- **BOARD OF DIRECTORS:** Yes, made up of representatives from the industry, Provincial Government and the University of Saskatchewan. The current board consists of 17 members. The current Chairperson is Gordon Birney, Partner, Birney & Smith Chartered Accountants.

- **PRESIDENT/DIRECTOR:** Jim Hutch, President .

- **PROFESSIONAL RESOURCES:** SRC has over 200 full-time employees of different calibers (scientists, researchers, administrators, etc.). They also have close links with the University of Saskatchewan and University of Regina.

STAKEHOLDERS:

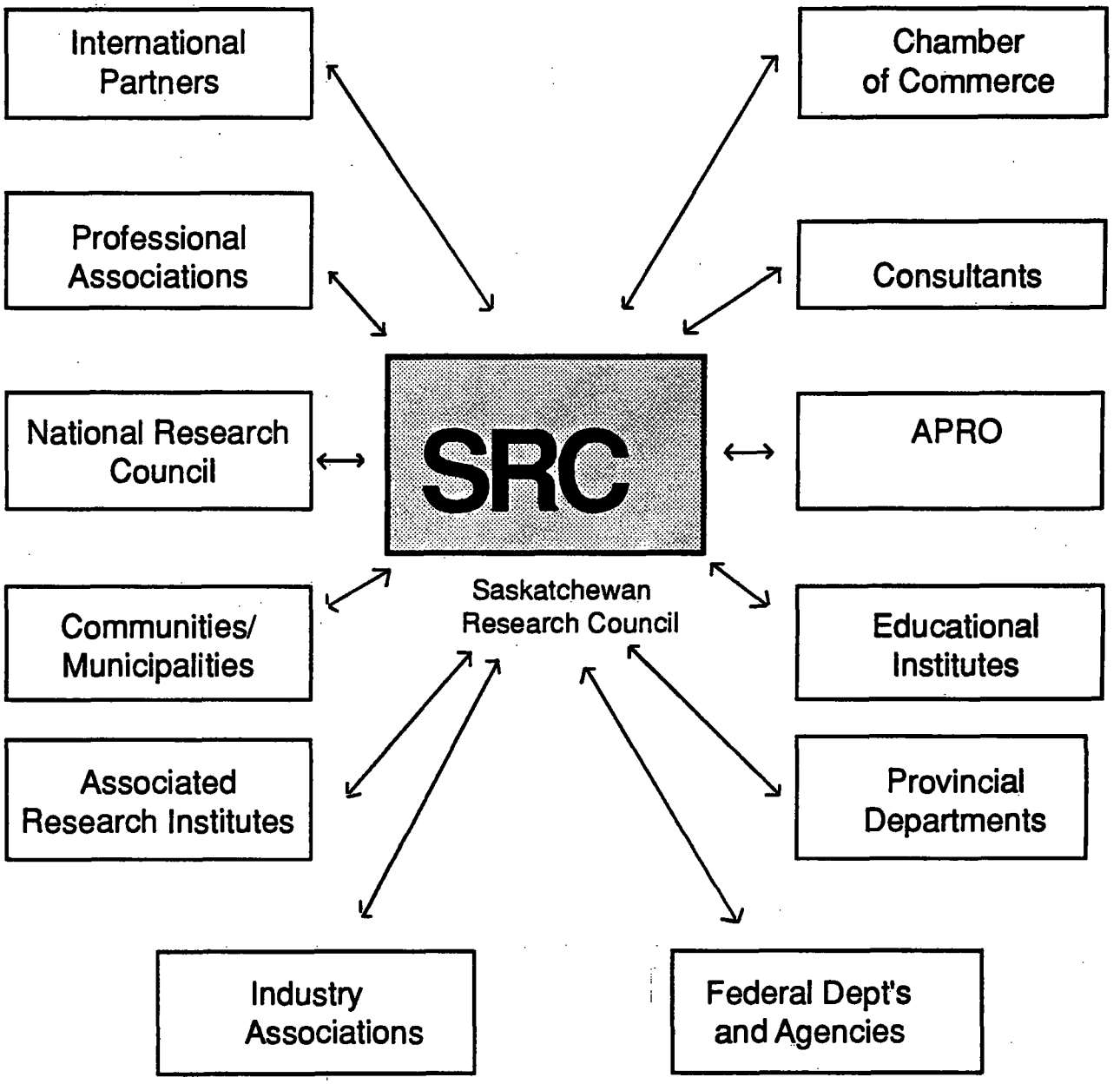
See attached map of their network.

o	Federal Government:	Yes, SRC delivers NRC's IRAP in Saskatchewan.
o	Provincial/Territorial Government:	Yes, through direct financial assistance.
o	University Faculty:	Yes, through their contributions in on-going research.
o	Technical Institute:	Yes, also through their contributions in on-going research.
o.	Community College:	Yes, also through research and training programs.
o	Business, Trade or Industry Associations:	Yes, Primarily through contract research.

SUBJECT MATTER DEALT WITH:

o	Innovation:	Yes, members provide technical assistance for companies involved in innovation - e.g., new windmill, water pump, direction changes for horizontal convey or belts used in mines, a safety belt lock for children's car seats.
o	Research and Development:	Yes, provide R&D services to number of the key industrial sectors in Saskatchewan.

SRC NETWORKS



o	New Product(s):	Yes, member companies (over 80% of which are privately owned) are actively involved. Several innovative products have been successfully developed and subsequently marketed by the member companies (e.g., ski tuning vice ultimately sold to Japanese customers; new rotary harrow, sold to farmers; a seismic source package sold to China; and thermometer and therapeutic heating blanket for animals and humans sold in Canada, U.S., and Europe).
o	High Technology Manufacturing:	Yes, provide process technology assistance to industrial members in the areas of petroleum, mining, agricultural, food processing, and building.
o	Diffusion of New Science and Technology:	Yes, have a technology transfer branch which offers expertise in product development, innovation, field services, precision instruments, and electronics. Have developed a number of resource centres (e.g., plastics resource centre, building sciences) and service centres (e.g., Analytical Services, Geoscience Services) which help with the diffusion of new technology.
o	Productivity Improvement:	Yes, assists companies in acquiring and implementing new process technology to make their operations more efficient and environmentally safe.
o	Total Quality Management:	Yes, have helped companies develop their TQM programs.
o	Marketing Development:	Yes, the hub helps the member companies in finding new markets and higher value uses for their products (e.g., assisted a mining and smelting company with developing soda ash from sodium sulphate and created a new market opportunity for them in selling to pulp and paper, glass, dye, and water treatment companies).
o	Export Trade Development:	Yes, many of the product and market development

		activities have resulted in export sales.
o	Business Incubators:	Yes, help small, product innovative startup companies with their development and commercialization activities.

ACTIVITIES UNDERTAKEN:

o	Business network research:	Yes, two successful examples are: electronics and oil.
o	Business network funding:	Yes, An active participant of APRO (Association of Provincial Research Organizations).
o	Business network formation:	Yes, SRC has been an initiator of APRO.
o	Business network project facilitation/process consulting:	Yes, several including one major project on advanced manufacturing technology supported by NRC.
o	Facilitating greater connectivity of networks and sector firms within clusters (Porter model)	Yes, Porter model fits nicely into what SRC is is trying to accomplish. SRC builds linkages among suppliers, customers, and researchers as well as enhancing the overall infrastructure for economic development in Saskatchewan.

ECONOMIC BENEFITS ACHIEVED:

- The current budget is about $17 million, 70 percent of which comes from company participate in projects. The objective is to become eventually self sufficient.

CRITICAL SUCCESS FACTORS:

- Having a champion, government support, appropriate technical and economic environment. SRC's network of technical professionals have been successful in working hands-on with companies in solving problems and pursuing new business opportunities, has helped position SRC as a credible and critical resource base for Saskatchewan's industrial community.

CHALLENGES/IMPEDIMENTS:

- Keeping the best interest of the (company) participants in mind in identifying the market opportunities, evaluating the relevant capabilities and capacity related to the

market demand, and developing a potential list of services to be offered.

- Having an up-to-date knowledge of leading edge technologies related to the interests of the member companies.

- Maintaining an efficient and value adding chain of internal and external clients to provide the best service at the best price each time.

INSIGHTS GAINED:

- Members' commitment is reinforced through quality of services provided by SRC.

- SRC, perhaps because of the limited infrastructure in Saskatchewan, has been able to position itself as a key conduit for technology related services for industry and many of the government assistance are channelled through SRC in a "one-stop" window style.

- Accessibility through various service and research centres (often aligned by industry sector) facilitates industry involvement and enhances communication links among the various players.

- Governments use of SRC as a delivery mechanism for its various initiatives helps in building SRC's credibility with industry as well as increasing the effectiveness and efficiency of government assistance.

DESCRIPTIVE CORE DATA

BUSINESS NETWORKS

NAME OF BUSINESS NETWORK: B.C. Wood Specialties Group

CONTACT INFORMATION:

Bob Holm
General Manager
1200 - 556 Burrard St
Vancouver, BC V7X 1S7
Tel: 604-684-4126 Fax: 604-687-4930

MEMBERSHIP

- **SECTOR:** Secondary/specialty manufactured wood products - see attached list of products.
- **NO. FIRMS:** 24 firms initially, now 45 - 20% large, 80% small (size determined by board feet).
- **INDUSTRY ASSOCIATION:** Provincial Association - Council of Forest Industries (COFI)
- **GEOGRAPHIC COVERAGE:** Provincial but mostly in Vancouver, Okanagon areas.
- **GOVERNMENT INVOLVEMENT:** Funding support; ISTC's Cooperative Industrial Marketing and Development Program and B.C. Trade and Development Program as well as representation on steering committee.
- **UNIVERSITY INVOLVEMENT:** None

FORMATION

- **WHEN FORMED:** 1989
- **HOW FORMED:** Secondary/manufacturers were members of COFI but their needs were not being met, industry players decided to set up their own group.
- **CURRENT STATUS:** Non-profit group, sub-sector groups (e.g., hemlock, cedar, spruce-pine-fir, and finished products) are beginning to formulate sector specific marketing programs.

- **NETWORK AXIS:** Associated with an industry association - Council of Forest Industries (COFI).

ORGANIZATION

- **LEADER/"CHAMPION":** Industry driven, original group of 24 companies, no one champion.

- **FULL-TIME MANAGER/DIRECTOR:** Yes, staff of 3 in total.

- **BOARD OF DIRECTORS:** Executive committee made up of 7 elected members - monthly meetings, also a steering committee which oversees long-term strategy and policies - quarterly meetings.

- **BROKER/FACILITATOR:** Committee of industry players.

MANDATE/MISSION: Provide educational and marketing support to the secondary wood manufacturing sectors.

SPECIFIC OBJECTIVES:

1. To increase volume and value of products from BC's secondary wood manufacturers - more specialty products targeted at export markets.

2. To enhance the relationship between primary and secondary wood manufacturers - improve supply conditions. The smaller non-integrated firms found it difficult to secure adequate raw materials from primary wood suppliers who were more interested in large volumes and export sales.

3. To educate manufacturers on new techniques in gluing, dry kilns, and molders.

FUNDING OF THE NETWORK:

Overall budget in 1992 was $1,750,000.

- **SERVICES:** Educational programs offered on a fee basis. (Overall budget in 1992 was around 1.8 million.) Other direct industry support initiatives were expected to be $260,000 in 1992.

- **PRIVATE:** 20% from membership, under 10 million board feet - $2,000, 11-25 million board feet - $4,000, over 25 million board feet - $6,000. Dues were expected to be around $120,000 in 1992.

- **PUBLIC:** 40% ISTC, 40% B.C. Trade and Development - Each contributes $735,000 annually.

SPECIFIC NETWORK ACTIVITIES/PROJECTS UNDERTAKEN:

1. Represented the group at trade shows in primary export markets - U.S., Europe, Japan.

2. Developed a number of brochures and advertising campaigns for the group's products

3. Participated in organizing and representing group in trade missions to Japan (3), Europe (4), and U.S. (1).

4. Offer a series of educational programs in affiliation with North Carolina State. These include educational videos and a 1 week management program.

5. Have begun to organize by sub-sectors and develop specific marketing initiatives by sector (e.g., each sector has a designated executive who is working with the sub-group to develop a marketing plan for their products - hemlock, cedar, spruce-pine-fir).

SPECIFIC RESULTS/BENEFITS ACHIEVED:

The manager is just beginning to monitor sales and other performance factors of the group but offered the following general observations:

1. Overall sales of the group have increased over 2 years.

2. Exports as a percent of sales have also increased.

3. Small firms working with large on joint marketing representation in foreign markets, also sharing knowledge on process technology.

4. Supply conditions with primary wood producers have improved because of the consolidated buying power (i.e., individually, they were having difficulty securing adequate supply of primary wood products).

CRITICAL SUCCESS FACTORS:

1. Very market oriented - the network provides valued services to members (e.g., education, marketing representation).

2. The ability to leverage industry contributions with government funding (e.g., for every industry dollar contributed they are able to secure up to $4 from the various government sources) served as a big initiative for industry to join.

3. A credible manager who came from the industry helped build members' confidence in this network's programs.

4. A focus on large export markets helps get over competition among members.

IMPEDIMENTS/CONSTRAINTS:

1. Small firms were concerned that they would be dominated by the larger members - addressed this with democratic representation. - "1 vote per firm representation" with majority rule decision making.

INSIGHTS GAINED:

1. Must get "closer" to the members than traditional business associations.

2. Credibility of management is important.

3. Equality in member representation is also key.

4. Initially, financial leverage (i.e., ability to lever private sector contributions with public sector support) helps in securing participation in network.

5. Focus on enhancing global competitiveness helps in securing collaboration among domestic competitors.

HAS THE NETWORK EVOLVED TO SELF-SUFFICIENCY: INDUSTRY-LED AND INDUSTRY-FUNDED?

1. Industry drives the group's plans and activities but government still accounts for 80% of the funding for the network's entire activities. Members' dues or fees cover just 1/3 of the administration overhead.

2. Evolving to having more established marketing infrastructure (group warehousing and distribution) in target markets - potential to earn fees from these kinds of member services which could move them closer to self-sufficiency.

Index

BCWOOD
SPECIALTIES GROUP

Directory of Products and Services

This index consists of product headings followed by a list of the BCWSG member firms who manufacture each product. Information on members can be obtained from the fact sheets provided. Members' fact sheets are ordered alphabetically in the directory.

Architectural Millwork

Accra Wood Products Ltd.
BW Creative Wood Industries Ltd.
Spindaleer Wood Products
Weldwood of Canada Ltd.

Boards (includes finish, shelving and fencing)

Ardew Wood Products Ltd.
Bridgeside Wood Products Ltd.
Canfor Wood Products Marketing
Central Cedar Ltd.
Crestbrook Forest Industries
Fletcher Challenge Canada
Gorman Bros. Lumber Inc.
International Forest Products Ltd.
MacMillan Bloedel Ltd.
Mid-Island Exteriors
Noranda Forest Sales
Sawarne Lumber Co. Ltd.
Slocan Forest Products Ltd.
Sylvanex Lumber Products Inc.
Tolko Industries Ltd.
Tyee Timber Products Ltd.
Vernon Kiln and Millwork Ltd.
Weldwood of Canada Ltd.
West Fraser Mills Ltd.

Custom Remanufacturing (includes sorting, drying and custom grading)

Pac-Deck Wood Specialties Ltd.
Primex Forest Products Ltd.
Sawarne Lumber Co. Ltd.
Swiftwood Forest Products
Uneeda Wood Products Ltd.
Vernon Kiln and Millwork Ltd.

Cutstock (includes industrial components, window and door components, and specialty end use cut parts)

Arbutus Manufacturing Ltd.
Ardew Wood Products Ltd.
BW Creative Wood Industries Ltd.
Bridgeside Wood Products Ltd.
Central Cedar Ltd.
Clearwood Industries Ltd.
Faulkener Wood Specialties Ltd.
Gorman Bros. Lumber Inc.
Hudson, Mitchell & Sons Lumber Inc.
International Forest Products Ltd.
MacMillan Bloedel Ltd.
Pac-Deck Wood Specialties Ltd.
Pacific Pallet
Paragon Forest Products Ltd.
Santek Manufacturing Corp.
Slocan Forest Products Ltd.
Swiftwood Forest Products
Tyee Timber Products Ltd.

Edge Glued Components

Arbutus Manufacturing Ltd.
BW Creative Wood Industries Ltd.
Hudson, Mitchell & Sons Lumber Inc.
MacMillan Bloedel Ltd.
Spindaleer Wood Products
West Fraser Mills Ltd.

European Joinery Lumber

Ardew Wood Products Ltd.
Bridgeside Wood Products Ltd.
Gorman Bros. Lumber Inc.
Noranda Forest Sales
Sylvanex Lumber Products Inc.
Tolko Industries Ltd.
Vernon Kiln and Millwork Ltd.
Weldwood of Canada Ltd.

European Window Stock

Forstar Trading Inc.
Hudson, Mitchell & Sons Lumber Inc.
International Forest Products Ltd.
MacMillan Bloedel Ltd.
Pac-Deck Specialties Ltd.
Paragon Forest Products Ltd.
Tyee Lumber Products Ltd.
Weldwood of Canada Ltd.

Fencing Panels

Mid-Island Exteriors

Finger Jointed Lumber

Arbutus Manufacturing Ltd.
BW Creative Wood Industries Ltd.
Bridgeside Wood Products Ltd.
Canfor Wood Products Marketing
Gorman Bros. Lumber Inc.
Hudson, Mitchell & Sons Lumber Inc.
MacMillan Bloedel Ltd.
Swiftwood Forest Products Ltd.
West Fraser Mills Ltd.

Furniture Components

Accra Wood Products Ltd.
Ardew Wood Products Ltd.
Santek Manufacturing Corp.
West Fraser Mills Ltd.

Garden Furniture & Accessories

Mid-Island Exteriors
Santek Manufacturing Corp.
Sarita Furniture

Industrial Lumber (includes clears, shop and vertical grain lumber)

Canfor Wood Products Marketing
Central Cedar Ltd.
Clearwood Industries Ltd.
Crestbrook Forest Industries
Faulkener Wood Specialties Ltd.
Fletcher Challenge Canada Ltd.
Forstar Trading Inc.
Gorman Bros. Lumber Ltd.
Hudson, Mitchell & Sons Lumber Inc.
International Forest Products Ltd.
MacMillan Bloedel Ltd.
Noranda Forest Sales Inc.
Pac-Deck Wood Specialties Ltd.
Paragon Forest Products Ltd.
Sawarne Lumber Co. Ltd.
Shera Wood Products Inc.
Slocan Forest Products Ltd.
Swiftwood Forest Products Ltd.
Sylvanex Lumber Products Inc.
Tolko Industries Ltd.
Tyee Timber Products Ltd.
Vernon Kiln and Millwork Ltd.
Weldwood of Canada Ltd.
West Fraser Mills Ltd.

Ladder Stock

Canfor Wood Products Marketing
Fletcher Challenge Canada Ltd.
Hudson, Mitchell & Sons Lumber Inc.
International Forest Products Ltd.
MacMillan Bloedel Ltd.
Pac-Deck Wood Specialties Ltd.

Laminated Components

Arbutus Manufacturing Ltd.
BW Creative Wood Industries Ltd.
MacMillan Bloedel Ltd.
Spindaleer Wood Products

Laminating Stock (includes window and structural blanks)

Arbutus Manufacturing Ltd.
Ardew Wood Products Ltd.
Bridgeside Wood Products Ltd.
Hudson, Mitchell & Sons Lumber Inc.
MacMillan Bloedel Ltd.

Machine Stress Rated Lumber

Crestbrook Forest Industries
Slocan Forest Products Ltd.
Tolko Industries Ltd.
Weldwood of Canada Ltd.

Mouldings

Accra Wood Products Ltd.
Clearwood Industries Ltd.

Moulding and Panelling Blanks

Bridgeside Wood Products Ltd.
Canfor Wood Products Marketing
Central Cedar Ltd.
Faulkener Wood Specialties Ltd.
Fletcher Challenge Canada Ltd.
Forstar Trading Inc.
Gorman Bros. Lumber Ltd.
Hudson, Mitchell & Sons Lumber Inc.
International Forest Products Ltd.
MacMillan Bloedel Ltd.
Noranda Forest Sales Inc.
Pac-Deck Wood Specialties Ltd.
Shera Wood Products Inc.
Swiftwood Forest Products Ltd.
Tyee Timber Products Ltd.
Weldwood of Canada Ltd.
West Fraser Mills Ltd.

Pallet and Crating Stock

Pacific Pallet
Shera Wood Products Inc.

Pattern Stock (includes panelling, siding, decking and flooring)

Central Cedar Ltd.
Clearwood Industries Ltd.
Crestbrook Forest Industries
Faulkener Wood Specialties Ltd.
Fletcher Challenge Canada Ltd.
Gorman Bros. Lumber Inc.
International Forest Products Ltd.
MacMillan Bloedel
Mid-Island Exteriorss
Noranda Forest Sales
Pac-Deck Wood Products Ltd.
Paragon Forest Products Ltd.
Paragon Wood Products Ltd.
Primex Forest Products Ltd.
Slocan Forest Products Ltd.
Sylvanex Lumber Products Inc.
Tolko Industries Ltd.
Tyee Timber Products Ltd.
Weldwood of Canada Ltd.

Staircase Components (includes spindles, handrails, shoerails and newel posts)

Accra Wood Products Ltd.
BW Creative Wood Industries Ltd.
Clearwood Industries Ltd.
Hudson, Mitchell & Sons Lumber Inc.
MacMillan Bloedel Ltd.
Pac-Deck Wood Specialties Ltd.
Spindaleer Wood Products
Swiftwood Forest Products Ltd.

Structural Glue-Laminated Timber

Structurlam Products Ltd.

Turned Wood Products

Accra Wood Products Ltd.
BW Creative Wood Industries Ltd.
Spindaleer Wood Products

Turning Squares

Arbutus Manufacturing Ltd.
Bridgeside Wood Products Ltd.
BW Creative Wood Products Ltd.
Canfor Wood Products Marketing
Central Cedar Ltd.
Clearwood Industries Ltd.
Crestbrook Forest Industries
Faulkener Wood Specialties Ltd.
Hudson, Mitchell & Sons Lumber Inc.
MacMillan Bloedel Ltd.
Spindaleer Wood Products
Tyee Timber Products Ltd.
Vernon Kiln and Millwork Ltd.
Weldwood of Canada Ltd.

Centre d'initiative technologique de Montréal
Ottawa Carleton Economic Development Corporation, Ontario
Toronto Biotechnology Initiative, Ontario
British Columbia Biotechnology Alliance, British Columbia
Atlantic Institute of Biotechnology, Nova Scotia
Institut de recherche en biologie végétale, Quebec
University of Toronto, Ontario
AG-West Biotech, Saskatchewan
Medical Devices Canada, Ontario
BIOFOR
AQUATECH

ORGANIZATION

- **LEADER/"CHAMPION":** Champions have been important in the formation and operation (ISTC Industry Officer, Odette Corbu; Rick Walter).

- **FULL-TIME MANAGER/DIRECTOR:** Rick Walter, Executive Director, CIB.

- **BOARD OF DIRECTORS:** Each member organization is represented.

- **BROKER/FACILITATOR:** ISTC, two technical officers and the staff of CIB who deal with sectors of the biotech field.

MANDATE/MISSION: To assist technology transfer, information dissemination and commercialization across Canada.

SPECIFIC OBJECTIVES:

1. Recruit member organizations.

2. Provide technology intelligence and networking opportunities.

3. Pursue projects which facilitate networking, education and intelligence.

4. Develop self-sustaining projects.

FUNDING OF THE NETWORK:

Total annual funding is $1,100,000 per year.

50% Private

50% Federal, ISTC Outreach Funding
Federal funding expires in 1994.

DESCRIPTIVE CORE DATA

BUSINESS NETWORKS

NAME OF BUSINESS NETWORK: Canadian Institute of Biotechnology (C.I.B.)

CONTACT INFORMATION:

Rick Walter
Director
388 Albert Street, 2nd Floor
Ottawa, Ontario K1R 5B2
Tel: 613-563-8849 Fax: 613-563-8850

MEMBERSHIP

- **SECTOR:** Biotechnology/pharmaceuticals (health care, agriculture, forestry, aquaculture, environment).
- **NO. FIRMS:** 15 Partners.
- **INDUSTRY ASSOCIATION:** Includes trade associations and smaller networks.
- **GEOGRAPHIC COVERAGE:** Canada
- **GOVERNMENT INVOLVEMENT:** Four levels of government (Federal, Provincial, Regional, Municipal).
- **UNIVERSITY INVOLVEMENT:** One university, two research institutes.

FORMATION

- **WHEN FORMED:** 1989, active in 1991.
- **HOW FORMED:** Precipitated by a network and ISTC.
- **CURRENT STATUS:** Active and growing, not for profit.
- **NETWORK AXIS:** Government sponsored (ISTC), affiliated with university, technology institutes. The 15 members include:

  Industrial Biotechnology Association of Canada, Ontario
  Environmental Bio-Industry Council, Quebec
  Pharmaceutical Manufacturers' Association of Canada, Ontario
  Municipality of Metropolitan Toronto, Ontario

CRITICAL SUCCESS FACTORS:

1. Availability of Federal funds.

2. Personality of champions.

3. Large volume of biotech activity in industry.

IMPEDIMENTS/CONSTRAINTS:

1. Unclarity of legal environment in Canada regarding protection/access regarding patents, protection, liability and ownership of intellectual materials.

2. Diverse interests of partners must be satisfied with limited resources.

3. Personalities who wish to gain either personally or on behalf of their own organization without concern for the entire group.

INSIGHTS GAINED:

1. Urgent need to develop methods suitable for monitoring the success of the network.

2. Diverse interests best served when priorities are clearly developed.

3. Champions are crucial.

4. Availability of Federal funds was a key factor in establishing the network.

HAS THE NETWORK EVOLVED TO SELF-SUFFICIENCY: INDUSTRY-LED AND INDUSTRY-FUNDED?

Not yet, but it is expected to.

SPECIFIC NETWORK ACTIVITIES/PROJECTS UNDERTAKEN:

1. To train and communicate through courses, seminars, conferences.

2. To transfer technology and commercialize projects (Co-sponsored with firms to a maximum of 40% CIB money).

3. To conduct feasibility studies.

4. To develop public education and media interface.

5. To create databases.

6. To facilitate network interactions.

SPECIFIC RESULTS/BENEFITS ACHIEVED:

1. Editing of a book on funding sources produced and distributed.

2. Adding of permanent technical staff (2 specialized field officers).

3. Creating library and database resources.

4. Hosting of conferences.

5. Developing and distributing media datasheets to help media personnel understand biotechnology and its importance to the future.

6. 13 Co-op research projects.

   - Over $900,000 total project costs.

   - $264,500 committed by CIB (maximum of 40% of project cost).

   - Projects in:

a.	Technology transfer	22%
b.	Conferences, workshops	43%
c.	Education and awareness	7%
d.	Databases, information systems	22%
e.	Feasibility studies	6%

DESCRIPTIVE CORE DATA

BUSINESS NETWORKS

NAME OF BUSINESS NETWORK: Groupement Québécois d'Entreprises (GQE)

CONTACT INFORMATION:

Benoit Paré
Executive Vice-President
99 Rue Cormier
Drummondville, Québec J2C 2M5
Tel: 819-477-7036 Fax: 819-477-3549

MEMBERSHIP

- **SECTOR:** Multi-sector.
- **NO. FIRMS:** Over 550 presidents from small manufacturing firms.
- **INDUSTRY ASSOCIATION:** No
- **GEOGRAPHIC COVERAGE:** Québec
- **GOVERNMENT INVOLVEMENT:** Very minor financial support (NRC).
- **UNIVERSITY INVOLVEMENT:** No

FORMATION

- **WHEN FORMED:** 1974
- **HOW FORMED:** Industry driven - an entrepreneur network lead by and for presidents and owners of small manufacturing firms.
- **CURRENT STATUS:** Very active, evolving to provide new services to network members (see activities undertaken).
- **NETWORK AXIS:** An independent group of business firms.

ORGANIZATION

- **LEADER/"CHAMPION":** Industry group versus one champion
- **FULL-TIME MANAGER/DIRECTOR:** Yes, 16 permanent staff in total. (Mostly administrative and support staff as opposed to specific professions.)

- **BOARD OF DIRECTORS:** Yes, 15 officers elected for two years (one from each region of Quebec). From this an executive board of 7 directors is formed.

- **BROKER/FACILITATOR:** 60 clubs each one consisting of 8 to 10 members from the same area. Each club elects a president to serve for 1 or 2 years. There are no competitors among club members and members decide on acceptance of new members. Also interclub meetings are held where 2 or 3 clubs from a region meet 2 times a year. Four province wide conventions are also held each year.

MANDATE/MISSION: To gather presidents, owners, decision makers of small manufacturing businesses who help each other by exchanging their own experiences in order to improve their overall management skills on technical and human levels.

SPECIFIC OBJECTIVES:

1. To develop more effective managers of manufacturing operations.

2. To facilitate knowledge exchange among members.

3. To enhance the support infrastructure for members.

FUNDING OF THE NETWORK:

Estimated total annual budget of $600,000.

- **PRIVATE:** About 90% - members pay an annual membership fee, each member is a shareholder in the GQE.

- **PUBLIC:** About 10% - NRC provides the funds (approximately $60,000 per year) to hire a technical resource person to work with the member firms.

SPECIFIC NETWORK ACTIVITIES/PROJECTS UNDERTAKEN:

1. Network meetings' to share experiences are held at the club, area, and province levels.

2. A computerized network of members' experiences facilitates problem solving and communication among entire membership.

3. A network of resource people from government, financial, and consulting organizations is maintained to help firms with specific problems or issues.

4. They are currently developing an "influence network" to ensure small business perspectives are represented in key policy decisions.

5. They are beginning to establish an international network involving match making services with small businesses from international markets.

6. A technology innovation service helps small businesses acquire and implement new technology.

7. A group insurance plan helps reduce the member's insurance costs..

SPECIFIC RESULTS/BENEFITS ACHIEVED:

1. There has been no formal evaluation of benefits to firms but network has continued to grow and its services have evolved over almost 20 years.

2. Enhanced support infrastructure is a key benefit to members.

CRITICAL SUCCESS FACTORS:

1. Industry driven agendas (ie., members decide which issues related to managing a manufacturing business should be addressed) are a key to sustaining members' interest and perceived value from the network.

2. Communication among members has been significantly facilitated by technology.

IMPEDIMENTS/CONSTRAINTS:

1. Coordination of various clubs around province can become a logistical problem particularly given the numbers involved.

2. Mix of members within a club - non competitive and compatible with existing members can constrain club formation and maintenance.

INSIGHTS GAINED:

1. Knowledge or experience sharing networks serve as a valuable resource base for SMEs.

2. Networks can evolve to enhance the requisite support infrastructure for SMEs - to becoming "network hubs" for the smaller clubs.

HAS THE NETWORK EVOLVED TO SELF-SUFFICIENCY: INDUSTRY-LED AND INDUSTRY-FUNDED?

Yes, other than technical support service which was a recent development this network is self-sufficient.

DESCRIPTIVE CORE DATA

BUSINESS NETWORKS

NAME OF BUSINESS NETWORK: Islander Fashion Co-op

CONTACT INFORMATION:

Trudy Walker
565 North River Road
Charlottetown, PEI C1E 1J7
Tel: 902-368-3504 Fax: 902-569-1669

MEMBERSHIP

- **SECTOR:** Fashion/clothing.
- **NO. FIRMS:** 9 small designer firms (all with less than 50 employees).
- **INDUSTRY ASSOCIATION:** None.
- **GEOGRAPHIC COVERAGE:** P.E.I. mostly, plus other Atlantic Provinces.
- **GOVERNMENT INVOLVEMENT:** Provincial and Federal for start-up funding (see Financing details).
- **UNIVERSITY INVOLVEMENT:** None.

FORMATION

- **WHEN FORMED:** 1990.
- **HOW FORMED:** Industry were the drivers, government funds and advice served as a catalyst.
- **CURRENT STATUS:** Co-op went into receivership and was bought by Trudy Walker. Now runs a separate manufacturing service company.
- **NETWORK AXIS:** Independent group of firms.

ORGANIZATION

- **LEADER/"CHAMPION":** There wasn't really one leader or champion. The network was more of a group initiative.

- **FULL-TIME MANAGER/DIRECTOR:** Yes. One manager was responsible for both manufacturing and marketing operations.

- **BOARD OF DIRECTORS:** Member firms.

- **BROKER/FACILITATOR:** Group initiative.

MANDATE/MISSION: To grow the fashion industry in P.E.I. and other Atlantic provinces.

SPECIFIC OBJECTIVES:

1. To provide a manufacturing facility to be shared by the designer firms.

2. To jointly market the products designed and manufactured by the member firms.

FUNDING OF THE NETWORK:

Estimated total funding annually is $125,000.

- **PRIVATE:** Each firm contributed $5,000 to become a shareholder.

- **PUBLIC:** Remaining funding was provided by ACOA and Provincial Manpower Ministry. (Exact amount is not known but estimated to be between $50,000 - $75,000.)

SPECIFIC NETWORK ACTIVITIES/PROJECTS UNDERTAKEN:

1. The network provided local (PEI) manufacturing facilities for the designer firms.

2. Some sporadic marketing initiatives for the clothing producers (e.g., States and rest of Canada) were also attempted by the network.

SPECIFIC RESULTS/BENEFITS ACHIEVED:

1. Manufacturing support was good but marketing side was slow in developing.

CRITICAL SUCCESS FACTORS:

1. The network had a clear focus but lacked sufficient capital and business management skills.

2. There was insufficient commercial success to sustain the co-op.

IMPEDIMENTS/CONSTRAINTS:

1. Island location was limiting from an operations perspective.

2. There was insufficient capital to support the network beyond some manufacturing capabilities.

INSIGHTS GAINED:

1. Networks need the requisite management skills.

2. Networks also need sufficient capital and infrastructure to gain sufficient commercial momentum.

3. Location can sometimes be an impediment.

HAS THE NETWORK EVOLVED TO SELF-SUFFICIENCY: INDUSTRY-LED AND INDUSTRY-FUNDED?

The network has transformed into a separate company which provides manufacturing services to the more successful designer firms in the Atlantic region. The company is still finding it difficult to generate sufficient business to sustain its existence.

DESCRIPTIVE CORE DATA

BUSINESS NETWORKS

NAME OF BUSINESS NETWORK: Joint Planning and Development Committee, Ontario Furniture Manufacturers Association

CONTACT INFORMATION:

Bill Fox
6900 Airport Rd
Suite 200, Box 85
Mississauga, Ontario L4V 1E8
tel: 416-677-6561 Fax: 416-677-5212

MEMBERSHIP

- **SECTOR:** Furniture Manufacturing in Ontario.
- **NO. FIRMS:** 10 - 15 levels of activity and commitment vary from firm to firm. Some will be invited to participate in pilot projects because of their vitality, while others will not (more marginal).
- **INDUSTRY ASSOCIATION:** Ontario Furniture Manufacturing's Association and Union (United Steel Workers).
- **GEOGRAPHIC COVERAGE:** Ontario
- **GOVERNMENT INVOLVEMENT:** ISTC, MITT, Canada Employment and Immigration, Ontario Ministry of Labour. These agencies function as a think tank and as resource brokers.
- **UNIVERSITY INVOLVEMENT:** Nil to date.

FORMATION

- **WHEN FORMED:** 1991.
- **HOW FORMED:** ISTC industry officer and director of industry association were influential. Brokering process led to invitations to sit on the Joint Committee.
- **CURRENT STATUS:** Active, refining program.
- **NETWORK AXIS:** Industry association. (Govemment sponsored)

ORGANIZATION

- **LEADER/"CHAMPION":** Association Director.

- **FULL-TIME MANAGER/DIRECTOR:** Bill Fox, former area director for CEI. Function separately from the industry association and at a different site.

- **BOARD OF DIRECTORS:** No, committee has representatives from membership, some non-voting invited as observers, resource persons or as potential brokers.

- **BROKER/FACILITATOR:** ISTC, Furniture Sector Industry Officer, Sheila Henry.

MANDATE/MISSION: Enhance industry competitiveness. Because the mission/mandate is so broad, (e.g., technology, training, marketing) it was felt that imputs from agencies should reflect that broadness. (This is an industry sector under severe threat because of obsolete technology, out-of-line costs and offshore competition.) Association members have seen vigorous rationalization of the industry in Ontario and realize that both survival and prosperity depend upon retooling both plants and management.

SPECIFIC OBJECTIVES:

1. Modernize plant and technology

2. Improve physical distribution.

3. Develop export and domestic marketing strategies.

4. Create strategic alliances.

5. Educate for consumer awareness.

FUNDING OF THE NETWORK:

- **PRIVATE:** Support for industry association staff and activities through association membership fees. Furniture manufacturers pay a levy based on sales volume to the association. OFMA provides infrastructure for the joint planning committee, other government agencies sponsor their staffs' participation.

- **PUBLIC:** Majority from government sources to date. Assignment of ISTC industry officer is critical catalytic support. $120,000 allocated for pilot projects in Total Quality Management (TQM).

SPECIFIC NETWORK ACTIVITIES/PROJECTS UNDERTAKEN:

1. Consultation with resource people from a variety of government agencies to address the diverse topics (plant modernization, training, marketing).

2. Longer range strategic planning.

3. Technology acquisition.

4. Training.

5. TQM pilot projects being planned. Funding obtained ($120,000). Test sites and specific projects yet to be identified.

SPECIFIC RESULTS/BENEFITS ACHIEVED:

1. It is still early in the process. Only started in 1991.

2. There appears to be a strategic vision developing.

3. Funding has been obtained for TQM pilot projects.

4. A couple of firms have caught the vision and are committed to really behaving differently to enhance their competitiveness (e.g., Magnussen Presidential of New Hamburg).

CRITICAL SUCCESS FACTORS:

1. Leadership, strategic vision.

2. Partnership amongst diverse players.

3. Availability of catalyst and government funding, as well as agency support and brokering to obtain support in other areas (e.g., CEIC focus on training)..

IMPEDIMENTS/CONSTRAINTS:

1. Many of the manufacturing participants are competitors.

2. Offshore competition/U.S. competition.

3. Old plants and equipment.

4. Lack of marketing skills.

5. Geographic dispersion.

INSIGHTS GAINED:

1. There is a pressing need to refurbish the entire infrastructure of the industry. The Canadian furniture manufacturing industry is out of date in technology, marketing and its approach to management (including human resources).

2. There is also a necessity to create a critical mass and to strive for economies of scale.

3. There is a need to identify synergies and to break up the manufacturing tasks so that a single firm does not need to make every component of the product.

4. One of the impediments to acquiring expensive automated equipment is the distance between manufacturers who could share the expense and capacity.

5. There are a lot of relevant players. Labour-management, industry-government links are vital. No one segment can effectively address alone the large and complex problems facing the furniture manufacturing industry in Canada.

6. Government facilitation and resources, plus industry leadership are both necessary to make the intervention successful.

7. Canadian industries were not adequately prepared for the impact of free trade. The fact that a major recession and the introduction of the GST were coincident with the implementation of free trade worsened the impact on the furniture manufacturing industry.

8. Some observers in the industry believe that the answer to competition is to become niche players.

9. Most information on technology in the furniture industry comes from machinery salesmen who have a vested interest in selling what they've got rather than what a plant needs.

10. A Technology Inflow Program trip to Europe was not particularly helpful since the group did not have access to leading manufacturers' plants. There are as few leading plants proportionally in Europe as there are in Canada.

HAS THE NETWORK EVOLVED TO SELF-SUFFICIENCY: INDUSTRY-LED AND INDUSTRY-FUNDED?

While there are a few leading companies, ISTC and other agencies' catalytic efforts are critical to continued success. A couple of "flag-ship" companies are keys to demonstrating the potentials of new approaches.

DESCRIPTIVE CORE DATA

BUSINESS NETWORKS

NAME OF BUSINESS NETWORK: Mechanical and Chemimechanical Woodpulps Network

CONTACT INFORMATION:

Dr H. I. Bolker
570 boul. St. Jean
Pte-Claire, Quebec H9R 3J9
Tel: 514-630-4100 Fax: 514-630-9444

MEMBERSHIP

- **SECTOR:** Pulp and Paper.
- **NO. FIRMS:** Firms are only indirectly involved through their membership in the Pulp and Paper Research Institute of Canada (PAPRICAN)
- **INDUSTRY ASSOCIATION:** PAPRICAN is supported by tonnage levies from its 45 Maintaining Member companies which are involved in the pulp and paper industry. The firms are not directly involved in the network; however, their interests are represented in the network by PAPRICAN.
- **GEOGRAPHIC COVERAGE:** National
- **GOVERNMENT INVOLVEMENT:** National Research Council.
- **UNIVERSITY INVOLVEMENT:** 10 Universities in 3 provinces (research).

FORMATION

- **WHEN FORMED:** August 1990.
- **HOW FORMED:** Network was stimulated by PAPRICAN to apply for Federal Centres for Excellence funding.
- **CURRENT STATUS:** Active. 190 research staff across 10 universities and 2 industry research centres.
- **NETWORK AXIS:** Government sponsored network (Federal Centres for Excellence Funding) McGill University and University of British Columbia, research laboratories in Pointe Claire, P.Q., and Vancouver, and PAPRICAN (itself a network). PAPRICAN is probably the most influential component. Eight other universities are involved in specific research.

ORGANIZATION

- **LEADER/"CHAMPION":** Dr. H. I. Bolker
- **FULL-TIME MANAGER/DIRECTOR:** Dr. H. I. Bolker
- **BOARD OF DIRECTORS:** Yes, representatives of the partners in the network.
- **BROKER/FACILITATOR:** Pulp and Paper Research Institute of Canada (PAPRICAN).

MANDATE/MISSION: To improve the competitiveness of the Canadian Pulp and Paper industry.

SPECIFIC OBJECTIVES:

1. Basic research.
2. Applied research.

FUNDING OF THE NETWORK:

- **PRIVATE:** PAPRICAN provides $2.5 million per year in kind contribution as the pulp and paper industry representative in the network. In kind contribution is in the form of facilities, research project funding and support of researchers.
- **PUBLIC:** Federal Science and R&D funding, $14.6 million over four years.

SPECIFIC NETWORK ACTIVITIES/PROJECTS UNDERTAKEN:

1. Basic research in:
    a. Colour of mechanical pulps.
    b. Brightening of pulps.
    c. Pulping.
    d. Process control.
    e. Pulp processing.
2. Applied research in:
    a. economic pulp supply.
    b. production process.
    c. process control.
    d. quality improvement.

e. environmental protection.
f. employee health.
g. technology forecasting.
(As part of the PAPRICAN mandate.)

SPECIFIC RESULTS/BENEFITS ACHIEVED:

1. Technological research.

2. Process research.

3. Product research.

4. Harvesting research.

5. Recycling research (e.g., de-inking of recyclable fibres, etc.).

6. Relation of pulp quality characteristics to paper quality and runability.

7. Environmental and safety research.

CRITICAL SUCCESS FACTORS:

1. Closely-linked industry - all recognize their shared fate and what they perceive as "the common enemy", Scandinavian producers (sic).

2. Well-established commitment to research in the industry (e.g., PAPRICAN).

3. Well-established links across Canada, between universities, research laboratories and production facilities.

4. Integration of education, R&D, and process improvements.

IMPEDIMENTS/CONSTRAINTS:

1. Strong off-shore competition, primarily from Scandinavia.

2. Scale considerations in the pulp and paper industry (everything is BIG) Many important changes require massive capital investments to implement. Also, since the changes are order of magnitude changes, the industry's capacity can easily outstep demand.

3. Collaborators from industry are potentially competitors, at least in the domestic market.

4. Tension between process versus product research. Since product research is likely to be proprietary, the joint research tends to focus instead on process, which is more easily shared between the players.

5. Individual firms are closing down in-house R&D and relying on PAPRICAN and the network to shoulder the research burden.

INSIGHTS GAINED:

1. The network and PAPRICAN demonstrate the importance of extensive R&D and the need for collaboration in an industry where the scale of requirements is so large that no one firm can do the development work.

2. One negative outcome of the network is that firms in the industry have been closing their corporate laboratories and leaving more work for PAPRICAN and the network. Consequently, new product research and innovation and evolutionary development of firms' proprietary processes is likely to suffer.

3. The research agenda flows up from scientists and engineers, but must be based on interactions with operators. Therefore, lots of visitation, seminars and such are necessary to develop the agenda and to share results.

4. Early fundamental science research laid the groundwork for later applications research. PAPRICAN's origins in McGill's Department of Chemistry set the pattern for the present links between the industry, universities and external research facilities. The migration of basic research into applied research and ultimately into transferable technology has been important.

5. With companies abandoning their own research departments and PAPRICAN concentrating on processes and not products, differentiation amongst Canadian producers will diminish or be accomplished through such means as acquisitions and joint ventures. The other alternative would be more contract research through PAPRICAN. This will probably mean fewer new products collectively from the Canadian industry which must compete globally.

HAS THE NETWORK EVOLVED TO SELF-SUFFICIENCY: INDUSTRY-LED AND INDUSTRY-FUNDED?

Because of the R&D emphasis, NRC will continue to be influential. The network is largely industry-driven, with industry providing funding, research sites and much of the research agenda. It is difficult to differentiate between the work of the Centres of Excellence network and PAPRICAN since PAPRICAN represents the industry input and Dr. Bolker is a senior officer of PAPRICAN as well as Director of the Network. However, that link probably improves the synergy.

DESCRIPTIVE CORE DATA

BUSINESS NETWORKS

NAME OF BUSINESS NETWORK: Plastic Wire Consortium Ltd.

CONTACT INFORMATION: Dr. Frank Maine
Guelph, Ontario
Tel: 519-823-1465 Fax: 519-855-5729

MEMBERSHIP

- **SECTOR:** Plastics manufacturing.
- **NO. FIRMS:** 7 (see Network Axis).
- **INDUSTRY ASSOCIATION:** No.
- **GEOGRAPHIC COVERAGE:** Southern Ontario.
- **GOVERNMENT INVOLVEMENT:** ISTC through R&D funding program.
- **UNIVERSITY INVOLVEMENT:** Nil.

FORMATION

- **WHEN FORMED:** 1990
- **HOW FORMED:** Economic development function (of Canada's Technology Triangle) called a meeting of potential players to look at a product opportunity.
- **CURRENT STATUS:** Winding up operations. Task complete.
- **NETWORK AXIS:** Independent group of business firms. Firms included: Zeph Technologies, Symplastics Ltd, Trimaster Manufacturing, Steel Wire Springs, Frank Maine Consulting Ltd, Hatch Associates Ltd, and Aclo Compounders Inc.

ORGANIZATION

- **LEADER/"CHAMPION":** Yes, Frank Maine.
- **FULL-TIME MANAGER/DIRECTOR:** No. Champion retained on consultant basis. Hired co-op students and researchers part-time, contracted out prototype manufacturing.

- **BOARD OF DIRECTORS:** Yes, 1 representative from each investing firm.

- **BROKER/FACILITATOR:** Guelph Economic Development Office, on behalf of the CTT called a meeting of interested parties after the development official heard about the availability of a technology.

MANDATE/MISSION: R&D: To investigate manufacturability and product potential of superplastics with new processes.

SPECIFIC OBJECTIVES:

1. Manufacturing technique/process research (use of metal forming technology to manufacture plastics using new resins) (superplastics).

2. Product development research.

3. Market research.

FUNDING OF THE NETWORK:

- **PRIVATE:** 50%. Approximately $5,000/partner.

- **PUBLIC:** 50%. ISTC R&D matching grant (approximately $40,000). R&D tax credit (approximately $8,000). Total funding of approximately $88,000 over the 2.5 years of the consortium.

SPECIFIC NETWORK ACTIVITIES/PROJECTS UNDERTAKEN:

1. Hired researchers.

2. Did R&D in lab and manufacturing sites.

3. Created prototype products.

4. Did market research on wide range of product possibilities.

SPECIFIC RESULTS/BENEFITS ACHIEVED:

1. Proved that specific resins could be formed in the ways desired.

2. Able to produce plastic of quality better than steel using metal forming techniques.

3. Analyzed wide range of product possibilities (rebar, paper clips, hockey sticks, rail ties).

4. Developed methods and test for evaluating new processes and products.

5. Completed R&D program as planned.

CRITICAL SUCCESS FACTORS:

1. Diversity of partner interests/knowledge.

2. Availability of government R&D money.

3. Champion.

IMPEDIMENTS/CONSTRAINTS:

1. Diversity of partner interests/knowledge.

INSIGHTS GAINED:

1. The diversity in the partners' interests has been an asset to the group.

2. Government assistance was judged as essential in the R&D phase. Partners acknowledged that had government funding for the R&D been available, the consortium would never have been formed.

3. Government can play a key role in brokering between interested parties and their opportunities. Government agencies must be involved in their constituencies' networks in order to effectively play the broker role.

4. The group was free to develop its own agenda after the broker called the initial meeting. Industry players in this and other networks have reiterated that network effectiveness depends on its being industry driven. Governments' role is to be a catalyst and facilitator only. It can best provide early infrastructure and communication resources.

HAS THE NETWORK EVOLVED TO SELF-SUFFICIENCY: INDUSTRY-LED AND INDUSTRY-FUNDED?

The network intended to test the manufacturability of certain superplastics using metal forming technologies. Having met that objective and having gained considerable intellectual property from the R&D, the network is disbanding. It was industry-led, jointly funded, and successful.

One of the partners was able to acquire the licence for the resins and intends to apply what was learned through the consortium/network to create new products.

The champion and some of the members have gone on to form a larger network consisting of suppliers, users, and developers of plastics. Over 100 participants, 3 meetings to date.

DESCRIPTIVE CORE DATA

BUSINESS NETWORKS

NAME OF BUSINESS NETWORK: REMAT Total Quality Management (TQM) Network

CONTACT INFORMATION:

Carole Litwiller
REMAT
Wilfrid Laurier University
Waterloo, Ontario N2L 3C5
Tel: 519-884-1970 Ext. 6662 Fax: 519-884-8853

MEMBERSHIP

- **SECTOR:** Cross-sectoral, with representation from Manufacturing, Service, and Municipal Government agencies
- **NO. FIRMS:** 50+ firms or organizations.
- **INDUSTRY ASSOCIATION:** Nil.
- **GEOGRAPHIC COVERAGE:** Kitchener, Waterloo, Cambridge, Guelph Area
- **GOVERNMENT INVOLVEMENT:** Nil, except for participants from municipal governments, who are fee-paying members.
- **UNIVERSITY INVOLVEMENT:** Yes, provision of champion, administrative resources. The university, through REMAT and the Laurier Trade Development Centre (LTDC) plays similar roles in other networks and may be evolving into a Hub as the range of involvement increases.

FORMATION

- **WHEN FORMED:** 1991
- **HOW FORMED:** "Customer focus" to identify network members' needs. The TQM network was itself TQM'd. Some 300 surveys were sent out to assess local industries perception of the need for a TQM Network. Respondents were invited to a meeting where the results of the survey were shared. The Network principles were developed. A steering committee of volunteers was formed to refine the Network design, create a kick-off event, and implement four small groups for monthly meetings.
- **CURRENT STATUS:** Growing through world of mouth referrals.

- **NETWORK AXIS:** Independent businesses and university research centre at Wilfrid Laurier University.

ORGANIZATION

- **LEADER/"CHAMPION":** Yes, more of a "catalyst" and facilitator for an industry driven steering committee.

- **FULL-TIME MANAGER/DIRECTOR:** No. REMAT provides the administrative and communication hub for the Network.

- **BOARD OF DIRECTORS:** Steering committee (8 members)

- **BROKER/FACILITATOR:** REMAT

MANDATE/MISSION: To promote and enhance TQM activities in our region through information and idea exchange.

SPECIFIC OBJECTIVES:

1. To facilitate small groups for resource sharing, information and encouragement.

2. To accumulate and share hard resources such as videos, articles, books, etc.

3. To organize workshops and conferences.

4. To stimulate research.

FUNDING OF THE NETWORK:

- **PRIVATE:** Member companies pay $150 per year. Total funding approximately $8,000 for the first year.

- **PUBLIC:** Nil, except for support in kind. Little funding was required because of leveraging of internal resources of the Network. REMAT, a Centre supported by Wilfrid Laurier University, had "donated" administrative and facilitator support as well as free use of meeting sites (estimated value, $5,000).

SPECIFIC NETWORK ACTIVITIES/PROJECTS UNDERTAKEN:

1. Kick-off conference on TQM

2. Monthly meetings to share processes and progress

SPECIFIC RESULTS/BENEFITS ACHIEVED:

1. More than 50 companies involved in network.

2. Four small groups functioning, each with its own agenda and leadership. The small groups each have 15-20 participants who meet monthly. Members are expected to make a commitment to the same group for a year to facilitate knowledge of each others' cultures, problems and opportunities. The groups are **not** segmented by industry, size, or sophistication - at the participants' request. Each group is facilitated by one of the industry representatives on the steering committee. The steering committee meets following the monthly small group meetings to evaluate effectiveness and to plan major events to be attended by all participants.

3. Resource inventory growing.

4. Encouragement/growth very effective.

5. Members learning from experiences of others. Members report that their application of TQM (and consequently the benefits it offers) is greatly accelerated and facilitated by Network membership.

6. Two major education/awareness events have been held.

7. TQM is becoming recognized as a potential advantage to the larger community.

8. The relationship between the University and the community is enhanced.

CRITICAL SUCCESS FACTORS:

1. Availability of infrastructure to initiate network (the university's provision of REMAT).

2. Industry driven = member acceptance. Industry members of the Steering Committee are committed, hard working well-respected and willing to invest their time for the benefit of the Network and the spread of TQM to facilitate economic development in their region.

3. Leveraging of internal resources builds ownership.

IMPEDIMENTS/CONSTRAINTS:

1. Diversity of members (type, size, stage of sophistication).

2. Softness of the concepts makes them harder to sell.

3. Time constraints for harried participants.

INSIGHTS GAINED:

1. A network which meets obvious needs can gel very quickly.

2. Infrastructure is needed to launch the network.

3. Turning over leadership early (first meeting) can give the desired "industry-driven" result.

4. Leveraging the resources of network members provides ample resources and a good comfort level, at least in the early stages of this network.

HAS THE NETWORK EVOLVED TO SELF-SUFFICIENCY: INDUSTRY-LED AND INDUSTRY-FUNDED?

The bulk of the leadership is now from the steering committee although REMAT still provides administrative support and catalytic help. Apart from the intangible costs of REMAT resources, the network is paying its own way. Next year it should pay to offset the costs of REMAT services.

DESCRIPTIVE CORE DATA

BUSINESS NETWORKS

NAME OF BUSINESS NETWORK: SPIRIT Subsea Systems Corporation

CONTACT INFORMATION:

Jon Patch
Chief Operating Officer
Suite 310 - 3700 Gilmore Way
Burnaby B.C. V5G 4M1
Phone: 604-436-3236 Fax: 604-435-1173

MEMBERSHIP

- **SECTOR:** Ocean - Sub-sea..
- **NO. FIRMS:** 8 small firms, each firm with less than 50 employees.
- **INDUSTRY ASSOCIATION:** No
- **GEOGRAPHIC COVERAGE:** Greater Vancouver and Victoria
- **GOVERNMENT INVOLVEMENT:** Provincial and Federal financial support for research projects but not involved in corporation.
- **UNIVERSITY INVOLVEMENT:** Engineering, computer service faculty from U.B.C., Victoria, and Simon Fraser Universities collaborate on research projects.

FORMATION

- **WHEN FORMED: 1990**
- **HOW FORMED:** In 1987 a committee of representatives from industry, government and academia - The Marine Robotics Committee - met to develop a strategy to address the downfall of sub-sea business related to oil and gas dripping. The recommendation from the committee was the concept of 'SPIRIT'.
- **CURRENT STATUS:** Incorporated for profit company with members as equal shareholders.
- **NETWORK AXIS:** An independent group of firms with strong research links to the universities.

ORGANIZATION

- **LEADER/"CHAMPION":** Committee First, then consortia member, then Jon Patch, President.

- **FULL-TIME MANAGER/DIRECTOR:** Yes - Jon Patch, and a small support staff.

- **BOARD OF DIRECTORS:** Member firms, B.C. Advanced Sciences Institute.

- **BROKER/FACILITATOR:** B.C. Advanced Sciences Institute helped set-up the network and provided office space.

MANDATE/MISSION: To collectively enhance their technological and competitive positions in the global ocean industry by developing complementary enabling technologies for an autonomous underwater vehicle.

SPECIFIC OBJECTIVES: To generate revenue/profits from:

1. Selling of autonomous underwater vehicles
2. Selling of enabling component technologies
3. Packaging the various technological capabilities to bid on research contracts (e.g., IRAP program, sub-contracting).

FUNDING OF THE NETWORK:

Asking for $10-20 million as part of ISTC's Ocean Sector Campaign. Current funding is not available.

- **PRIVATE:** 40% private sector

- **PUBLIC:** 25% Provincial Government
  35% Federal Government (Western Diversification Fund, IRAP)
  * Applied for $10 - 20 million as part of Oceans Sector Campaign

SPECIFIC NETWORK ACTIVITIES/PROJECTS UNDERTAKEN:

a. Major project to develop an autonomous underwater vehicle.

b. To develop this major product the following SPIRIT consortium companies are collaborating with universities to address specific enabling technologies:

   o International Telepresence Corporation - Video and data communication link systems.

- o Nuytco Services Ltd. - Functional test platform fabrication and integration.
- o Offshore Systems Ltd. - Precise positioning and navigation systems.
- o RSI Research Ltd. - Telerobotic manipulator systems.
- o Stone Microsystems Inc. - 3-Dimensional ocean mapping sonar systems.
- o Vitron Systems Inc. - Advanced propulsion systems and vehicle designs.
- o Western Subsea Technology - Digital terrain mapping.

c. Development work is done by member companies and collaborating universities under contract to the SPIRIT Corporation.

SPECIFIC RESULTS/BENEFITS ACHIEVED:

1. Network has provided critical mass and visibility necessary for securing funding for projects.

2. Short-term results will likely come from contracts and enabling technologies during long development cycle.

CRITICAL SUCCESS FACTORS:

1. Stoking and feeding interest in the network concept is an on-going activity.

2. Managing the development project across a number of independent, entrepreneurial firms is a critical task.

3. Delivering some short-term business/results to maintain commitments to the network is also key.

IMPEDIMENTS/CONSTRAINTS:

Major challenges in management the network are:

1. Addressing the various needs of the participating firms

2. Sorting out shared versus individual returns from projects

3. Managing the various time lines for development projects

INSIGHTS GAINED:

1. Market conditions necessitated collaboration

2. The network requires an integrated effort of industry, government and academia

3. Existing funding programs do not support setting up and marketing of network initiatives.

HAS THE NETWORK EVOLVED TO SELF-SUFFICIENCY: INDUSTRY-LED AND INDUSTRY-FUNDED?

The network administrative infrastructure is largely supported by the member firms. The development projects are jointly funded by member companies and government funding agencies. As sales of the enabling technologies and the autonomous underwater vehicle begin to materialize, the corporation will evolve towards self-sufficiency.

DESCRIPTIVE CORE DATA

BUSINESS NETWORKS

NAME OF BUSINESS NETWORK: Strategic Microelectronic Consortium

CONTACT INFORMATION:

John Roberts
President
Suite 400
340 March Rd
Kanata, Ontario K2K 2E4
Tel: 613-592-8155 Fax: 613-592-8163

MEMBERSHIP

- **SECTOR:** Microelectronics
- **NO. FIRMS:** 14 (Mitel is the largest, 550 employees), 3 or 4 others with employees in the 200-400 range, rest are small with less than 50 employees).
- **INDUSTRY ASSOCIATION:** Canadian Semi-conductor Design Association (CSDA)
- **GEOGRAPHIC COVERAGE:** Canada wide - really captures the whole microelectronics industry
- **GOVERNMENT INVOLVEMENT:** ISTC, through Strategic Technologies Program (STP).
- **UNIVERSITY INVOLVEMENT:** Individual firms have research relationships with universities.

FORMATION

- **WHEN FORMED:** 1992 - 2 years in the making.
- **HOW FORMED:** CSDA was too narrow in focus so a consortium was established with a broader focus on pooling resources for precompetitive R&D. Government financial assistance made it happen ($12 million ISTC sector campaign).
- **CURRENT STATUS:** Incorporated non-profit corporation.
- **NETWORK AXIS:** Non-profit organization owned by private sector firms (each of the 14 members is an equal shareholder in the consortium).

ORGANIZATION

- **LEADER/"CHAMPION":** The Director of the CSDA together with ISTC representatives who helped to secure the funding were the champions of the consortium.

- **FULL-TIME MANAGER/DIRECTOR:** Yes, plus 3 other executives. All formerly from the microelectronics industry.

- **BOARD OF DIRECTORS:** Member companies sit on the board which meets to approve R&D projects.

- **BROKER/FACILITATOR:** Ottawa - Carleton Research Institute.

MANDATE/MISSION: Collaborate on R&D projects to be able to compete in the global microelectronics industry. Individual firms can't afford to keep pace with the technology.

SPECIFIC OBJECTIVES:

1. To increase Canada's share of the global semiconductor market from $400 million to $1.2 billion by the year 2001.

2. To find additional investment capital for the microelectronic industry.

3. To form R&D alliances to produce a series of interlinked core competencies that can produce competitive products.

4. To provide firms additional services and skills in the areas of quality and product marketing.

5. To develop product ideas and products to the point where they can be manufactured and sold by member companies.

FUNDING OF THE NETWORK:

- **PRIVATE:** Annual dues (approximately $150,000 per year in dues) - Companies with over $3 million in sales pay $10,000. Companies with under $3 million in sales pay $1,000.

- **PUBLIC:** ISTC - $12 Million over 5 years.

SPECIFIC NETWORK ACTIVITIES/PROJECTS UNDERTAKEN:

1. $1.2 million provided for R&D projects underway by subgroups of members - (e.g., i modular chip design, (ii) charged coupled device imaging).

2. Product definition and market research support for research - customer driven applications engineering.

SPECIFIC RESULTS/BENEFITS ACHIEVED:

1. There is a larger R&D pool available to members which expands the scope of their development activity.

2. Members have quicker access to pooled R&D funds which is consistent with requirements for a faster "time to market".

3. Assistance is provided to members in meeting the ISO9000 quality standards.

4. Members are accessing each others technology where appropriate which speeds up the product development process (e.g., licensing of an algorithm from a member instead of developing from scratch).

5. The consortium through networking both inside and outside the member pool are able to provide an expanded base of resource people to assist development initiatives (e.g., 3 resource people are providing technical assistance with Newbridge Microsystems)..

6. Members are beginning to share marketing infrastructure (e.g., Gennum will sell Genesis's products).

CRITICAL SUCCESS FACTORS:

1. Short-term successes being able to move projects along or to initiate with funding are key to building commitment in the consortium..

2. There was a working model of a network already in place with CSDA which accelerated set-up time.

3. ISTC funding was a key catalyst in providing structure and securing interest in the consortium.

IMPEDIMENTS/CONSTRAINTS:

1. Fostering commercial marriage with people who don't see the connectedness - industry is small but diffused across the country. The consortium had to build awareness and understanding of each others capabilities and resources.

INSIGHTS GAINED:

1. ISTC sector campaign funds are key.

2. R&D projects need to be industry-driven with quick decision making - in order to accelerate time to market.

3. Consortia need administrative infrastructure support, in order to be able to focus on project work.

4. Commercial focus with some early success are key in building networks.

5. Consortia can facilitate and reduce risk in government R&D support programs.

HAS THE NETWORK EVOLVED TO SELF-SUFFICIENCY: INDUSTRY-LED AND INDUSTRY-FUNDED?

The consortium is industry led but jointly funded. Plans for self-sufficiency are not clear at this stage in the development.

DESCRIPTIVE CORE DATA

BUSINESS NETWORKS

NAME OF BUSINESS NETWORK: Waterloo Region Shoe Manufacturers Limited

CONTACT INFORMATION:

Don G. McLeod, formerly president, Savage Shoes Ltd.
President, DGM and Associates
7 Rosslinn Road
Cambridge, Ontario N1S 3K2
Tel: 519-740-7802 Fax: 519-740-7833

MEMBERSHIP

- **SECTOR:** Footwear Manufacturing

- **NO. FIRMS:** Six footwear manufacturing firms within one hour of Kitchener, Waterloo, including Savage Shoes, Kaufman, Bonnie Stewart Shoes, Cambridge Shoe, Andrew McNeice Shoes and Greb.

- **INDUSTRY ASSOCIATION:**

  1. Shoe Manufacturers Association of Canada
  2. Footwear and Leather Institute of Canada (FLICCC)

  Associations encouraged corporate players to take initiative.

- **GEOGRAPHIC COVERAGE:** Southwestern Ontario

- **GOVERNMENT INVOLVEMENT:** Nil

- **UNIVERSITY INVOLVEMENT:** Nil

FORMATION

- **WHEN FORMED:** 1978

- **HOW FORMED:** Companies which operated in the marketplace as competitors met, agreed to form a limited company in order to acquire the technology necessary to enhance competitiveness.

- **CURRENT STATUS:** Sold at a profit to FLICCC. Now defunct. A former partner believes FLICCC allowed overheads to grow too large.

- **NETWORK AXIS:** Independent group of business firms incorporated a new firm to hold and operate the shared technology.

ORGANIZATION

- **LEADER/"CHAMPION":** Don G. McLeod (address above)

- **FULL-TIME MANAGER/DIRECTOR:** Yes, plus bookkeeper and operator. Manager was intentionally a "neutral" since he would be responsible for impartially distributing the new firm's resources amongst the member firms and providing inter-firm confidentiality on their proprietary shoe designs.

- **BOARD OF DIRECTORS:** 1 from each shareholder company. Met bimonthly. Task of Treasurer was rotated.

- **BROKER/FACILITATOR:** The Board became the main instrument for shaping direction. Lots of good volunteer input into the board.

MANDATE/MISSION: To become more competitive through joint acquisition of technology which none could afford separately.

SPECIFIC OBJECTIVES: To acquire required technology to provide pattern grading services to member firms. The computer-driven system would evaluate the quality and colour of hides and plan the pattern cut to optimize on grade and colour matching while minimizing waste.

FUNDING OF THE NETWORK:

- **PRIVATE:** Corporate partners bought shares in the new firm.

- **PUBLIC:** Ontario Development Corporation (ODC) Loan 4% for 1st 4 years, 8% thereafter.

SPECIFIC NETWORK ACTIVITIES/PROJECTS UNDERTAKEN:

1. Establishment of shareholders' agreement, operating rules.

2. Acquisition of technology.

3. Provision of quality services, first to partner firms, then to 28 customer firms.

4. Training of partners' pattern department staffs.

5. Training of customers' pattern department staffs.

6. Training courses for supervisors

7. Spin-off of separate company with same players for export development.

SPECIFIC RESULTS/BENEFITS ACHIEVED:

1. Reduced costs of patterns because of speed, accuracy, matching and reduced wastage.

2. More rapid processing of patterns.

3. Better, more consistent quality.

4. Attraction of customers which led to profits and dividends for the partners.

CRITICAL SUCCESS FACTORS:

1. Choosing the right technology.

2. Structure of the Board, good contributions.

3. Strict adherence to confidentiality rules (the partners were all competitors!).

4. Queuing Rule Fairness. All partners had to have confidence that none of them would receive unfair advantages in accessing the technology.

5. Quality service.

6. Profitable operations (keep overheads low).

7. Training of those from both partner and customer firms so they could use the technology to its best advantage.

IMPEDIMENTS/CONSTRAINTS:

1. Need to overcome competitors' mindset; e.g., my new partner is my competitor. (threat of import competitors aided this).

2. Import competition was brutal on cost, then on quality. Dropping of tariff barriers made the Canadian manufacturers vulnerable.

INSIGHTS GAINED:

1. Even head-to-head competitors can collaborate to enhance their individual and collective competitiveness.

2. Shareholders' agreement must address the basic concerns of the partners' objectives and services to be provided must be clearly understood.

3. Rules must be respected (e.g., confidentiality, access to resources, etc.).

4. Could have had board members more involved in marketing programs.

5. Member firm that sent a junior representative (rather than senior) was a weak link (eventually dropped out and became a customer).

6. The network should have expanded its services more quickly into marketing projects.

7. Although original partners came from within a 1-hour radius, customers eventually came from greater distances

HAS THE NETWORK EVOLVED TO SELF-SUFFICIENCY: INDUSTRY-LED AND INDUSTRY-FUNDED?

It did, from the outset. The network serviced shareholder companies, attracted 28 customers, made a profit and paid dividends. Its demise was the result of import competition which made continuing manufacturing of shoes in Canada impractical. Mr. McLeod believes the network slowed the ultimate decline of the industry but could not stop it. The shared technology approach has been adopted by other "area groups" in the footwear industry (e.g., Maine).