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INCUBATORS IN CANADA

A REVIEW OF CURRENT CANADIAN SMALL BUSINESS

INCUBATOR PROGRAMS

PREPARED FOR INVESTMENT CANADA

AND THE NATIONAL RESEARCH COUNCIL



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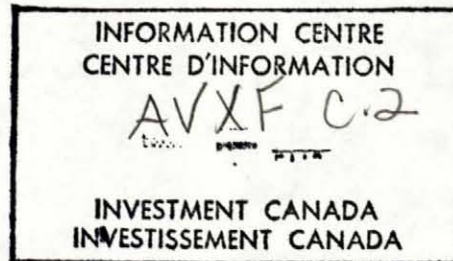
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AND THE NATIONAL RESEARCH COUNCIL

Prepared by

The Network Inc., Ottawa

(Summer, 1986)



(This report was commissioned as part of Investment Canada's domestic mandate. The views and opinions expressed are those of the authors and participants in the study; they do not necessarily reflect federal government or Investment Canada policies. The report is presented with a view to stimulating discussion on an issue of importance to the Canadian business community.)

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INCUBATORS IN CANADA

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INTRODUCTION

(i) Purpose of this Study

Investment Canada and the National Research Council retained the services of *The Network* to study the business incubator concept and survey existing Canadian incubators.

There have been sporadic attempts to establish incubator programs in Canada for the past ten years. Some of these programs have matured into viable small business development mechanisms, others have floundered and some have closed. Although interest and enthusiasm for incubator programs in this country has grown over the past decade, there has been no comprehensive study of the activity that has occurred. No one appears to be asking the questions or gathering the data necessary to measure the performance of incubator programs. This report should be seen as an initial study in a broader review and evaluation of incubator programs in Canada.

This report is based on extensive research into the current Canadian experience with incubator programs. We have surveyed the available literature about incubators in Canada and internationally. After analyzing the material, we travelled across the country visiting ten locations where incubator programs were said to be operating. As well, we did in-depth telephone interviews with the eight incubator managers who had at least one year of experience in running their program. This was followed by detailed telephone interviews with a sampling of tenants presently located in incubators. (Details of the interviews gathered from the on-site visits and the in-depth telephone interviews are contained in the appendices to this report.) We also talked extensively with managers and organizers who had recently started incubators in their communities or planned to initiate a program shortly. We talked to federal and provincial government officials who are directly involved in financing and supporting incubator programs in Canada.

After briefly surveying the history and outlining the concept of incubators, this report examines incubators in the context of small business. As incubators are mechanisms for fostering small business development, an understanding of incubators must start with an understanding of the nature of small business and the factors behind its success or failure. The report reviews the current Canadian small business environment and discusses the reasons for individual small business success or failure. The report then examines how incubators might have an impact on these factors and reviews the actual performance of incubators in Canada. This is followed by a discussion of the potential for an incubator strategy in the Canadian environment and is accompanied by an account of the support programs necessary to improve incubator performance in Canada.

(ii) Background and Origins of Incubators

Incubators arose from British experimental programs initiated in the early 1970s to

rejuvenate declining regions where the traditional industrial base had eroded. Community conscious corporations and independent consultants demonstrated some success in fostering small business development through the provision of low cost space, shared services and on-site counselling for small new enterprises.¹ This form of encouragement came to be known as the business incubator, a name implying that the assistance was intended to be temporary, extending only until such time as the business had matured and could survive on its own within the community.

While the English were experimenting with business incubators as a technique for regional revival, the Americans were experiencing a strong surge of small business activity. This was documented by the Birch study of 1979 which showed that the small business sector had become a powerful net creator of new jobs in the economy.² As a result, Americans went searching for mechanisms that would help to stimulate and strengthen the small business sector. They learned about British incubators which they began introducing into the United States as a response to a very wide range of economic circumstances.

At present, incubators in the U.S. can be measured in the hundreds. They are supported by an array of government programs and private initiatives, and they have spawned an extensive network of newsletters, conferences, and academic research.

In Canada, the incubator technique was first seriously considered in the early 1970s. At that point, it was thought of as a regional economic development instrument and the first Canadian incubators were established in the Maritimes. Prince Edward Island led the way with an incubator in Charlottetown opened in 1975 and another at Summerside in 1978. Nova Scotia followed between 1979 and 1984 with a series of incubator-like industrial malls managed by Industrial Estates Limited.

Incubators did not appear in other provinces until the early 1980s when facilities were opened in Winnipeg, Waterloo, Bathurst, and Burnaby. Since then, interest in incubators has mounted. Impressed by the claims of success for European and American incubators, various groups in this country have promoted the incubator concept as a method of job creation, as a technique for easing regional economic disparities, as a means of disseminating advanced technology, or as a way of stimulating real estate development.

1 Renee A. Berger, "The Small Business Incubator: Lessons Learned From Europe" (Office of Private Sector Initiatives, Small Business Administration, Washington, D.C.)

2 David Birch, The Job Generation Process: MIT Program on Neighbourhood and Regional Change, (Cambridge, Mass. 1979)

There are now over twenty incubator-like establishments operating across the country with dozens more opening this year and next. Indeed, many Canadian cities have become very enthusiastic about the potential of small business incubators to stimulate economic activity in their communities.

(iii) The Role of an Incubator

The accepted definition of a small business incubator is that it is a facility that aids the early stage of growth of companies by providing rental space, shared office services and business consulting assistance.³ Communities that are interested in developing an incubator program may be motivated by the prospect of job creation, economic renewal, or economic diversification. A viable small business sector certainly can contribute to job creation and economic renewal or diversification. However, no matter what the motivation for its creation, "a business incubator has one major purpose, to nurture and develop fledgling firms into healthy small businesses".⁴

Therefore, it is the argument of this study that the most appropriate goals for an incubator should be:

- o to encourage the development of small enterprises
- o to help small businesses survive the first years of operation
- o to promote faster growth of small businesses

The measurement of the success of the incubator program is the degree to which it has achieved these goals.

The incubator program may be an effective development tool in realizing a community's desire for job creation, economic revival, and diversification. In the final analysis, however, an incubator facility cannot create entrepreneurs, markets or capital. It can only draw on them where they already exist, or where other relevant but peripheral programs bring them into existence for the incubator program to exploit.

³ David N. Allen, Syedur Rahman, "Small Business Incubators: A Positive Environment for Entrepreneurship", Journal of Small Business Management (July, 1985) pp.12

⁴ Jeffrey M. King, George F. Economos, David N. Allen, "Public and Private Approaches for Developing Small Business Incubators", Institute of Public Administration, Pennsylvania State University, (1985).

(iv) The Economics of an Incubator

It should be clearly understood that the incubator is not one economic entity, but many. The incubator itself as a shared facility is only one enterprise in the program. In addition, there are several tenants of the incubator which are distinct enterprises in their own right. It is vital to remember that the interests of the incubator and those of the tenants do not necessarily coincide.

For example, it is in the short-term financial interest of the incubator to provide as few services to its tenants as possible, especially if the incubator is supposed to make a profit. On the other hand, it is in the short-term interest of the tenants to extract whatever services they can from the incubator in order to enhance the development of their enterprise. Any economic analysis of incubators must keep this dichotomy of interests in mind.

In order to provide the level of resources and services required to adequately support new small business start-ups through their initial development, the incubator facility needs to be large enough to derive economies of scale. In our discussions with incubator managers it became apparent that it takes almost as many resources to mentor five companies as it does to mentor twenty-five companies. In the larger facilities the rental fees paid by the tenants can finance a self-sufficient yet fully resourced operation. Experience in the field indicates that self-sufficiency is usually reached after about three years of operation when the incubator is fully leased, has ironed out the bugs in the structure, and has stimulated sufficient entrepreneurial activity in the community to generate replacement tenants.

In our survey of incubators we found that facilities with less than twenty tenants were either dependant on continual public funding or had reduced the level of services and mentoring in order to achieve self-sufficiency. Where mentoring and services were limited, the incubator program appeared to have stagnated. Therefore, to take full advantage of incubators, economies of scale must be considered.

(v) The Standard Incubator Model

Because incubators are located in distinct communities with diverse resources and needs, each incubator program is unique. However whether the incubator is located in Canada, the United States or Europe, the structure of the operation is generally the same. The degree of sophistication of the structure is dependent on the resources committed to the incubator program and the strength of the community base from which it draws support.

The major organizers of the incubator generally have a position on the board of directors of the facility, thereby influencing critical decisions. The directors typically establish the entry, exit and graduation criteria required of the tenants and set out the parameters of the operating budget.

The key players in the incubator resource network are the people in the community who can be called on to advise and assist the tenants with their individual

enterprises. This resource network is very dependent on the strength of the community base. Academics, local representatives of government agencies and community-minded business people are usually asked to constitute an advisory board which can help with the screening of potential tenants as well as on-going mentoring.

Finally, the directors of the incubator may establish a seed capital pool to assist its tenants, and this capital may be directly associated with the facility or operate at an arm's length relationship to it. Alternatively, the incubator may rely on its resource network in the community to put needy tenants in touch with sources of capital.

Incubators have been housed in a variety of facilities. Where urban renewal constituted a policy priority, as it did in many areas of the United States, the incubator was housed in a renovated building. Alternatively, in slack economies, incubators can be established by leasing underutilized real estate. In some situations, however, entirely new buildings have been constructed. This has generally been the experience of incubators in Canada.

The physical structure of the incubator depends on the types of businesses envisaged as its tenants. Though incubators have assisted small companies in virtually all sectors of the economy, light manufacturing has been the dominant and preferred sector for most incubator activity. All incubators, however, strive to provide flexible space that will allow tenants to expand as their businesses develop.

The leases prepared for tenants of the incubator are generally short term to allow for expansion or exit as the need arises, with minimum obligation or financial loss. Incubators can lease space at rates well below the market, but in some cases - for example where public money has gone into establishing the incubator - market rates may be charged so as not to compete with private real estate developers in the community.

In addition to space, most incubators offer some basic office services such as maintenance, reception, photocopying and the like, as part of the lease. The quality and range of these services, however, varies from one facility to another. In some incubators, additional assistance is only available on a fee for service basis.

The incubator management team administers the facility and ensures effective delivery of the shared services. The team forms the link to the external network of advisors and helps tenants access government sponsored programs and initiatives. Perhaps most significantly, the management team provides tenants with on-the-spot advice and guidance. This mentoring process is felt by many (including the authors of the present study) to be the critical and distinctive element in the incubator program.

A new business can spend anywhere from one to five years growing within the incubator. Once the company has stabilized and appears to be self-sufficient it is expected to leave the incubator and establish itself in the community. To ensure that this happens, some incubators impose financial penalties, or limits on the space made available to any one firm. For example, many incubators employ a graduated

system of rents which starts with a considerable subsidy in the first year, and then moves towards market rates in subsequent years.

While there are a number of differing but valid small business development strategies, what distinguishes the incubator program from other small business assistance is that it is actually a facility offering a range of services to its small business start-up tenants. As have other major studies of incubators, we classified those small business development programs that provided shared space, shared services and on-site mentoring in an identifiable facility as an incubator program.^{5 6}
⁷ Facilities meeting only one or two of these three criteria are not usually considered incubators and we have followed this accepted practice.

5 Jeffrey M. King, George F. Economos, David N. Allen, "Public and Private Approaches for Developing Small Business Incubators", Institute of Public Administration, Pennsylvania State University, (1985)

6 Candace Campbell, "Hatching Small Businesses", Cooperative Community Development Program, Hubert H. Humphrey Institute of Public Affairs, (Minnesota, 1984)

7 David N. Allen, Syedur Rahman, "Small Business Incubators: A Positive Environment for Entrepreneurship", Journal of Small Business Management (July, 1985) pp. 12-22.

1. THE RELEVANCE OF INCUBATORS

The interest in incubators can be directly correlated with the recent renewed interest in the small business sector. The importance of the small business sector in the economy has attracted growing interest in the potential role that incubators might have in small business development.

(i) The Role of Small Business in Canada

The last ten years have seen the emergence of the small business sector as a major creative force in the economy. This has been verified by studies that show small business to be the most significant net creator of new jobs.

The seminal study of job creation categorized by size and age of firm was done in the United States by David Birch of M.I.T. and published in 1979.⁸ Birch reported that between 1969-1976, 66 percent of the new jobs created and 51.8 percent of net job growth came from companies with 0-20 employees.

The same trend has been observed in Canada. In 1983 the Canadian Federation of Independent Business undertook a study of job creation by age and size of firm covering the years 1975 to 1982.⁹ It included 7,750 small businesses that were members of the Federation as well as 175 large firms in the Canadian Business list of the largest 400 corporations for which employment data was available (see Table 1 and Figure One).

Despite the impressive statistics about job creation by small young firms, young enterprises have borne the brunt of business failure. Of the Canadian enterprises that failed in 1984, 48.4 percent had been in business less than 6 years.¹⁰ This fact led Dun & Bradstreet to make the following observation:

"The first five years of operating a business have traditionally been more hazardous due to the 'testing' of the ability of the management, marketing, personnel, etc. The second to fifth years of the business' life are the true test. Very few fail in the first year, as the business has not 'devoured' its starting capital, nor used up outside sources of credit."¹¹

8 ibid.

9 Canadian Federation of Independent Business, *A Study of Job Creation 1975 to 1982 and Forecasts to 1990*, (December 1983)

10 Dun & Bradstreet Canada Limited, *The Canadian Business Failure Record*, (1985)

11 ibid. p.4

TABLE 1¹²

Job Creation by Age and Size of Firm

- Percentage of Net Change in Employment 1975-1982

Age of Firm (Years)

Size (Employees per Firm)	1-2	3-5	6-10	11-20	20	All Ages
1 - 4	9.8	6.7	6.4	7.0	7.0	36.8
5 - 9	3.9	5.2	7.2	4.8	4.7	25.9
10 - 14	0.8	2.2	3.2	3.9	4.1	14.2
15 - 19	0.4	2.1	1.6	3.7	1.6	9.5
20 - 49	3.3	1.5	3.4	4.1	5.1	17.4
50 - 99	0.9	-0.8	-1.9	7.8	-3.6	2.3
100 +	-0.6	-2.2	-7.2	-7.8	11.7	-6.1
All Sizes	18.5	14.8	12.6	23.5	30.7	100.0

Table 1 shows that almost all the job growth in the companies studied occurred in firms with less than 50 employees. Firms with less than 10 employees accounted for 62.7 percent of net new jobs. Finally, it should be noted that 45.8 percent of net new jobs were created by firms that had been in business for ten years or less.

¹² Canadian Federation of Independent Business, A Study of Job Creation 1975 to 1982 and Forecasts to 1990, (December 1983) p.9.

FIGURE ONE ¹³

SHARE OF JOB CREATION RELATED TO SHARE OF EMPLOYMENT BY SIZE OF FIRM, 1975 - 1982

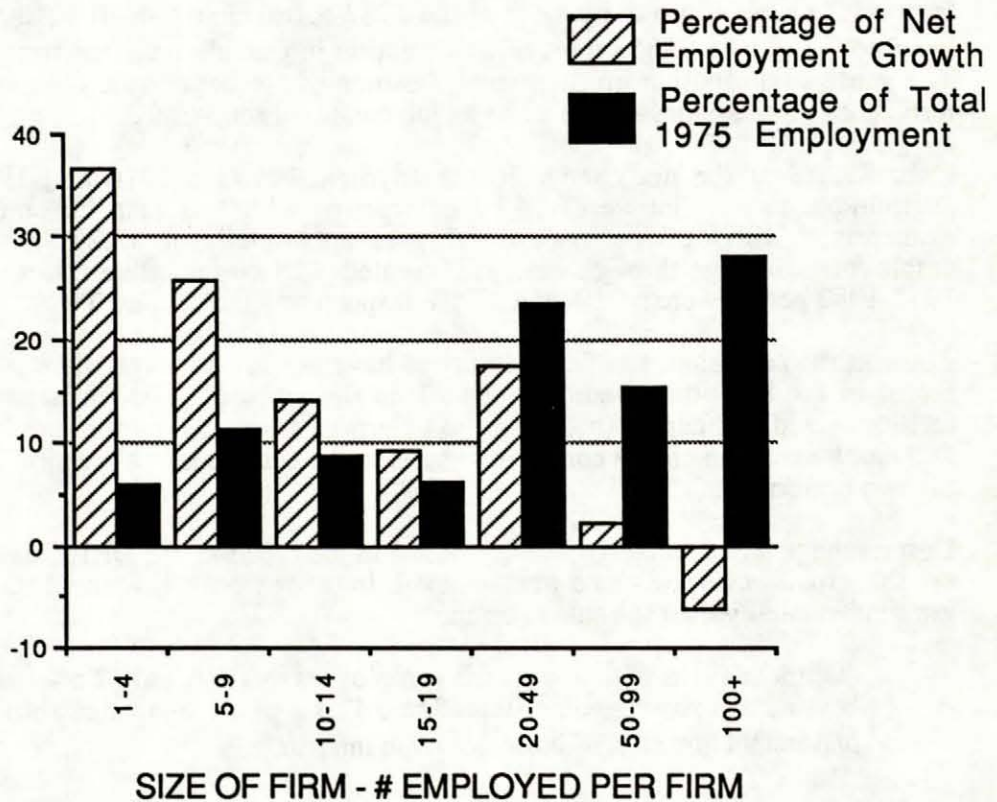


Figure One shows that firms with less than 20 employees outperformed larger firms in relative share of job creation.

¹³ Canadian Federation of Independent Business, A Study of Job Creation 1975 - 1982 and Forecasts to 1990, (December 1983) p.9.

At the same time, there are grounds for cautious optimism. Dun & Bradstreet's studies have also shown a steady decline in new business failure rates.

"It is significant to note that the proportion of 'new' businesses failing has been declining since 1979. In 1979, 63.3 percent of the failures were in business 6 years or less. This has declined every year to the present 48.4 percent."¹⁴

This new business failure data suggests that people going into business, even during the recession, were more successful than their counterparts a few years previously.

Important insights into the impact of the 1982 recession on small business have been provided by a 1985 report on job creation in Canada prepared for DRIE.¹⁵ The study suggests that, in fact, small businesses are better able to weather the turbulence of recession, at least as far as job creation is concerned.

Over 87.3% of the net change in employment between 1976 and 1984 was attributable to new jobs created by enterprises with less than 20 employees. Enterprises with 500 or more employees accounted for 42.2% of the net employment change through new jobs created. The comparative figures for the 1972-1982 period were 54.7% and 39.4% respectively (see Figure Two).

Thus, in the recession, smaller enterprises have become an even more important factor in the creation of employment. It is the worsening performance of the medium-sized companies (belonging to enterprises with 50 or more but less than 500 employees) which has contributed most to the decline in job creation between the two periods.

Despite the positive record of small business in job creation, the DRIE study points out that small businesses tend to stay small. In other words, few small businesses grew substantially over the study period.

"Of those firms with less than 20 employees in 1976, only 2.5% had grown beyond that size range by 1984. Some 42.4% of the smaller establishments had in fact gone out of business in the interim."¹⁶

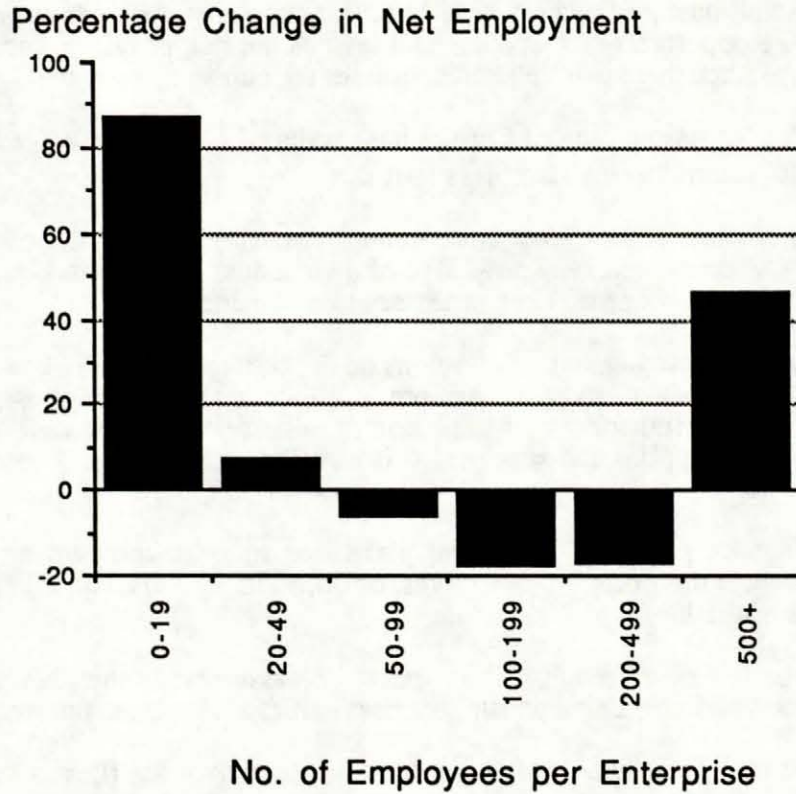
14 Dun & Bradstreet Canada Limited, *The Canadian Business Failure Record*, (1985) p.4.

15 Department of Regional Industrial Expansion, *A Study of Job Creation in Canada, 1975-1984* (Statistical and Data Base Services, 1985).

16 *ibid.* p.vi.

FIGURE TWO ¹⁷

**PERCENTAGE DISTRIBUTION OF NET EMPLOYMENT
CHANGE BY ENTERPRISE SIZE, 1976 - 1984**



¹⁷ Department of Regional Industrial Expansion, A Study of Job Creation in Canada, 1975-1984 (Statistical and Data Base Services, 1985) p. 38.

Small business has been the engine of net employment creation in the past few years, contributing almost double the net new jobs of either the medium or the large business sectors. But this phenomenon does not appear to have been achieved by rapid growth of individual businesses. Rather it seems that the high volume of small business creation has compensated for a high level of small business failures.

Not surprisingly therefore, increasing attention has been paid to the reasons for the high attrition rate in small business start-ups, as well as to ways of directly assisting small businesses during the critical early period of their development.

(ii) Factors in Small Business Success or Failure

If an incubator program is to succeed in helping new small business start-ups survive their initial years of operation, then the program must carefully address the key factors in small business success or failure. If it cannot create an environment that increases the opportunity for success and lessens the risk of failure for small business start-ups, then there is little justification for the concept.

The Venture Capital Association of Canada has produced a comprehensive list of major reasons for failure in small business start-ups.¹⁸

1. *Lack of knowledge* - Most entrepreneurs, starting out on their own, do not have a comprehensive knowledge of their industry, their markets, their products or the mix of services necessary to do business.

2. *Unsuitable environment* - Conditions on the business premises can affect morale and productivity. Furthermore, the location of the business -- its distance from transportation and community services, as well as its proximity to supplies and suppliers -- is a major factor affecting company operations.

3. *Inadequate planning* - Business plans that squeeze companies out of shape, distort their original objectives, or omit vital factors, can all put the enterprise at risk.

4. *Production shortcomings* - Unexpected breakdowns in the plant or ill-understood and unanticipated supply crises can cause business failure.

5. *Marketing failures* - Inadequate distribution networks, flawed service systems, lack of advertising and promotion, poor market sector targeting, or inexperienced sales staff can cut into sales potential and profitability.

6. *Undercapitalization* - The lack of adequate capital to conduct effective operations is listed as the most common problem encountered by new

¹⁸ Cited in Richard Adair, "The Enterprise Centre (Incubator) and the Entrepreneur", (November, 1985)

companies.

7. *Unsuitable or insufficient staff* - New entrepreneurs are frequently unaware of staffing requirements, both as regards quantity and quality.

8. *Incompetent management* - The entrepreneur's own lack of experience and inability to assess his/her own strengths or weaknesses is often cited as a significant cause of business failure.

With so many problems to confront and with the high rate of small business failure, it is somewhat surprising that individuals ever take up the challenge of starting their own businesses. However, it appears that entrepreneurialism is experiencing rapid growth. In 1975, there were some 300,000 new corporations founded in the United States. By 1980, that annual rate had risen to 600,000 newly incorporated businesses per year. If partnerships and newly self-employed people are added to the total, the U.S. now witnesses the beginning of over one million new entrepreneurial activities every year.¹⁹

In Canada the figures are less clear. While it is apparent that small business start-ups are increasing, comprehensive statistics are not readily available. The government of Ontario estimates that there are something like 100,000 business start-ups every year in that province. Ontario also estimates that this may represent something like two thirds of the start-ups in Canada, though these estimates are by no means conclusive.

A number of factors -- characterized as "pushes" or "pulls" -- are contributing to this increase in entrepreneurial activity. The pushes are the negative aspects of present employment, while the pulls are positive inducements to pursue a new idea or opportunity. The pulls are the factors that make independent business activity attractive and acceptable. In a survey conducted by David Allen and Syedur Rahman with entrepreneurs in twelve incubators, the major influence or "pull" for starting a business was the desire for self employment.²⁰

Potential entrepreneurs are frequently pushed into business formations by the personal frustrations of working in larger organizations. While working in a larger company, the entrepreneur frequently identifies an unmet market need. He may be pushed by the fact that the larger company does not recognize the potential market or he may be pulled by the chance to exploit and directly benefit from his idea. The

19 U.S. Department of Commerce, Economic Development Administration research quoted in "Public and Private Approaches for developing Small Business Incubators", Jeffrey M. King, George F. Economos, David N. Allen, Institute for Public Administration, Pennsylvania University, (1985).

20 David N. Allen, Syedur Rahman, "Small Business Incubators: A Positive Environment for Entrepreneurship", Journal of Small Business Management (July, 1985) pp. 12-22.

opportunity to develop a new product or service was found to be a major factor in spurring new business formations.

There are additional factors contributing to the entrepreneurial boom. The economic environment is producing more people with talent and technological experience while technological evolution is providing a growing number of new enterprise opportunities. At the same time there has been a demographic shift represented in the "baby boom", the creation of and availability of new sources of capital, and a general social acceptance of independent entrepreneurial activity.²¹

These factors are all present in Canada. The average Canadian entrepreneur is between 35 and 45 years old and is getting younger. At the same time, the average level of his or her education is climbing, with many entrepreneurs having specialized training in finance, engineering and marketing.²²

Education alone, however, cannot in itself overcome the obstacles facing any entrepreneur attempting to start a new business venture. Richard Adair, Director, Innovation York, York University (formerly Vice President and General Manager of Innovation Place) cites six attributes judged to be critical to an entrepreneur:²³

- o self-motivation
- o integrity, honesty
- o tenacity
- o understanding of economy and industry
- o an ability to motivate others
- o planning ability

At the same time, he reviewed the characteristics of successful companies:

- o positive profit potential
- o positive growth potential
- o quality management
- o unique product or service
- o low financial risk

21 Karl Vesper, "Entrepreneurship and National Policy", (Walter Heller International Institution for Small Business Policy Papers), quoted in "Public and Private Approaches for Developing Small Business Incubators", Jeffrey M. King, George F. Economos, David N. Allen, Institute of Public Administration, Pennsylvania State University, 1985

22 The Canadian Federation of Independent Business, "A Full-employment Future", Submission to the Royal Commission on the Economic Union and Development Prospects for Canada, (December, 1983).

23 Richard Adair, "The Enterprise Centre (Incubator) and the Entrepreneur", (November, 1985)

- o low technological obsolescence risk
- o quality business plan

When considering such factors it becomes clear that opportunities do exist to influence the success rate of small business start-ups. In areas such as planning, marketing, capitalization, and management, the assistance provided through an incubator program could make the critical difference between success and failure.

(iii) The Potential Impact of Incubators

There are no precise figures or agreement on the number of small business start-ups or failures in Canada. There is even less clarity in assigning statistical measurement to the causes of small business failure. While most people involved with small business development would agree with The Venture Capital Association of Canada's list of reasons for business failure, nobody can with any certainty state which factors caused what percentage of the failures. It is felt by many that some form of appropriate intervention such as incubator programs can reduce the rate of failure by as much as 50-80 percent. But there is no data to substantiate these claims at the present time.

However, the benefits to job creation of reducing small business failure are demonstrable and substantial. In its study of job creation, the Canadian Federation of Independent Business projected the number of jobs that would be created by the small business sector between 1980 and 1990.²⁴ Based on the assumptions that large firms and the public sector would remain static and that the establishment and failure of small business would progress at the same rate as in the previous seven years, the CFIB suggested that existing and future small business would create 4.4 million jobs and lose 3.2 million jobs due to small business failure during this decade.

Incubator programs that can reduce undercapitalization, improve business planning, offset managerial inexperience, and focus community resources and government assistance programs could have a significant impact on reducing the failure rate of the small businesses start-ups in their facilities.

But there are over a hundred thousand businesses created in Canada every year. Even assuming 50 incubators in Canada -- more than double the number currently functioning -- at an average of 20 tenants each, the incubator program could at best influence the fate of some 1000 small businesses over the two or three years they were in the program. In other words, Canada's incubators could have a direct impact on less than one percent of the annual small business start-ups in this country. At that rate, could an incubator program, no matter how successful, have a measurable impact on national trends?

²⁴ Canadian Federation of Independent Business, *A Study of Job Creation 1975 to 1982 and Forecasts to 1990*. (December, 1983).

Have incubators encouraged the establishment of small businesses? Set against the entrepreneurial explosion sweeping the country it is hard to discern any direct impact attributable exclusively to the presence of incubators.

Have incubators helped small businesses survive the first years of operation? The failure rates of businesses in an incubator do seem lower than the national average, with any one incubator only reporting one or two failures for every 20 or 30 tenants. Yet even if failure rates are lower and growth rates higher in an incubator than outside, can this be linked directly to the impact of the incubator? After all, there is a screening process that generally restricts admissions to the more promising candidates. It may be that those who have been admitted would have succeeded anyway.

Do incubators promote faster growth? In the report "Small Business Incubators: A Positive Environment for Entrepreneurship", 42 percent of the tenants surveyed said the incubator allowed their firm to accelerate plans and expand at a faster pace.²⁵ It is this accelerated growth that is one of the attractions for private companies to establish incubators and take an equity position in their tenants.

Despite the lack of concrete evidence or accurate and substantial data, it is generally accepted that incubators are seen to have helped their tenants through difficult moments and on the whole have accelerated their growth and development.

However, it should be equally understood that an incubator program cannot create entrepreneurs, markets or capital. It can only draw on them where they already exist. There is a tendency to want an incubator program to create a thriving economic environment where there is none, but this the incubator cannot do. Without a supporting network of expertise, technology, skilled workers, and entrepreneurialism, the incubator runs the risk of becoming yet another perennial drain on the public purse with limited results relative to the investment.

²⁵ David N. Allen, Syedur Rahman, "Small Business Incubators: A Positive Environment for Entrepreneurship", *Journal of Small Business Management* (July, 1985) pp.12-22.

2. INCUBATORS IN CANADA

(i) General Observations

It is difficult to be precise about how many incubators are currently operating in Canada. There are some facilities calling themselves incubators that amount to little more than shared office space. There are other initiatives calling themselves "incubators without a roof" that are really management training programs. Finally, there are a considerable number of proposed incubators, ranging from facilities that are virtually ready to open, to vague projects with little prospect of realization. The fact is that "incubator" has become something of a business development fad. As the number of institutions calling themselves incubators proliferates, it becomes difficult to catalogue the number of true incubators without analyzing each project to determine whether it is providing all of the characteristics of an incubator program.

In a survey initiated by DRIE in January of 1986, 23 incubators were listed as in operation across Canada. Another 25 incubators were listed as under development or in the proposal stage.²⁶ However, several of the facilities on the DRIE list fail to provide the minimum elements of shared space, shared services and on-site mentoring that have historically defined an incubator program.

Some of the locations listed as incubators provide subsidized space, but only rudimentary office services, and virtually no mentoring. In such cases, it becomes difficult to distinguish the incubator from an ordinary industrial mall with the addition of subsidized rents. At present, it would be fair to say that there are only a handful of fully-fledged incubators, offering shared space, services, and on-site mentoring all in one package.

The present study found approximately twenty true incubator programs that are presently or will shortly be operating in Canada. Of these, we identified eight incubator programs that had been operating for at least a year and had established a routine operation. These incubators are:

- Discovery Park
- Calgary Advanced Technology Centre
- Winnipeg Business Development Centre
- Innovation Place
- Centre d'incubation industrielle de Grand'Mere
- Dieppe Regional Small Business Centre
- Chaleur Industrial Park Incubator
- Charlottetown Industrial Mall

On-site visits were made to these locations and in depth telephone interviews were done with each of the managers and a sampling of the tenants. These surveys are detailed in Appendices A, B & C.

²⁶ Small Business Secretariat, Department of Regional Industrial Expansion, "Survey of Small Business Incubators in Canada", (January, 1986).

While the eight incubators all offered shared space, shared services and on-site mentoring, they vary greatly in their goals, their structure and their resources.

The Charlottetown Industrial Mall is managed by the P.E.I. Development Corporation. It is the oldest incubator in the country. It was started in 1975 with a plan to create a number of companies active in metal industries. This did not occur and the companies in the incubator have come from a variety of sectors. Through the PEI Development Corporation, the tenants have access to a number of government assistance programs for small business development. Although it has been operating for more than 10 years, the incubator has graduated only a few companies that are still functioning today.

While there are many projects that identify themselves as incubators throughout Nova Scotia, upon examination they did not meet the three basic requirements of an incubator program. The Nova Scotia projects generally consisted of subsidized space in industrial malls or parks. They did not offer shared services or on-site mentoring. While the Nova Scotia projects may be viable economic development schemes, the authors of this study did not classify them as fully fledged incubators.

There are two functioning incubator programs in New Brunswick. Both the Chaleur Industrial Park in Bathurst and the Regional Small Business Centre in Dieppe are operated by the respective Industrial Park Commissions of the two communities. In each case, the Industrial Commissioner is on-site to offer support to the tenants. The Bathurst incubator is a small operation with limited services. The manager notes that the project would be more successful if it had flexible space so that the incubator could lease smaller units. The incubator began operation in 1982 and it hopes to graduate its first self-sufficient company this year.

The Dieppe incubator began operating in the fall of 1984. The incubator which houses 13 tenants, was filled in a year. It hopes to graduate two self-sufficient companies this year. The major emphasis of both New Brunswick incubators is to reduce costs for small business start-ups. Neither incubator project has a fully developed mentoring program.

The incubator in Grand-Mere/Shawinigan is the largest incubator in the country. The city of Grand-Mere purchased a large mill that had been closed for five years. It renovated the huge facility to house a large incubator and some permanent enterprises. The incubator has been entirely funded by the community which has invested \$1.25 million in the creation and operation of the incubator.

The Grand-Mere/Shawinigan region was once one of the most industrialized areas of the country, but because of major plant closures it is now classified among the economically depressed. With a highly trained work force and a strong entrepreneurial base, the community sees the incubator concept as a natural economic development tool for the area. The community has devoted substantial time and money to the development of an incubator program. As a result, the incubator displays a sophisticated and comprehensive strategy. It was started a year ago and has had 50 applications with 12 tenants already established in the incubator. The program has been professionally evaluated and there is general

agreement that the incubator should be self-sufficient within three years.

Innovation Place in Waterloo, Ontario was arguably the most successful established incubator program encountered during the course of this study. The program focused on entrepreneurs who had a technology-based innovative idea that was ready to be marketed. The strength of Innovation Place was its mentoring and its focused attention on business learning. Special care was taken to create interaction between tenants and business specialists from the community. As a result, the average time that tenants stayed in the incubator was less than a year. The management's philosophy was that either a company was growing or it was dying. Either way, the company would move through the incubator program relatively quickly. Mentoring helped tenants handle their business growth or it helped them face up to the fact that the business was not likely to succeed. Over a four year period the incubator helped 35 tenants of whom 20 successfully graduated.

In the end, however, it was found that the incubator facility was not big enough to handle the growing demand for admission or achieve the economies of scale necessary to support the services being provided. Under the Ontario Government's new incubator program, a larger broad-based incubator is being established in Waterloo. Innovation Place has been phased out this year and many of the key players will assist with the new incubator program in the community.

The Winnipeg incubator is part of the provincial government's Technical Commercialization Program (TCP). The goal of the program is to create a broader technological base in the province. The TCP focuses on technology transfer, new business assistance (both through outreach programs and an incubator), and a provincially funded investment program. The Winnipeg incubator is used to assist the more marginal companies in the TCP. The incubator offers support to companies that it is felt will not survive without mentoring.

The Calgary Research and Development Incubator is the creation of the Calgary Research and Development Authority. The incubator is seen as one mechanism for establishing Calgary as a centre for advanced technology. All the tenants must be working with advanced technology and they must have some component of R&D in their enterprise. The Calgary incubator leases space in the same building as the Alberta Research Council. The incubator is about half full after a year in operation. It provides extensive services and mentoring through a strong community network, but it has a limited investment network and this constrains many of the tenants who are seeking financing to further their research and business development.

Discovery Park in Burnaby, British Columbia is the incubator component of the province's Discovery Foundation. The goal of the incubator is to foster a low end advanced technology industry in the region. Discovery Park was constructed as a flagship for new advanced technology enterprises. The incubator provides very few services to the tenant and the mentoring is formally handled by the innovation office of the Discovery Foundation. The focus of the incubator's management is on attracting private investment to their tenants. The incubator enjoys considerable credibility within the investment community and Discovery Park has become a prestigious address for new technology-based enterprises. With 45 tenants, the

incubator is full with a waiting list for entry. Since its creation in 1982, it has successfully graduated 5 companies.

In an attempt to analyze the various incubator programs in Canada, we identified many of the major elements commonly found in incubator programs and plotted the eight incubators we had studied in detail on the matrix (see Figure Three). As the chart shows, there is a wide variation in the range of services and resources available in the programs. Waterloo had offered the most comprehensive program, while Vancouver, Calgary, Winnipeg and Grand'Mere offer sophisticated programs as well.

It should be noted, however, that the elements of the various Canadian incubator programs were determined through telephone interviews with each of the managers. There was no attempt to confirm these services or to evaluate the degree or level of quality of the elements of these programs. However, the information in the matrix raises questions about the range of services provided in various parts of the country. With standardized definitions of program elements, it should be possible in the near future to plot resources and services against results.

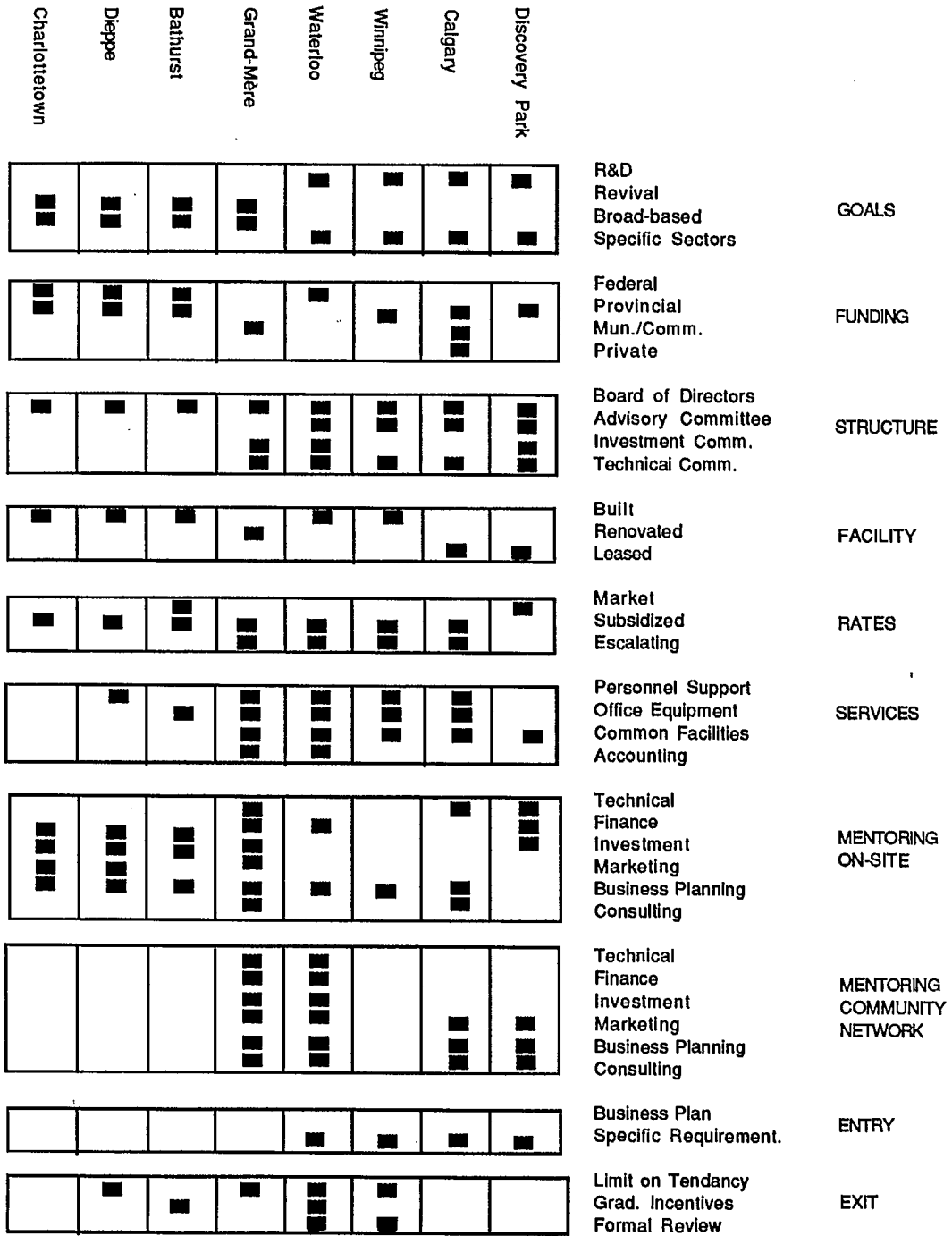
Given the short time that Canadian incubators have been in operation and the tremendous regional and structural differences among them, generalizations can only be made with extreme caution. One generalization that does carry some validity, however, is that public money has played and continues to play a prominent role in establishing and financing most Canadian incubator programs.

It is also interesting to note that many Canadian incubators serve specialized purposes. One trend is to promote advanced technology by offering space in incubators only to companies conducting R&D in designated areas such as electronics, software, oceanography, and the like. At the other end of the spectrum, incubators have been established as explicit job creation mechanisms for economically troubled regions of the country.

It is also significant that there are few Canadian incubators aimed at the entrepreneurial mainstream, which is to say few incubators intended to help the broad general base of small business start-ups located in economically developed parts of the country. To date, Canadian incubators appear to be operating at the periphery rather than in the mainstream of small business activity. The incubator concept has been applied as a curative measure, either to improve technological penetration, or to revive a flagging region, rather than as a vehicle to exploit obvious potential in developed markets.

There is an interesting regional bias in the application of incubators in Canada. In western Canada, incubator programs are being used to encourage or enhance the

FIGURE THREE



R&D
Revival
Broad-based
Specific Sectors

GOALS

Federal
Provincial
Mun./Comm.
Private

FUNDING

Board of Directors
Advisory Committee
Investment Comm.
Technical Comm.

STRUCTURE

Built
Renovated
Leased

FACILITY

Market
Subsidized
Escalating

RATES

Personnel Support
Office Equipment
Common Facilities
Accounting

SERVICES

Technical
Finance
Investment
Marketing
Business Planning
Consulting

MENTORING
ON-SITE

Technical
Finance
Investment
Marketing
Business Planning
Consulting

MENTORING
COMMUNITY
NETWORK

Business Plan
Specific Requirement.

ENTRY

Limit on Tendency
Grad. Incentives
Formal Review

EXIT

technological component in the economic base. In eastern Canada, incubator programs are being used to stimulate economic activity in a depressed economy. In the economy of central Canada, there have been surprisingly few incubator programs to date though a significant number are now in the development stage.

(ii) Future Canadian Incubators

The new generation of incubators in Canada -- those started or coming into operation in 1986 -- has two general characteristics in common: it is targeted to a broader cross section of business start-ups and it is more closely tied to local communities.

In the case of Ontario, it is instructive to note that up to this point, there has only been one incubator operating in the province. That situation is changing rapidly. The provincial Ministry of Industry and Trade has just entered into contractual arrangements with groups in six Ontario communities for joint funding of incubator programs. Incubators will be started this year in Thunder Bay, London, Kitchener/Waterloo/Cambridge, Brantford, York and Kanata. Cornwall may also join the program if the town can assemble an appropriate community-based organization.

Under the Community Small Business Centres Program, the provincial government has entered into joint venture arrangements with municipalities or locally based organizations. These organizations can be either non-profit or for-profit groups. Each incubator must supply low cost space for tenants, on-site advice and professional management. Applicants must finance all capital outlay themselves since the province will not invest in the construction of new buildings nor will it finance leasing arrangements. The province's only financial commitment is to assist with the incubator's operating costs.

Provincial funding is combined with locally derived funding but there is a stipulation that provincial funding will only last for three years. The goal is to render the incubator self-sufficient within that time frame. The whole program is viewed as a pilot project and it will be assessed over the next eighteen months to three years. Until that assessment is complete, the province of Ontario will not initiate any further incubator programs.

Each group applying for incubator funding under the program has to demonstrate community involvement, financial commitment and the possibility of eventual self-sufficiency. The seven locations were selected after they met the criteria and because of the entrepreneurial activity present in those communities. It was felt by the provincial government, that investment in those communities would achieve the best results.

Over the three year life-span of the program, the seven incubators are expected to create 300 new business in a variety of sectors. In a province with 100,000 business start-ups annually, the program will have a direct impact on one tenth of

one per cent of the business start-ups in the province. These proportions make it clear that these incubators will have no substantial impact on reducing the rate of small business failure in Ontario. Rather they are being introduced as a mechanism for accelerating the development and growth of small businesses. The companies being incubated will be studied and compared to 10,000 non-incubated new small businesses to assess the impact incubator programs have on accelerating small business growth and development.

One of the major attractions of an incubator program from the provincial government's perspective is the opportunity to strengthen community-based services for small business. Incubator programs and the outreach programs spun off from them have the potential of raising the level of entrepreneurship and fostering investment at the local level. The motivation to succeed is high because the principal players all have a vested interest in the community and in any mechanisms that will benefit its economy.

The federal government has also initiated a community based incubator program in a joint venture with TIEM. This program is aimed at fostering a grassroots approach to economic development. The incubator component of the TIEM approach is nested in a series of support and development programs. The approach is dependent on community support and participation in the program. TIEM will work with the community to establish innovation programs that foster entrepreneurial development. They will assist in the creation of community-based mentoring networks to complement the on-site mentoring of the incubator. As well, they will work with the community to establish local investment resources for new small businesses. Funded by DRIE and Employment and Immigration, TIEM will establish their comprehensive program in Vancouver, Winnipeg, Quebec City, Sydney and St. John's.

For many of the people involved in incubators surveyed for this report, the TIEM program has been the source of considerable controversy as a result of its funding arrangements. The most controversial aspect appears to be the fact that TIEM will receive \$8,500 from Employment and Immigration for every job it creates, while at the same time receiving royalty payments from the companies that are in the incubator program.

Canada's most extensive incubator-like program exists in Nova Scotia. So far, however, most of Nova Scotia's incubators have really been little more than subsidized industrial malls, with very little mentoring included in the package. This will change with the establishment of a completely new facility at Woodside. According to conversations held in Halifax, Woodside will mark a radical departure from what has hitherto been called an incubator in Nova Scotia. It will focus on advanced technology, and will provide a complete mentoring facility in addition to office space and services.

The province of Quebec has displayed considerable interest in the incubator concept. Incubators were an issue in the last election with both parties promising a huge increase in the number of incubators in the province. There are three incubators currently operating in Quebec and several are still in the proposal or

development stage. While Grand-Mere is the most established incubator program in the province, facilities have recently opened at Becancour and Boucherville.

Becancour (Centre d'incubation industrielle de Becancour) is an entirely private initiative that has been in operation since August of 1985. Two local businessmen bought an empty building with some 75,000 square feet of space. They received technical assistance from COPERS (Le Conseil de promotion economique de la Rive-Sud) which has worked with the incubator's tenants. At present there are three tenants employing some 20 people in general light manufacturing.

The Inno-Centre Quebec at Boucherville was founded in the autumn of 1985. At present, it operates out of rented premises and supervises the operations of three new enterprises, though a new building is planned when the number of tenants reaches about twenty. At present, however, the Boucherville incubator concentrates on providing space with mentoring provided by sources outside the incubator.

The ventures outlined above are only the beginning of what promises to become an important phenomenon in Quebec. With a local provincial tradition of community action, and a need for economic development, Quebec seems ripe ground for an expansion of incubators.

Newfoundland has been examining the concept of incubators for a number of years, but has only established its first incubators in the last few months. Along with the TIEM incubator recently established in St. John's, the town of Pasadena has opened an incubator. Pasadena is located 70 miles east of Corner Brook and, although it has a population of only 3500, it draws on a population of 60,000 within a 30 mile radius. The goal of the incubator program is to stimulate business activity in the area. The appropriate community networks have been established for mentoring and advising tenants. The directors of the incubator are in the process of establishing a local investment pool for tenants. The incubator management has been particularly active in identifying opportunities for business. A number of players have been travelling inside and outside the province searching for viable ideas for business opportunities for their area. The incubator program aims to motivate business activity as well as assist entrepreneurs to establish self-sufficient businesses.

The coming generation of incubators have developed more comprehensive and sophisticated programs than most of their predecessors. However these newer incubators, like those before them, are being developed for specific but distinct results. In order to assess the validity of these incubators and compare their results, it is necessary to classify them in some manner.

(iii) A Classification Scheme for Incubators

There are as many ways to classify incubators as there are facets of the program. People have classified them by goals, source of funding, size or location. The most frequently used method of classifying incubators is by source of funding. This approach tends to distinguish private, non-profit, government and university funded incubators. These categories are less clear-cut in Canada given the almost complete domination of government funding in the creation of incubator programs in this country.

Given that many Canadian incubators were established with specific economic development goals, it seems logical to classify the incubators in terms of economic development. We located each of the incubator programs along an economic spectrum (see Figure Four). In terms of economic development, we found there were three distinct types of incubator programs. The first type were the incubators designed to aid in revitalizing a weak economy. Incubators in this category were charged with creating activity where none had existed before or revitalizing an economy that had been weakened through economic downturn. The second type were the incubators designed to exploit a strong economy. Incubators in this category were charged with utilizing a sound infrastructure and buoyant economy to foster an expanded and more firmly rooted small business sector. The third type were the incubators designed to transition an already healthy economy to an advanced level of development. Incubators in this category were charged with fostering the the introduction or broadening of low end advanced technology-based enterprises into the existing economic base.

While the classification of incubator programs by level of economic development is perhaps simplistic, it was found to be the most effective method of assessing the quality and depth of the programs being offered to entrepreneurs operating in quite distinct environments. It is these distinct economic environments that should determine the nature of the incubator program and the extent of the external resources needed to achieve effective results.

FIGURE FOUR

**ECONOMIC CLASSIFICATION
OF INCUBATORS IN CANADA**

Advancing a Strong Economy	<p>Vancouver Calgary Winnipeg</p>
Exploiting a Strong Economy	<p>Waterloo Kanata, Vancouver (TIEM) Kitchener, London, York Winnipeg (TIEM), Quebec City Brantford</p>
Revitalizing a Weak Economy	<p>St John's (TIEM) Grand ' Mere Becancour Charlottetown, Bathurst, Dieppe Camrose, Pasedena, Sydney</p>



(iv) Reviewing the Canadian Incubator Experience

The introduction of incubators into Canada has been a rather haphazard phenomenon. There is certainly no national consensus on what constitutes an incubator nor is there one generally accepted view of what the instrument is capable of doing. Instead, incubators have arisen for a variety of purposes and in many different circumstances.

Government support for incubators has expressed itself through traditional regional development programs and outright grants. There is, however, virtually no ongoing, evaluation of incubator programs by outside sources. And yet the incubator bandwagon seems to be gaining momentum. Judging by the number of incubators that are being proposed or are already in the development stage, Canada could easily witness a doubling of its incubator facilities from twenty to forty within the next two years.

But what can be learned from the established incubators in Canada? The eight established small business incubator programs identified in this report fall easily into two general groups. One group of incubators is focused on assisting troubled local economies through stimulating economic activity. The other group of incubators is focused on transitioning relatively healthy local economies through the fostering of advanced technology-based companies.

Incubators in Charlottetown, Bathurst, Dieppe and Grand'mère were all started with the goal of improving poor economic conditions. But the programs vary greatly. The Maritime incubators sprang from a desire to fill community industrial parks. These programs have focused on subsidizing space and services for the start-up companies. Mentoring is generally very modest with little or no focus to this aspect of the program. The tenants are generally directed toward existing government assistance programs, but there is no direct involvement by the community in establishing support networks for small business development. Each of the Maritime incubators is virtually fully leased. Most of the tenants are new start-up companies and thus there are 40 or so new enterprises in the region. But there is little motivation to move the companies through the process, graduating the successes and exiting the failures so that other entrepreneurs can be assisted. None of these incubators has potential tenants applying or waiting for entry. This is perhaps a result of the isolation of the incubator programs. These Maritime incubators do not appear to be supported by the types of programs or citizen networks that stimulate entrepreneurial development or economic opportunity.

On the other hand, the Grand'Mere incubator has drawn on the resources established in the region for economic development. It functions within a sophisticated network of programs and committees structured to assist small business start-ups reach self-sufficiency. While this incubator provides reduced rent and shared services, mentoring is clearly a priority. Substantial resources both on-site and within the community are committed to coaching entrepreneurs in business management. There is extensive regional support and commitment to the incubator

and its satellite programs. One of the factors in marshaling such support and resources is the magnitude of the project. The incubator has the potential to house 60-80 tenants and this makes the investment in resources and manpower attractive and economically viable.

With the exception of Charlottetown and perhaps Bathurst, none of the incubators have been operating long enough to draw any substantiated conclusions about the ability of individual incubator programs to revive ailing economies.

Incubators in Waterloo, Winnipeg, Calgary and Vancouver have focused on fostering the development of technology-based small businesses to enhance the existing economic base in the region. Again the programs vary widely in their structure and performance. In the case of Vancouver and Calgary, they have sought to grow their own low end advanced technology sector through the fostering of small business start-ups. Both of these incubator programs demand an R&D component to any business enterprise accepted into the incubator. While the R&D is assumed to have direct business application and opportunity, by and large the product is still in the developmental stages. Many of the tenants carry out business activities in related fields to finance their R&D work and search for investment opportunities to realize the potential of their developmental work.

These factors create quite distinctive priorities in the incubator program. In the case of Vancouver, the emphasis is heavily weighted to marketing the tenants to the investment community. The very building is a marketing tool. There is less emphasis on traditional mentoring and little or no shared services for the tenants, but there are significant resources for technical assistance and investment extensive business mentoring and shared services for the tenants. However Calgary does not have an established network within the investment community. Neither incubator requires a tenant to have a product or service that is ready to be marketed. This fundamentally alters the concept of the traditional incubator. Calgary and Vancouver have focused the program on the R&D stage of business development and thus they are incubating private research companies that hope to establish viable products or services in the future. This generally requires lengthy periods of incubation and a critical need for financial resources during the developmental stages.

Winnipeg and Waterloo select technology-based tenants that are ready to market their product or service. But the emphasis is quite different. The Winnipeg incubator is a component of a larger program attempting to assist in the development of an electronics-based small business sector. The incubator frequently takes the more fragile start-up companies as tenants and attempts to help them stabilize and grow to self-sufficiency. This sheltering aspect of the program in conjunction with the financial support package provided by the provincial government provides substantial protection for the new companies. In the case of the Waterloo incubator, critical review was a key aspect of their program. The average tenant's stay in the incubator was less than one year. The focus was on providing business mentoring to entrepreneurs who had a good business concept ready to market. The good companies grew quickly and left the incubator, the weak companies were forced to recognize that the concept was not working and they too left the incubator. The overriding philosophy in the Waterloo facility was that start-

up companies were either growing or dying but they were not allowed to stand still inside the incubator. Waterloo carefully screened potential tenants and invested substantially in mentoring those that were admitted into the incubator. However the incubator was too small to serve the demand for admission and not economically viable for the amount of resources committed to the program.

Each of the technology-based incubator programs can justify the type of program being offered to the tenants in terms of fostering a new sector of their economy. But in terms of producing self-sufficient enterprises that function in the private sector, only the Waterloo program has shown significant results to date.

It is not possible to draw any significant conclusions about the merits of incubator programs on small business development. There has been little or no comprehensive study of Canadian incubators to date. There are few if any routine surveys of incubator activity and no common data base of incubator resources or results. To date, only the government of Ontario's incubator support program plans to measure the results of their incubator programs against the development of 10,000 non-incubated new small businesses over the next three years.

The comments and observations made in this report are the result of on-site visits and telephone interviews with incubator managers and tenants and discussions with various government officials involved in funding incubator programs. Much of what is stated is based on general speculation by the various players. Prior to evaluating the Canadian incubator experience there is a need to classify the various incubator operations and agree on standards of measurement for the various goals and objectives.

However, even this initial survey and review of incubators in Canada points up some obvious strengths and weaknesses in the current programs. There is no doubt that there is a strong commitment to incubator programs by both community representatives and their citizens and by government officials at various levels. But without a more effective method of analyzing the various programs and communicating the lessons learned to interested parties, the implementation of the incubator program will result in repeated errors and costly misconceptions. As a result, the concept could well be dismissed before it has truly demonstrated its potential.

3. IMPROVING INCUBATOR PERFORMANCE

The introduction of incubators into the Canadian environment was accompanied by expectations of accelerated economic development that in retrospect may appear somewhat exaggerated. At the same time, the essential structure and limitations of incubators were only imperfectly understood. As a result, incubators have not yet fully realized their potential in this country.

Among the difficulties identified during the course of the present study, the following seem most significant:

a. *Graduation.* Few Canadian incubators have established effective provisions that would encourage tenants to graduate within a realistic set period of time, or after certain economic objectives have been achieved. Some incubators threaten to become permanent shelters for companies that are unwilling to compete in the marketplace.

b. *Mentoring.* Most of Canada's so-called incubators are in fact no more than industrial malls because they have underplayed the mentoring function in small business development. There is generally not enough community support for and commitment to the mentoring function.

c. *Economies of scale.* A corollary to the lack of community commitment to mentoring is the fact that many incubators are simply too small to justify the full-scale mentoring effort that could make the difference between small business success or failure. That is why mentoring tends to be perfunctory in many incubators, and vital areas such as marketing research or technical assistance may be poorly covered.

d. *Investment capital.* Organizing a network of locally available investment capital for small businesses is frequently the missing element of an incubator program. Often tenants are encouraged to look no further than the nearest or most flexible government financial assistance program. This narrow view is a result of a lack of information about appropriate sources of capital. A further problem is the difficulty of getting the kind of small to medium-sized loans necessary for small business start-ups from either the government or the private sector. Both sources appear to have their level of lending set too high for this sector.

e. *Government funding.* Canada's incubators have been heavily subsidized by the federal government and more than one department has been the source of incubator funding. For example, DRIE has funded some incubators through its regional development programs, and Employment and Immigration Canada has funded others under the rubric of job creation. Differing grant programs can result in confusion about the role and function of the incubator concept. However, the key issue with government funding is that it has frequently preceded any real community initiatives. All too often, the federal government has funded the entire program with little requirement or expectation of a commitment of community resources. The federal government's generosity has in the end short-circuited the grassroots strategy so beneficial to the incubator concept.

There are, however, creative responses to all of the difficulties listed above. But the environment for incubator programs will need to change. If the incubator concept is to be a grassroots strategy for economic development then the communities will need to play a larger role in initiating and maintaining the incubator program. But few communities can do it alone. Supporting the incubator concept needs to be a partnership arrangement among a number of government agencies or departments and the interested communities. The resources to house and operate the incubator should be present in the community or surrounding region, although the initial development of these resources may be achieved in partnership with external agencies. But while the individual incubator should be the responsibility of the community, the larger infrastructure or network to support incubators in general can be achieved through focusing the resources of various committed provincial and federal departments on a common strategy. The strategy is one of supporting not supplanting community initiative.

(i) Support Programs for Incubators

At the present time, almost all the incubators (with the exception of TIEM's use of Control Data's programs) are required to originate all the support programs directly involved with the incubator operation. Many of these support programs are common to every incubator with modest community or regional variation. National and provincial support programs that complement the community initiatives could result in improved incubator performance and reduced costs for operating individual incubators.

a. *Communication.* At the present time, the existing incubators operate in relative isolation. With limited communication between operations, the opportunity to learn from one another or share resources is minimal.

However the telecommunications options are expanding rapidly and the costs of utilizing this electronic resource is becoming increasingly less expensive. A government department such as DRIE's small business secretariat could be very effective in taking a leadership role in assessing various communications options and recommending a strategy that would find acceptance with a significant number of incubator operations. The communications strategy should involve computer links for the sharing of electronic mail and access to relevant data banks. Computer networks would allow for a simple and effective gathering of data to analyze incubator performance and assist in constructive evaluation.

A communication strategy is only as good as the willingness to communicate. Agencies and departments that prepare or handle information relevant to small business entrepreneurs would need to be encouraged to communicate with the various incubator via the network. At the same, time individual incubator managers and tenants would need encouragement to communicate with other incubators to benefit from the shared experiences.

If the communications network is well-structured and reasonably priced it could prove an enlightened and invaluable form of assistance to incubators t

b. Money. Financing small businesses is a perennial problem because there is as yet no efficient way of matching the needs of a small business with an appropriate source of funding. Undercapitalization inhibits the development of small businesses and constrains market development. Instead of concentrating on the business, the novice entrepreneur must spend a tremendous amount of precious time and energy trying to find potential sources of capital or willing investors to keep the business going.

Most small businesses are initially financed through personal savings and loans from friends and relatives. Further financing often takes the form of a bank loan secured by personal rather than business assets. Such funding usually sees a business through the early stages of start-up.

Difficulties can occur, however, at the moment when the business is on the verge of expanding its customer base and securing new markets. At this point, the business needs intermediate funding -- more than can be secured through a personal loan (or after the personal line of credit is exhausted), but not yet substantial enough to attract the interest of the venture capital community. It is the lack of funding at this critical stage that can stop a business from expanding to meet growing demand.

In its submission to the Macdonald Commission, the Canadian Federation of Independent Business laid out a table of financial requirements for small business by stages of growth (see Table 2).

The CFIB estimates that the incremental investment required every year to keep Canadian small businesses functioning is in the order of \$3 billion. It is unlikely, however, that an incubator program, even if multiplied many times over the current level, could make a very large impact on this investment requirement.

Incubators do claim to reduce the risk of failure for their tenants, and thus they claim that the investment community should be motivated to take an interest in these businesses at an earlier stage in their development. So far, however, with the exception of Discovery Park and Innovation Place, there is little evidence that the venture capital community has been impressed by the track record of Canada's incubators. The incubators with the longest track record in this country are the employment incubators in the Maritimes whose extensive government funding is the antithesis of what venture capital is looking for. Incubators that are more oriented towards the private sector are of recent vintage and have yet to prove themselves.

TABLE 2 27

Stages of Growth and Financial Requirement

Stage of Development	Investment Requirement	Typical Investors
1. START UP (< 2 years)	Up to \$75,000	Owner Family Associates
2. 1ST EXPANSION (2-5 years)	\$75-250,000	Wealthy individuals Organized investors Employees
3. 2ND EXPANSION (5-10 years)	\$250-1 million	Sophisticated investors Venture capitalists Employees
4. MATURITY/ DIVERSIFICATION (> 10 years)	\$ million +	Venture capitalists Pension funds Employees Public shareholders

27 The Canadian Federation of Independent Business, "A Full-employment Future", Submission to the Royal Commission on the Economic Union and Developmental Prospects for Canada, (December, 1983) p.19.

Nonetheless, the problem of venture capital is crucial for the future success of incubators in Canada. Solving the problem will, in the first instance, be a challenge for incubator operators and their communities. From the government's perspective, there are many ways that investment could be attracted to incubator tenants, among them:

- o a program of government guarantees for loans and investments made to incubator tenants
- o better information for tenants about the availability of private capital
- o special tax incentives to invest in incubator tenants
- o an aggressive campaign by the government to promote the incubator concept among investors

While there are existing government incentive programs for investment in small business, many of these programs do not directly complement the incubator program. From coast to coast, various managers and tenants stated the need to find private sources of funding for new enterprises. In most cases, they felt that predominately government funding was destructive for small business. More appropriate government initiatives would encourage interest in and promote the concept of incubators in an effort to attract capital to this instrument.

c. Markets. The possibility of providing a desirable new service or product is a major factor behind the creation of many small businesses. To be successful, however, such innovation depends on knowing and understanding potential demand in the marketplace.

Entrepreneurs should be familiar with the immediate, short term market potential of their product or service. They should also be aware of where potential markets exist for future expansion. They should know how to promote their business in such a way as to reach their target markets effectively. They should understand the nature of the competition they are facing. They should also know whether or not the marketplace can provide the appropriate skilled manpower, production personnel, and sales staff.

Rarely can a new business owner afford the services of a research firm to provide this critical information. Most new businesses operate in the marketplace on intuition and the owner's personal belief that the product is viable. All too often, the business is poorly targeted and opportunities are missed.

If incubators are really to help small businesses, the vital component of market research must be included in the mentoring that they offer their tenants. Only a few Canadian incubators have thought about this issue and all too many have ignored it, just as they have ignored other forms of mentoring.

One solution adopted by several incubators is to develop a relationship with a nearby school of business. The objective is to utilize the developing skills of MBA students to prepare business plans and market studies for the incubator's tenants. Another solution is to tap into the expertise of local retired businessmen, especially those with marketing experience. Both solutions require effective networking at the community level.

But existing market research abounds in the offices of various government departments and agencies. Much of this valuable information should be reviewed and focused for small business entrepreneurs and incubator managers to access at limited cost.

d. *Management:* Research has suggested that persons who have the creative ideas or the energy and ambition to start their own businesses do not necessarily also have the managerial expertise to turn their ideas into a commercial success. Entrepreneurs are required to commit their full attention to operating their new business. They cannot afford the time to attend courses or take a degree in business administration. Those that do have traditional business education backgrounds may find that academic studies were of only marginal relevance in operating a small business.

The owner/operator of a small business is usually required to be "jack of all trades". The company cannot support several managers, each with a specific area of expertise. The entrepreneur also cannot afford the services of various professionals such as accountants, tax experts, marketing specialists and lawyers. Given the demands on a manager's time and the variety of tasks that must be performed, the ability to be efficient and effective is critical to entrepreneurial success.

Consequently, the major focus of the incubator program is mentoring. Incubators must emphasize the mentoring and consultation that is essential to small business survival. Entrepreneurs can learn from this on-site counselling while actively keeping their businesses going.

A few incubators have developed very comprehensive and apparently effective mentoring programs. Programs such as the "Executive Development" program developed at Innovation Place should be made available to those incubators who feel the package is appropriate.

As well as providing mentoring and consulting advice to new business owners, entrepreneurs should be taught and encouraged to utilize equipment such as computers as a management tool. Small businesses in particular need to be efficient and flexible. Tools such as computers can cut their costs and provide them with competitive advantages. Incubators should make a special effort to help their tenants become computer literate and help them access computing resources.

The list of possible national and provincial programs to support incubator activity could be extensive. Canadian incubators generally operate on a modest if not shoestring budget. They have limited staff and few direct resources, nor is this likely to change in the future. If incubators are to help their tenants, not only with

management, but also with securing capital and developing effective marketing strategies, they must be able to secure the appropriate support and assistance for their tenants from resources outside the incubator. An incubator manager and his sponsors can create resource networks within the community in which the incubator is located, but additional opportunities also exist outside of that immediate community. National and provincial funding programs, communications strategies, large networks of investors, and marketing support services are all potential resources to be tapped by local incubators and their tenants.

While support programs are essential to the effective use of the incubator concept, in order to improve the performance of Canadian incubators, it is equally important to ensure that the individual incubator is appropriately structured to achieve its objectives.

(ii) Models for Canadian Incubators

Canadian incubators support a wide variety of objectives, ranging from job creation in a depressed region to stimulation of high-tech R&D. These objectives are reflected in the pragmatic typology presented in Chapter 2 which distinguished among incubators focusing on R&D, on economic revival, and on mainstream business opportunities. In order to realize these opportunities, the incubator program needs to be adapted fundamentally to these specific objectives.

a. *The economic revival incubator:* the mandate of the economic revival incubator is to create jobs in economically underdeveloped or depressed regions of the country. It should be clear that an employment incubator, by definition, demands much more effort and commitment than a more conventional facility. The employment incubator, after all, is being placed in a region where economic mechanisms are not performing well, and where at least part of the economic infrastructure may have eroded. For example, skilled workers and investors may have gone elsewhere, leaving a community without economic leadership.

The incubator alone is not a cure-all for a weak economy. It cannot be arbitrarily parachuted into an underdeveloped region in the expectation that it will somehow turn around the economy unless at the same time, parallel efforts are made to create an appropriate economic infrastructure. This infrastructure would include committees of volunteers taken from the community to screen tenants, administer the incubator, or assist in finding appropriate sources of capital. It might include training programs for entrepreneurs and workers. However, key to the success of this type of incubator program is the identification of realistic business opportunities.

While an incubator may be an important tool in developing a viable small business sector in a weak economy, it cannot function without entrepreneurs with viable business proposals and the resources to realize them. Much of the groundwork for an economic revival incubator must be done before the incubator is ready to operate. In communities like Grand'Mere and Pasadena, citizen's committees and

community representatives have invested substantial time and resources planning and preparing their economic renewal prior to establishing the incubator. But this commitment by the community will be required once the incubator is operating as well. In economically depressed areas, struggling entrepreneurs will need greater support and fragile enterprises will require more services.

Initial government funding of a portion of the incubator operation may be essential given the economic circumstances of the community. But the funding should occur only where a community has previously indicated that it understands the problems involved and has taken steps to provide solutions. Above all, it is only appropriate where a community has demonstrated its commitment to the project. Without such commitment, an incubator decreed from afar by central authorities will have little hope of achieving real results or exploiting the full potential of the community's resources.

The real objective of government policy, and one which is increasingly being articulated by provinces such as Ontario, is to transfer more of the financial responsibility for incubators to local communities. There is a growing reluctance on the part of government to fund the bricks and mortar for incubators. Communities must either use existing available space, or they must raise the funds for a new building elsewhere. The rationale behind this position is both simple and persuasive: if a community cannot acquire a building or raise the money to build one, then it may also not be able to provide adequate mentoring or financial support for incubator tenants. The issue is not whether a community wants an incubator, or even needs one. The real issue for government should be whether or not a community has the enthusiasm and resources to invest in an incubator. If it does not, no amount of government funding will result in self-sufficient enterprises.

b. *The mainstream incubator:* in their rush to stimulate advanced R&D or to revive underdeveloped parts of the country, planners should not overlook the fact that incubators are perfectly legitimate instruments for the promotion of ordinary, mainstream small business. Not every region of Canada can support high tech industries. Not every region is underdeveloped or deprived. Regions which already enjoy considerable economic activity can also benefit from an incubator program.

While it is unrealistic to consider incubating even a substantial percentage of all business start-ups, there is merit in identifying those new small businesses that indicate significant growth potential. This type of thinking seems to lie behind the Ontario incubator program. Its purpose is to tap into legitimate opportunities in whatever sector they may exist. The goal is economic acceleration: by supporting promising enterprises, by making their initial years of operation less difficult, and therefore by helping enterprises to reach their potential faster, the Ontario government hopes to use incubators as an instrument of economic stimulation to make an already healthy economy grow even faster.

If the policy objective is economic stimulation, perhaps a more appropriate metaphor to use in place of incubator is hothouse. In any case, with such an objective clearly in mind, it becomes necessary to structure the incubator in such a way as to promote growth. A wide range of mentoring and support services must

be readily available, as must appropriate amounts of capital.

Most, though not all, Canadian incubators, are housed in facilities specifically constructed for the purpose. However, constructing a new building each time an incubator is established is costly and may not be effective. It should be kept in mind that an incubator can be fully functional, providing offices, services and mentoring, without being housed in one facility or without having to go to the expense of building completely new premises for itself.

For example, a community incubator committee might make arrangements with a number of existing institutions with surplus capacity in order to secure blocks of space suitable for several tenants in different parts of the community. Because it is in surplus, this space might be secured at below-market rates on short-term leases. Several tenants could be housed in each block of space and provided with the full range of incubator services for the duration of the lease. The expiry of the lease could also mark the expiry of the other support services associated with the incubator. After that, the tenant company could choose to stay in the space by making a new set of arrangements with the original owner, or it could move to other accommodations.

This kind of arrangement would ensure that tenants do not become permanent residents of the incubator. When the lease terminates, the space would simply cease being part of the incubator program and, without having to change its business address, the company would find itself competing in the marketplace. The incubator would have migrated to wherever there was spare capacity in the community.

By adopting a transient incubator approach, the community does not have to tie up its resources in bricks and mortar, nor does it have to go to another level of government for additional funding. It might also be possible to achieve better economies of scale at lower cost by mopping up spare capacity in a community, than by attempting to build a dedicated facility. Finally, and perhaps best of all, the transient incubator allows the incubator to mentor a greater number of small business start-ups and to graduate tenants automatically, when the lease expires.

c. The R&D Incubator: the mandate of the R&D incubator is to foster private enterprises that undertake commercial R&D usually in advanced technology applications. Unlike other incubators, which emphasize start-up businesses, the R&D incubator may also attract components of medium-sized companies that want to undertake R&D to develop a new product. In such a case, the company is less likely to need conventional mentoring. Its primary need will be for assistance with the technology, and in securing funding for their research efforts.

The majority of private R&D enterprises will undertake revenue generating business activity to finance their research. Often, this income may be enough to sustain the business, but insufficient to pay for costly and time consuming research. That is why much of the focus of an R&D incubator is on securing private investment for research. The incubator can do this because of the commercial focus of the research: potential investors see a commercial application just down the road.

Two examples of Canadian R&D incubators -- Discovery Park and Calgary -- are a study in contrasts. Discovery Park has a prestigious address, sophisticated facilities, a large number of tenants, extensive screening and evaluation mechanisms, community support, and considerable private investment. Calgary's incubator is tucked away in a larger real estate development, its facilities are limited, its screening mechanisms are only just being developed, community support remains problematic, and investment capital is limited.

If it is to be successful, an R&D incubator must have both technological and commercial credibility. It needs a technological committee that can assist with technology transfers as well as verify the viability of the technological solutions being proposed. This will help less technologically sophisticated investors evaluate the commercial potential of the prototype or application. At the same time, entrepreneurs undertaking private R&D need to be able to exploit the resources and expertise of academic institutions and public research agencies. These entrepreneurs are the vehicle for technology transfer and their relationship with the public institutions should be that of informal partners.

One element that should not be overlooked is prestige -- the prestige of an address or of an impressive facility. Such prestige may conflict with the stereotype of R&D conducted in a garage, but the stereotype presents a largely false image of how advanced R&D is really conducted. There is a danger that in their rush to conform to some stereotype of R&D on a shoestring, development agencies may ignore the packaging that attracts both tenants and investors to the facility. While it should not be overstated, a prestigious facility helps to secure the confidence and acceptance of potential investors who know that sophisticated R&D does not come cheaply.

Though virtually all development agencies in Canada would like to join the high-tech bandwagon, it is obvious that only a few regions of the country have the requisite combination of characteristics that would make such a venture viable. R&D incubators can realistically exist only where there is access to universities and public research institutions and where there is an infrastructure of at least some larger advanced technology firms. Equally important to the environment for an R&D incubator is a pool of potential investors who are attuned to the specific conditions of R&D.

d. Incubator variations: there are several variations possible on the incubator theme. For example, incubators could be structured to meet the needs of immigration to Canada. There is currently in place an immigration program designed to encourage immigrant entrepreneurs to invest their assets in this country. An incubator program might be tailored to their specific needs. It could provide them with an introduction to Canadian business practices and language training, in addition to more traditional incubator services. Such a program could be attached to existing incubators, wherever the influx of immigrants was great enough to warrant action.

Another variation on the incubator model might focus on the needs of Canadians abroad. Just as incubators might attract foreign investment to Canada, incubators might also be established to make it easier for Canadian firms to penetrate foreign

markets. For example, a set of offices might be established in a key foreign market. The offices could be operated jointly by institutions such as the Canadian Exporters Association, the Export Development Corporation, CIDA, or other interested institutions. They would be made available on a short term lease to Canadian companies wishing to test a market and they could involve translation services, office support, and specific counselling aimed at helping that company access the market.

(iii) The Incubator Bandwagon

At the present time and for the foreseeable future small business activity will have a major impact on the health of the economy and its ability to create jobs.

People have made great claims for the incubator concept. On the strength of these claims, millions of dollars have been committed to various incubator projects in Canada. But no one can state with any confidence what the net impact of incubator programs can be on small business development. Their potential for helping small businesses survive during start-up and their potential for accelerating small business development cannot be dismissed. Yet, with a few exceptions, the track record to date of Canadian incubators is not an impressive one. The possibilities are tantalizing, but until the results of incubator programs can be measured, approaches should be cautious, investments limited and the review and evaluation rigorous.

While it rests with individual communities to exploit the potential of incubators, national and provincial public agencies can help facilitate the process through flexible responses to community needs.

Appendix A: Incubator On-Site Reports

Appendix B: Incubator Manager Interviews

Appendix C: Incubator Tenant Interviews

APPENDIX A: Incubator On-Site Reports

During the preliminary research phase, ten locations where incubator programs were said to be operating were visited in preparation for the interviews to be found in Appendices B and C. The following is a brief overview of the information gathered in each visit.

British Columbia - Discovery Park

Discovery Park, located near the British Columbia Institute of Technology in Burnaby, B.C. has been entirely funded by the provincial government. Opened in 1982, it is housed in an impressive facility that won the Governor General's award for architecture and has attracted international attention.

Discovery Park is owned and operated by the Discovery Foundation, a non-profit organization founded by British Columbia to promote advanced technology in the province. The Foundation is administered by a self-perpetuating board of 31 trustees that includes representatives from each university in the province, the B.C. Institute of Technology and the business community.

The Foundation currently operates three parks, including Discovery Park situated near the British Columbia Institute of Technology. The second park is on land leased from Simon Fraser University and it contains one building occupied by Microtel with some 300 employees. The third park is adjacent to the University of British Columbia. A Pulp and Paper Research Institute is being constructed on that land with funding from the federal government and it is estimated that it will eventually employ 350 people. Negotiations are also being conducted between the Discovery Foundation and U.B.C. to create a Biomedical Research Institute.

Discovery Park contains about 70,000 square feet of rentable space. It currently houses some 45 tenants in blocks of space ranging from 300 to 8,000 square feet. It was suggested that the building runs somewhat like a large "Rubik's Cube" because tenants start in small facilities and gradually maneuver their way up to larger facilities.

The rentals charged to the tenants are at market rates, on the grounds that it would be unfair to use a foundation supported with public money to take tenants away from commercial real estate developers. In fact, because of soft rates elsewhere as a result of the recession, the rents charged by Discovery Park probably reflect the top end of the market in the Vancouver area.

Leases are for a year though each tenant makes his own financial arrangements with the incubator. In the event of a change in the status of the business, the lease may be renegotiated. The tenants pay a flat rate that includes heat, water, taxes, but does not seem to include very many office services apart from a telex machine and some

photocopying.

The single criterion for admission is that a tenant must be an R&D - based company. At present, most of the incubator's tenants are involved in electronics, computers and software. The program seeks to take researchers out of isolation and put them in close proximity in the hope of creating additional synergy.

The explicit mandate of this incubator is to create jobs. This reflects the terms of the charter of the Discovery Foundation - the incubator's parent - which specifies that the Foundation's purpose is to create jobs in British Columbia. It is estimated that the current tenants employ some 300-350 people in excess of the principals of each company. Altogether, there have been some 4-5 companies that have failed since the operation began. At the same time, it is not entirely clear what the success rate has been.

Few companies have graduated, though one, Microlink has in fact been a striking success. Not only has it graduated, but it has attracted \$4.5 million in investment, and is putting up its own building.

Discovery Park seems to have little incentive built in to graduate its tenants. A common pattern is for tenants to enter the incubator renting only a few hundred square feet, and then progress through successively larger spaces, while remaining in the incubator. Because the facilities are impressively first rate, many companies might prefer a tight squeeze in Discovery Park to the costs of moving out of the incubator. Not only is there a waiting list for about 25% of the space in the facility, but in some cases, established companies have been attracted there. For example, Mobile Data International, a leading producer of mobile computers, has its manufacturing arm in Richmond, but its R&D arm in Discovery Park. This seems to go beyond the original objectives behind the incubator concept.

Though Discovery Park provides no office services for its tenants, it does organize monthly meetings and communal lunches in order to promote synergy. Tenants are encouraged to find out about each other's work and perhaps even sub-contract projects to each other. The Discovery Foundation runs a Discovery Club with monthly meetings to which noteworthy speakers are invited. The presentations cover a wide range of topics of interest to would-be entrepreneurs including legal and regulatory matters.

Discovery Park and the surrounding region may become a critical mass area for advanced technology. The close proximity of the B.C. Institute of Technology gives the incubator tenants access to a library and other facilities. Close contacts also allow for joint projects with instructors at the institute as well as the hiring of post-graduate and summer students.

Associated with the Discovery Foundation is an Innovation Office that steers innovators to government programs, industry contacts, and whatever else might help them develop their products. This includes designers, market analysts, business planners, investors, and patent attorneys. NRC and DRIE are both involved in this program. The Innovation Office gets some 400 calls per month,

with 80 percent of these calls satisfied through information given over the telephone. For the remainder, counselling is available, though there is a discouragement fee of \$25 for the first hour, and \$75 for each subsequent hour to screen out frivolous inquiries.

There is also a technology transfer program operated by the Foundation. Its purpose is to attract advanced technology into British Columbia, either to one of the Foundation's Parks, or elsewhere in the province. One individual is employed full time to attract such investment, secure incentives from various levels of government, and put deals together.

Finally, Discovery Park enjoys access to a venture capital fund of \$10 million established by the province. The fund is aimed at high-tech companies that have used up their funds but are not yet viewed as reasonable risks. To secure access to this fund, they must prepare a business plan that is reviewed by one of five committees. Financial assistance can take a variety of forms including debentures, or a minority equity position. Wherever possible, for every dollar put into a company by the fund, efforts are made to secure matching funds from other capital sources. Occasionally a letter of intent from the fund to the applicant promising financial support is sufficient to interest others in providing capital. To date, of the original \$10 million in the fund, some \$6 million has been advanced to about 28 companies. There has only been one failure that cost the fund \$40,000.

Discovery Park claims to keep its overhead low by employing a lot of volunteers to man its various committees and boards. Its operating budget seems to be \$1 million per annum, and it seems to have a total staff for the Park, the Foundation, and the Innovation Office of 17.

The incubator at Discovery Park prides itself on not offering a lot of extra services or mentoring. What it claims to do is to act as a facilitator, putting tenants in touch with sources of capital, providing a synergistic atmosphere, referring tenants to those who can provide them with needed services, and helping to screen out inappropriate companies for potential investors.

The Discovery Park incubator raises several important questions about the way incubators have been managed in Canada. Perhaps the most significant issue is the park's ability or even desire to graduate tenants. Though the facility seems entirely successful, and tenants are clamoring to get in, few seem to be leaving. The other issue worth considering is the fact that both office services and mentoring are not provided in an extensive or a systematic way. To make up for it, however, capital assistance seems to be very well developed.

Alberta - Calgary Advanced Technology Centre

The Calgary Advanced Technology Centre is operated by the Calgary Regional Development Authority, a body jointly formed in 1981 by the local Chamber of Commerce, the City of Calgary, and the University with some financial assistance from Alta Can Telecom, Petrocan, and Alberta Energy. It is a non-profit organization with a mandate to foster advanced technology in the Calgary region. Initially, the Authority planned to create an industrial park, but the recession forestalled this project. Instead, the Authority decided on an incubator.

The incubator opened its doors in June of 1985. It is located in a new building owned by Carma Corp. a real estate developer. The incubator has an arrangement with Carma that gives it an option to lease up to 30,000 sq.ft. of space at rates representing the lower end of the current market. The incubator, however, only pays for the space it actually leases. By March of 1986 about half of the available space was leased, well ahead of the occupancy rates forecast when the facility was first opened. The goal of the incubator is to reach capacity within two years of the opening date, housing some 40 tenants.

The focus of the Calgary incubator is generally on advanced technology. Most of the tenants are high-tech firms active in the oil and gas industry, or in agriculture. Two thirds of them are start-ups. The tenants are generally small, repeating the usual pattern of starting in small quarters and gradually expanding into larger facilities as they grow. The one exception to this rule is Biotechnica, a Canadian-owned company that emigrated to Massachusetts several years ago and has established itself solidly in that market. Backed by \$17 million, it now wants to return to Canada and has taken the opportunity offered by the incubator to re-enter the Canadian environment. It offers an example of how an incubator program might be used to attract investment from abroad.

At present, the Calgary incubator houses about 13 tenants with some 30 employees. In contrast to Discovery Park, the Calgary incubator focuses much of its effort on providing office services and mentoring. Services include computing facilities, reception, telephone messaging, photocopying, conference rooms, a library, on-line database searches, janitorial services, building security and a loading dock.

The mentoring component is provided in several phases. The first is on-the-spot advice offered by the incubator staff itself. When asked, they will offer experienced (not "expert") advice, or recommend recognized experts who can offer more detailed assistance. The incubator also maintains close links to the Business School at the University of Calgary. Students in the MBA program (averaging about 5 years of experience in the business world) help tenants of the incubator to prepare business plans, marketing studies, and financial records. The incubator's tenants even access the legal expertise of the University's law school. The third phase of advice is offered by four major consulting firms and one law firm, all of whom have agreed to offer the incubator subsidized services. The final phase consists of a wide network of contacts working in established businesses, interested in the incubator's success, and willing to donate some time and advice.

Because of the recession, many companies in Calgary were able to secure office space at very low rates. The Calgary incubator cannot compete with those rates, and established companies would not be inclined to move in. But with its mentoring and services, the incubator's total package seems attractive enough for new companies.

The incubator has managed to secure assistance and donations from a wide variety of institutions. For example, Honeywell and Digital Equipment of Canada contributed equipment, computer time was also donated by Canada Systems group and the University of Calgary, and consulting services have come from Calgary branches of some of the largest accounting and consulting firms in the country.

The Calgary incubator expects to reach financial self-sufficiency soon, though its original goal was to do this within five years of opening. It does not get a lot of public money (the city of Calgary has given it a grant of some \$250,000 a year) and it does not have a large pool of discretionary money that might be invested in tenants. Any expenditure of funds goes through the incubator's executive committee, but limited resources might be made available if a tenant gets into difficulties. The basic response would probably be to try to put the tenant in touch with the appropriate sources of private funding.

It should also be mentioned that the Authority played a supporting role in the formation of SPURT I, a seed-capital fund managed by Alta-Can Telecom. Some ten companies contributed \$100,000 each to the fund.

At present, the Calgary incubator has not been in operation long enough to decide whether or not its approach is likely to be successful. Nonetheless, in its devotion to private sector solutions, it offers a strong contrast to the government-funded structure of Discovery Park.

Manitoba - Winnipeg Business Development Centre

The Winnipeg incubator came into existence through government funding about five years ago as the Advanced Factory Space Program. This initiative proved highly successful as a classic incubator providing shared space, services and mentoring. Over a four year period, the incubator assisted 27 companies, of which three failed and another 3-4 amalgamated or were taken over. Eventually, a more ambitious Technology Commercialization Program (TCP) was created to replace the earlier venture.

The TCP program consists of three elements: technology transfer, new business assistance, and investment. The technology transfer element identifies sources of technology within the province arising from universities, government labs, private sector R&D establishments, private inventors, and the like. This inventory is then made available to potential users and especially to those who might be able to commercialize that technology by using it to create new products and processes. The first step is to compile a list of what is available. About \$35,000 has been set

aside to hire one individual to begin compilation of a data base. In conjunction with bulletins and seminars, efforts are made to match this technology with companies and individuals who might be the most likely users. It should be noted that the program does not seek to match new technology with new companies since this is held to be a very difficult combination. Experimental technology is referred to established companies, while new companies are offered appropriate but proven technology.

The second part of the TCP consists of what is traditionally meant by an incubator. This involves the shared office space, business services and counselling associated with the incubator concept. A company has to be in the TCP to use the incubator, but companies that are not in the incubator can still benefit from the technology transfer and capital assistance elements of the program.

The Winnipeg incubator charges its tenants reduced rent, and as they progress through the commercialization program, that rent increases to the point that in the third year it is fully equivalent to market rates. Because office services are free, and the problems of moving can be considerable, tenants still may not have an incentive to leave the incubator in the third year.

This incubator has been in operation under the TCP for over a year. At present it houses some 30 tenants and has registered only one failure. The Winnipeg incubator does provide informal mentoring in a supportive synergistic atmosphere. Tenants requiring help with their business plans can turn to a section of the government's small business development office for forecasting and referrals.

The incubator will assist tenants with a number of their activities in order to enhance their chances of success. For example, it might help them with the preparation of brochures or manuals, legal costs, trademark registration, prototype design, testing, materials, and marketing. These decisions are made informally, though the incubator has a rule that it will not cover the cost of salaries and wages.

Incubator tenants are required to tender for these services, and they have to ask the incubator to approve any costs for which they want to be reimbursed. Only when everyone is satisfied with the work done, will the incubator reimburse the tenants. The approval process takes enough time and is difficult enough that it eliminates frivolous applications since tenants must be serious enough to wrestle with the approval process and with the problems of cash flow that may arise.

The final element of the program consists of financial assistance to small firms (either in the incubator program or registered in the TCP) at critical stages in the start-up process when other sources of funding are simply unavailable. Under the TCP the government will undertake a percentage of the costs of certain materials and services such as brochures, manuals, software, market studies, equipment rentals, legal costs, design and prototype production. Allowable items are specified and must be approved by the manager of the program before companies can go to tender. After the service is provided to everyone's satisfaction, the government will reimburse the participating company.

This assistance is available in three stages -- \$5,000, \$20,000, and \$50,000 -- over a two year period. Once this avenue of assistance is exhausted, companies can make a special application to the TCP, or they can apply for investment capital. The government has made provisions for additional assistance up to \$200,000 but the latter is in the form of a loan that must be repaid in the form of a royalty on gross sales. The royalty has been adopted instead of a straight loan because the government does not want a loan appearing on the books of the company to frighten away additional venture capital. Under the terms of the program, a company benefiting from a \$200,000 grant would not have to repay it in the first year. In the second year, repayment would constitute no more than 7 percent of a company's revenues, rising to 10 percent in the third year. It should also be added that this assistance is not restricted to new companies. Established companies can also benefit from this element of the TCP if they are attempting something new.

The Manitoba program is specifically designed to nest the incubator within a larger program that provides both technological assistance and venture capital. In that sense, it goes beyond the simple incubator concept. On the other hand, it depends on government support and funding which can slow down reimbursements and tie up approvals in a bureaucratic labyrinth.

In the on-site visit, a certain amount of scepticism was expressed about the value of "synergy" in an incubator. This only works if all of the tenants are working in related fields. If the activities of tenant companies are completely different, synergy will be difficult to achieve.

Furthermore, though government assistance can be vital to small companies at certain stages in their development, it seems to be subject to unnecessary bureaucratization. Getting reimbursement from the government for approved services is a time-consuming and tedious process. The participating companies inevitably experience cash-flow difficulties and their effectiveness is thereby reduced. After all, just about the only advantage a small business has is flexibility, but if it is tied to an inflexible program, even this advantage is crippled.

Ontario - Innovation Place

The incubator at Waterloo arose out of the Innovation Centre which in turn is a private, not-for-profit organization that spun out of the University. The Innovation Centre started through a university program of assistance to inventors. It was quickly found that innovation assistance was not sufficient. Many of the inventors failed to start viable businesses, and successes were few and far between. It became clear that solid business advice and a critical mass of expertise was an essential addition to innovation counselling.

These early experiences refocused the initiative. The Innovation Centre was moved out of the university environment and developed its own funds and its own financial arrangements. The Centre started with 13 people, and ultimately grew to 27 staff members. It also attempted to develop a national focus instead of a purely

regional one and sought assistance from the federal government.

Under the auspices of The Innovation Centre, the incubator, Innovation Place, was founded in 1981 with a total area of about 6,000 square feet. It had a receptionist, plus two part-time managers, though it could tap into the expertise of the Innovation Centre. Its focus tended to be on technology-based innovation, though not exclusively so and certainly a technological orientation was not a criterion of admission. The incubator holds about 10-11 tenants, most of which are small software companies that require little more than desk space for their operations. To complement the Innovation Centre, and the incubator, the Entrepreneurship Institute of Canada was established as a subsidiary with a mandate to discover and encourage would-be entrepreneurs.

The Innovation Centre and the incubator have worked closely together on numerous start-ups, many of which came out of the University of Waterloo. At the appropriate moment, such start-ups would be presented to the venture capital community as well as to a local capital committee. Introductions were assisted by the local branch of Clarkson Gordon which sponsored an "event" at which tenants and potential investors might get to know each other. Local professionals helped in finding potential investors to invite to the event. Interestingly enough, to keep everything on a business footing, the tenant pays a finder's fee to the Innovation Centre if it manages to secure investment capital for the tenant's business.

From the beginning, the incubator was fully committed to supplying a full range of office services including a receptionist and meeting rooms -- but it was found that the incubator was too small to sustain such services economically. It was felt that about 20,000 square feet was the break-even point beyond which such services could be provided cost-effectively.

The incubator is being phased out now, to be replaced with a larger program directly connected with the government of Ontario's incubator initiatives. This should be taken as an indication of the incubator's success, since it will be transformed into a much larger operation. A joint incubator program is being developed to serve the needs of Waterloo, Kitchener, and Cambridge with an identifiable presence in each of the three cities.

Quebec - Grand-Mère/Shawinigan

One of the most impressive incubators in Canada is situated on the boundary between Grand-Mère and Shawinigan, Quebec. The incubator is housed in a large factory abandoned by the textile giant, Wabasso, about six years ago. At that time, there was no clear idea of how to use this space to replace the jobs the community lost when Wabasso left the region, but an energetic mayor together with a determined group of citizens committed to the well being of the region turned the empty facility into some 300,000 square feet of usable space -- the largest incubator space in Canada. What is most impressive, however, is that they were able to do this without any public money. All funding for the project so far, has come from the local community and from local corporate donations.

Grand-Mère/Shawinigan is an economically depressed region that has seen several important companies leave in recent years. This has cost the region jobs and has put its future survival and prosperity in question. The incubator in Grand-Mère is seen as an economic development mechanism: its primary purpose is to create jobs and stimulate economic activity in the region. But the job creation imperative has not overshadowed sound business principles. The progress of the project is overseen by the retired businessmen who volunteer their time to serve on various committees and boards associated with the incubator. As a result, the project has a healthy business orientation that promises future success.

The Grand-Mère incubator has arisen out of a cooperative effort involving the towns of Grand-Mère, Shawinigan, and Shawinigan-Sud. The incubator is supported by three affiliated committees; CODICEM (Corporation de Développement Industriel du Centre-Mauricie) which is responsible for regional economic promotion and development; SOFICAR (Société de Financement à Capital Risque) which assists in securing adequate financing for start-up companies; and CCECM (Centre de Création d'Entreprises au Centre-Mauricie Inc.) which provides management consulting, mentoring, and project evaluation. These committees are closely tied into the incubator to create a complete program of support and development that is coordinated with regional objectives.

Among the most impressive aspects of the Grand-Mère incubator is the comprehensive program of mentoring that has been attached to it. This is a function of the CCECM. It includes financial services such as bookkeeping; administrative support such as financial analysis, assistance in securing venture capital, and business plan analysis; marketing services such as market analysis and strategic planning, impact studies, product line analysis and promotions; office services such as a secretariat, purchasing, reception, photocopying, and meeting rooms; and technical assistance. The latter is not provided on-site, but the incubator has a close association with engineers and technical specialists who can help with product design, and production methods.

Grand-Mère's comprehensive mentoring function is provided by several experienced, semi-retired business people who volunteer their time, or take half-pay for their work. In this regard, the incubator at Grand-Mère has demonstrated that it can galvanize the community's expertise and turn it to the tasks of economic

revival.

Another key player in the incubator project is the finance committee -- SOFICAR -- and Quebec's Caisse Populaire. SOFICAR is equipped to give incubator tenants loans of \$25,000 to a maximum of \$75,000. It will also guarantee the financial viability of tenants, allowing them to borrow from the Caisse Populaire. The latter has established a risk capital fund of between \$4-5 million for the region. In addition, several individuals affiliated with the project have proven themselves especially energetic in locating sources of funds.

The Grand-Mère incubator has an ambitious development project which includes setting aside some of its space as a training facility for entrepreneurs. In addition, about a third of the building will be reserved for non-incubated small and medium-sized enterprises. In that sense, the building itself offers the space for incubator tenants to graduate without having to move. For larger enterprises, the incubator has about a million square feet of zoned and fully serviced industrial parkland behind the incubator building. This offers another possibility for graduating companies. The incubator management is adamant about there being a five year time-limit for a company to stay in the incubator. Thereafter, alternative arrangements will have to be made.

The old Wabasso building was taken over by the community in February of 1985, and the incubator's operations began in May of 1985. An extensive mentoring operation was added in March of 1986. At present, of the 300,000 square feet of available space, incubator tenants occupy over 77,000. An additional 24,000 square feet is leased to established companies for warehouses and storage space. At the time of the on-site visit, discussions were being held with several potential tenants, and it seemed likely that an additional 64,000 square feet would be occupied soon.

There are twelve individual companies currently housed in the incubator. They represent the kind of light manufacturing ideally suited to the region and its resources. The tenant companies make: metal chairs and stools, sleeper-cabs for large long-haul trucks, kitchen cabinets, office furniture, lamps, awnings, custom-designed wooden furniture, machine tools, and ceramic glue. There is also a printer occupying part of the premises.

A tour of these enterprises suggested that several of them were using only very rudimentary equipment, while others were quite sophisticated. It seemed that some technical assistance might be invaluable in securing maximum productivity. It was also clear that some of the entrepreneurs were good and solid workers, but they were not professional businessmen. Consequently, a developed mentoring service was essential if they were to survive.

One of the largest tenants is the Ateliers Centre du Québec, a provincial organization that gives work to handicapped people. Occupying some 22,000 square feet, the ateliers are a kind of anchor tenant. Their premises have been thoroughly renovated and equipped with woodworking machinery, sewing equipment, and the like, to be used by some 15 handicapped persons. Altogether, some 75 people are employed by the companies currently located in the incubator.

Perhaps the most interesting aspect of the Grand-Mère incubator is that it has been launched without government funds. The three communities involved were able to purchase the Wabasso building for only \$180,000, and funds for partial renovations and improvements to the building have all been locally raised. Some of the funding represented donations by local private enterprise.

Further development plans all hinge on the ability of the incubator's administration to solve the rather considerable problems of the incubator building -- problems which may serve as a concrete illustration of the troubles that might be encountered in converting existing industrial space to incubator purposes.

The building is huge, and susceptible to serious decay unless there is appropriate maintenance. For example, a new electrical and heating system had to be installed. Additional renovations were needed to the building's walls, floor, and access points (doors, loading bays, ramps). Most seriously, the structure needs a new roof. So far, the community has spent some \$1.25 million on the incubator and it is estimated that altogether it will cost some \$3 million to preserve the building and make it entirely available for incubation purposes, making the original purchase price seem trivial by comparison.

The incubator at Grand-Mère has reached something of a turning point in its existence. It has lately turned to the federal ministry for small business development for additional funding. It would seem, however, that the work the community has already put into the incubator, the commitment and good will that its organizers have displayed, and the success they have already had, indicate that grants to this project would be money well spent. Indeed, the entire experience of Grand-Mère suggests an appropriate model for Canadian incubation: a community should first be required to demonstrate that it is willing and able to take advantage of an incubation program -- only then should government funding be applied to help the incubator over its initial difficulties.

Prince Edward Island - Charlottetown

The incubator at Charlottetown was the first to be opened in Canada. It arose from concern by the federal government about the lack of an industrial base in Prince Edward Island. A Development Agency was formed and it hired Rex Gross, a developer, to create an industrial park. Other developers were not enthusiastic about the scheme, largely because they were worried about competition, but the Agency eventually bought 100 acres of land at West Royalty in the outskirts of Charlottetown, and another 30 in Summerside.

Prince Edward Island is small enough so that the entire community can easily remain in touch. This makes it harder to weather intense criticism, but easier to contact people for necessary services and contributions. After a decade of operation, the industrial park (as distinct from the incubator) employs a total of about 700 people, of which 100 are students.

The incubator part of the West Royalty park is organized into two malls containing a total of 32 units. Some problems have been caused by the nature of the space provided in the incubator. It seems to be parceled out into units that are much too large. As a result, some tenants got in over their heads. Space is also a critical factor at Summerside where there are five units of 3,000 square feet each. In addition, the pie-shaped units at Summerside are awkward to use for light manufacturing with the result that the facility has been severely underutilized from its inception. It is estimated that units of about 1,500 - 2,000 square feet are appropriate for PEI's level of development.

One result of space underutilization is that the incubator has made arrangements with established companies to take up some of its space. Perhaps the most striking example is the presence of Northern Telecom in one of the incubator units. Northern Telecom established this branch in the incubator ostensibly to manufacture grasshopper switches, but also to have a presence in Prince Edward Island.

The services provided by the Charlottetown incubator seem to be offered on an ad hoc basis but the administration of the incubator cooperates closely with the tenants to provide specialized assistance. For example, a company supplying orthodontists needed special sinks installed: the incubator operator arranged for and covered the costs of the installation.

The composition of the incubator's tenants seems to reflect an orientation towards light manufacturing. Among the companies described were producers of marble sinks, pottery, orthodontists products, kitchen cabinets, hydraulic tailgates, blueberry harvest equipment, coasters, swimwear, grocery carts, espresso coffee machines, plastic glass frames, leather goods, heat conservation equipment, woolens, and crests for jackets. Among the biggest successes was a fish salting operation, and a chemical firm specializing in blood tests. In addition, the list of past and present tenants includes companies that are involved with food conservation, paper recycling, restoration of alternators and starter motors, and training courses in machine operation. Perhaps the most interesting prospect is a company that is doing research into the uses of karageenan, an edible stabilizer extracted from seaweed. Apparently, the seaweed off the PEI coast is particularly rich in this substance, offering a major commercial opportunity for worldwide exports.

It is estimated that about 77 tenants have gone through the facility: some went bankrupt, others are still there, and a few have graduated. However, it was pointed out that even companies eventually going bankrupt did contribute towards training workers, introducing ideas and technology, and developing a sense of industrial discipline that has been so far lacking in PEI's agriculturally-based economy. Workers from a bankrupt company would often move over to another start-up in the incubator, acquiring experience and training as they went.

It was also pointed out that the province as a whole was perennially struggling against a brain drain problem: as soon as workers are trained and experienced, they have a tendency to leave the community in search of better jobs elsewhere.

The criteria often applied in Central Canada to evaluate economic activity are inappropriate or at least premature in Prince Edward Island. The pace of life was different, and economic development was a slow process. It was fully expected that the development of an industrial base and an industrial mentality would take years. Because of its industrial limitations, PEI did not pursue high-tech as much as it looked for technology appropriate to its stage of development.

The visit to the incubator at West Royalty was followed by an interview with an economic development officer of the provincial government. He pointed out that the province is eager to get foreign investors involved in the province, and additional incubator malls might be one way of encouraging their interest. The province would be prepared to give them a 30 percent rebate on their investment, assuming that certain conditions were met. Among these conditions were locating the malls elsewhere in the province. The provincial government was also not rigid in the criteria it would apply for admission to the malls. It could envisage malls that might include professionals such as doctors and dentists, as well as other forms of economic activity. It is especially interested in turning abandoned and empty buildings to this kind of use.

It was also pointed out that there were political problems in enforcing strict sunset clauses on incubator tenants, especially in an underdeveloped economy. To eject a tenant after five years of incubation might bring political consequences with it. Politicians were unwilling to "pull the rug" out from under tenants when the tenants could always claim that they were just on the verge of success.

Another idea put forward was the possibility of an incubator affiliated with the PEI Veterinary Institute, a large college that is nearing completion. The college will be conducting R&D as well as teaching activities, and this offers the possibility of technology transfer and commercial spin-offs.

The general impression left after the interview was that despite their difficulties, incubators were considered to be a success in PEI and that more of them should be constructed. On the other hand, care should be taken to focus them to the economic infrastructure already in place, and not try to introduce something completely different. Advanced technology might come to PEI in the form of a large investment by a major outside corporation (there was much talk of the possibility of Litton locating a plant in PEI), but incubators were not the appropriate mechanism to introduce advanced technology-driven industries into the province.

On the other hand, advanced technology can enter PEI as it were, through the back door, by concentrating on the needs of agriculture, fishing, and livestock. In today's economy, every industry, even the seemingly traditional, will need to become a high-tech industry in the sense that it must learn to adapt technological innovations to its activities. In this sense, incubators might focus on making PEI's agriculture, fisheries, and livestock rearing more efficient as well as devising ways to do more processing on the island.

New Brunswick - Dieppe

The incubator in Dieppe, New Brunswick has been in operation since October of 1984. It is very much the result of energetic leadership by Ferdinand Malenfant who spent several years developing the concept, preparing a business plan, and persuading various groups to support his initiative. As a result, the community of Dieppe got about a quarter of a million dollars in funding from both the federal and provincial governments to erect a small facility that currently houses 14 tenant companies employing about 75 people.

The Dieppe project benefited from the fact that the local community had already established a substantial industrial park covering some 500 acres of prime land located close to the Moncton airport. The park has already been parceled out for sale to investors and interested companies and it includes some 400 feet of frontage along the highway.

The park provides a natural graduation target for the incubator's tenants. For example, one of the incubator tenants, has been very successful in selling telex machines, word processors, and telephone equipment. It is now grossing about \$40,000 a month, employs some ten sales people and is contemplating expanding its office facilities. If it continues to be successful, it may eventually build its own facility in the park, thus minimizing the disruption of graduation.

The Board of Directors of the Industrial Park oversees the operations of the park, and the park's management controls the operations of the Small Business Development Complex, which is the incubator. Dieppe does not have a venture capital fund of its own. Loans and grants are available from various provincial and federal programs, and close personal relationships with the manager of the local branch of the National Bank also help tenants secure access to needed capital.

The present tenants of the incubator represent a broad variety of economic activities. For example, a surveyor who used to operate his business out of his basement found it difficult to market his services. Since he moved into the incubator, his business has increased substantially. Other tenants include a telephone equipment repairman, a landscaping contractor, a manufacturer of ventilation machinery for office buildings, a firm specializing in office renovation, and a company designing prefabricated buildings.

During its period of operation, the incubator has lost only one company. The length of stay by tenants varies, but the incubator has a maximum limit of three years. Rents are charged at a flat rate of \$4.50 a square foot, with utilities and telephone service extra. Tenants have access to a shared receptionist as well as photocopying, telex and computing facilities.

One characteristic common to many of the tenants is that they start independent businesses as sub-contractors to larger established companies. Some of them were operating in limited or inappropriate premises and thus the incubator offers them an important advantage that they did not previously enjoy. Sixty percent of the incubator's tenants live in Dieppe, while ninety percent of the industrial park's

occupants are from outside the community.

In addition to space, however, the Dieppe incubator provides access mentoring. Of particular importance is advice on securing appropriate investment capital. The provincial Department of Commerce and Technology is heavily involved in providing capital for small businesses. DRIE funding is also available to match half of a tenant's investment, or provide guaranteed loans and other assistance.

One of the most successful aspects of the Dieppe incubator is the synergy that has been stimulated among different companies with complementary areas of expertise. As a result, they are able to sub-contract work to each other, and most have reported an increase in their activity since they entered the park. On the other hand, the incubator's operators concede that for many entrepreneurs, growth is not the only priority. For many, the sheer personal satisfaction of operating one's own business, however small, may be equally important.

There are only two fully fledged incubator projects in New Brunswick. The incubator in Bathurst has been in existence since 1982 and there is an incubator being planned for Fredericton. The Dieppe incubator has been judged to be extremely successful, and plans are currently being formulated to expand the facility.

Nova Scotia - Cape Breton Development Corp.

Cape Breton Island is a classic case of industrial underdevelopment in a community struggling to retain its specific characteristics and cultural integrity. At present, there are six industrial malls operating, or under construction around the island. It should be noted, however, that so far, these have really been little more than space provided at subsidized rates. The office services and mentoring that are considered a vital part of incubation seem to have been either entirely absent or poorly developed, at least so far.

The mall at Louisdale contains 10,000 square feet divided into five units (three of 2,000 sq. ft., and two at 1,500, with the remainder devoted to administration. At the time of the visit, only two units were rented.

The mall at Inverness is equally large, though it is divided into four units of 2,500 square feet each. Here too, only two units have been rented. Both the Louisdale and Inverness malls are administered by local industrial commissioners. When the malls were originally constructed in 1981, the bulk of the funding came from the provincial government. Operational funding is provided by the federal and provincial governments as well as by the local industrial commission, each sharing one third of the costs. Because of this assistance, and because the malls have no capital debt outstanding, they are able to offer space at heavily subsidized but gradually increasing rates, ranging from \$1 per square foot in the first year of operation, to between \$3.75 and \$4.50 in the fifth year.

A different type of operation is the Sydport Industrial Park, located near the town of Sydney and founded in 1981. Sydport is located in what used to be an old naval facility that has subsequently been closed down. The buildings were generally sound, however, and have been converted for use in the industrial park. Of course the park has excellent facilities for ocean-going traffic, but it also has communications by rail, and a highway link that is currently being improved. The industrial park rents space to several established companies and institutions including Wajax, and the Atlantic Foundation for Occupational Health. There is a common building called an Office Mart that contains some of these operations.

As part of the Sydport Industrial Park, an Ocean Industry Centre was created to act as an incubator for what was hoped to be a thriving industry spurred on by offshore drilling. This has not lived up to earlier expectations and the incubator building that was intended to house young spin-off companies sat idle for a year. Part of the problem was that the Cape Breton Development Corporation, which is ultimately the owner of all the industrial malls on the island, enforced stringent conditions for admission into the Centre. After 1982, however, these were relaxed and admission is now open to any company with a promising idea. Tenants began arriving in 1983.

The Ocean Industry Centre at Sydport contains four units of various sizes with a total of 15,000 square feet. At present, it is fully occupied and its tenants include a company making mining supplies, another manufacturing microwave landing systems for airports, a small fabricator, and the Sydport International Trade Zone (SITZ) - a customs-free warehousing operation.

SITZ is a bonded warehouse that has been established to attract other industries into the park. Materials can be imported and stored in the warehouse without paying duties. Customs are only owed after a final product is shipped from the park. There is also talk of designating the whole park a free trade zone, but this obviously will depend on passing the appropriate legislation.

Some of the problems faced by an underdeveloped economy such as Cape Breton are illustrated by the experiences of one of the incubator's tenants. A fire extinguisher company which occupied the space between 1983 and 1985 was relatively successful and eventually moved to Halifax, which it considered a better site for its operations. Even though the company had been founded by local people, their investment came from the Halifax area and the investors preferred relocation. In other words, it is not enough to found successful companies, ways must be developed to keep them in the community.

The Ocean Industry Centre is housed in new facilities costing over \$1 million, because it was felt that the existing structures in the park (old naval barracks) were not appropriate to light manufacturing. The same rationale was behind the construction of new buildings in the other industrial malls around the island. Rents at Sydport range from \$3 to \$5 a square foot over a maximum period of five years.

New industrial malls are also being built for Glace Bay and Port Hawkesbury. These projects are connected to the closing of the heavy water plants in those two

communities. Here too, there were no readily available buildings in the community and new facilities are being created. The Cape Breton Development Corporation is working with the local industrial commissioners and the communities, but there is a danger that here too, as in the other cases, the crown corporation and the government will become a permanent partner.

The Corporation has agreed to put up funding for capital expenses, but it has insisted that all operating expenses come from the local community. Capital costs will be covered through a five year loan that may be written off once performance requirements are fully met. Another condition imposed by the Corporation is that the rent requirements range from 25 percent of the market rate in the first year of operation, to 125 percent in the sixth.

The new buildings will have flexible partitioning to accommodate a variety of tenants. There will also be an effort made to provide more of the shared services and mentoring characteristic of a classic incubator. At Glace Bay, the staff running the incubator will be trained by federal manpower training programs, thus providing qualified assistance at a cheaper cost.

In addition to the incubator building, the Cape Breton Development Corporation has an extensive program of assistance to all small businesses on the island. It will help cover one half the costs of business development (items such as accounting, marketing), it will assist with term financing, it will provide management staff assistance to help hire appropriately skilled individuals, and it will assist in marketing activities such as market testing, and the production of brochures. These programs of business assistance will be available to all small businesses, not just those located in the industrial malls. The Development Corporation, however, will not be involved in covering the operating costs of the new malls in order to force local communities to take a more active role.

Nova Scotia - Industrial Estates Limited

Industrial Estates Limited (IEL) is a Crown Corporation of the province of Nova Scotia, established originally to lend money to businesses. The provincial government was impressed by British examples and became convinced that Nova Scotia needed a system of industrial parks. IEL was given this role though the purposes of the program in retrospect do not seem to have been well-defined. IEL has been involved in creating industrial parks, industrial malls, and business incubators. At some stages of the process, the pendulum has swung toward local communities which preferred to establish and manage their own parks. At other points, communities withdrew from such ventures, leaving IEL to carry the program. At present, IEL manages 14 industrial parks and 7 industrial malls across the province.

Over the same period, IEL lost its Small Business Development group and the Industrial Promotion Group. This has distanced it from small business development issues and made it appear to be more of a landlord, providing good quality

commercial space at highly subsidized rates. It does, however, continue its role as a lender of capital to small businesses.

IEL manages seven industrial malls across the province. Because these facilities really provide little more than subsidized commercial space, they do not conform to the classic definition of a business incubator, that is a facility also offering shared business services and mentoring. On the other hand, IEL does claim to have been influenced by the example of the Charlottetown incubator, and the name incubator has been applied to its industrial malls. Because of this confusion, IEL has been included in this appendix, with the caveat that its facilities do not really fit the standard description of an incubator.

Nova Scotia's Department of Development operates a network of regional business advisers. The role of these development commissioners is to maintain contact with local businesses and advise them on new programs and government initiatives at both the provincial and federal levels. The Commissioners are usually appointed by the local municipality or county, though the method varies. In some cases, they are retired businessmen who may still maintain active contact with the local business community or board of trade.

IEL took the position that these regional advisers should maintain communication between IEL and the tenants in its industrial malls. Consequently, if any mentoring does take place, it is very haphazard, depends entirely on the energy of the individuals involved, and is conducted by people who have no direct connection with the organization administering the industrial malls.

IEL has been working closely with the Industrial Development Commissioners in the regions to identify potential tenants for its industrial malls. Unfortunately tenants who seem promising when construction of a mall is begun, may no longer be around for its completion.

Once the buildings open, prospective tenants have disappeared and the malls suffer from chronic low occupancy rates. On the other hand, it is argued that there is a real shortage of suitable commercial space for rent in Nova Scotia, so the very fact of providing such space will in the long run promote business development.

The IEL programs have tended to be very expensive. Part of the reason is that the communities themselves have been largely passive, lacking the staff and the financial resources to take a very active role in any small business development initiatives. Much of the burden of development fell on the shoulders of IEL and this initial expense was compounded by heavy subsidization of the space in the industrial malls, as well as significant vacancy rates.

Clearly the program was in need of some reform which has occurred on two levels. After a study of subsidization in the industrial malls, the province has decided to increase the rates charged to tenants. In addition a conscious effort has been made to shift more of the burden of facility development onto the shoulders of the local community. For example, after one mall was built in Windsor, the local community became very enthusiastic about the project and promised to fill a second building

with tenants if it were constructed. IEL refused to put up more money, however, thus placing the onus on the community to find alternative methods of organizing and funding the project. Ultimately a subsequent mall at Windsor, and one at Yarmouth were established through contracts with local developers. The province signed leases in the buildings to be constructed, thereby guaranteeing the rents and undertaking to find tenants. In return, the developer built the facility. This model of a partnership between the province and the local community seems to have worked well in the two examples cited, and it is likely that any future developments will draw upon this experience.

Other changes to the program involve taking greater care in deciding where to put a new industrial mall, and a greater tendency to look for existing buildings that might be suitably renovated. The two 'flagship' industrial malls in the program, Kentville and Debert, have been judged to be successes because they performed exactly as anticipated. Situated in regions where there was already considerable economic activity, the two malls are currently fully occupied. By contrast, the industrial mall at Amherst was poorly situated. It competes with New Brunswick, as well as with Liverpool and Stellarton.

IEL is quite aware that its industrial malls do not quite fit the classic definition of an incubator. In fact, it is now involved in construction of a facility at Woodside which will be a fully-fledged incubator. The building is being especially constructed for this purpose as a joint federal-provincial project under the Ocean Industries Development Agreement. When completed, it may be entirely leased to a corporation specializing in technological innovation. The Woodside facility will have its own board, and a 'champion' to counsel tenants, thereby regularizing the mentoring function that has hitherto been lacking in Nova Scotian industrial malls. Woodside will not include any significant rent subsidies.

APPENDIX B: INCUBATOR MANAGER INTERVIEWS

Appendix B is a review of a series telephone interviews with the managers of incubator programs. There are interviews with each of the managers of the eight fully established incubators in the country. As well, there are interviews with three managers of incubator programs that have started or plan to start operations in 1986.

DISCOVERY PARK - Burnaby, British Columbia

Formation of the incubator:

Discovery Foundation was set up in 1979. The incubator component, Discovery Park, was established in 1982. At the time the incubator was conceived, the economy was soaring and a lot of attention was focused on the success of California's "Silicon Valley". To get British Columbia in at the bottom end of the advanced technology industry, the Foundation felt it was important to foster small technology-based businesses. "We had a lot of well established electronics and basic software companies in Vancouver but we didn't have any place where we could consolidate these small garage and basement companies that were starting up. The building for Discovery Park was constructed as a flagship for new advanced technology enterprises."

Goals of the incubator:

According to the manager, the desired results are to attract tenants and see if the concept works.

Structure of the incubator:

The manager of the incubator reports to the President of Discovery Foundation. There is no separate budget for the incubator and it is rolled in with the Foundation budget.

Although there is no formal advisory council within the structure of the incubator, there is a network of retired business people, bankers, lawyers, and accountants that the incubator can utilize. The Innovation Office of the Foundation has an external advisory board. They assist in evaluating potential tenants for the incubator.

In addition to the incubator manager there is an administration manager and a property manager. The incubator also draws support from the accounting department of the Foundation.

Policies of the incubator:

Assessing applications is done first by the incubator manager. Applicants prepare a one or two page outline of their company. The outline provides background information about what technology is involved, a history of the entrepreneur and his business, and the potential applications of the technology. The submission is then reviewed with people in the Innovation Office and the Vice President of Technology Development. Together they decide if the applicant is appropriate for incubation or not.

Leases are offered for a one year term. This gives the tenant flexibility to leave if the business does not work out or expand if the business is doing well. If the tenant does not live up to expectations then the lease is not renewed. They have not had to ask anyone to leave. Three out of five candidates screened were admitted, but the screening is tougher now that they are fully leased.

Discovery Park has not experienced any problems with graduating companies. They do not have any formal graduation policy. The manager suggested that a couple of companies in the incubator had reached a plateau and would not go any further. They will be encouraged to graduate. The incubator charges market rents so there is no economic shock when tenants graduate. The manager feels the tenants know it is a privilege to be in Discovery Park.

Services available through the incubator:

Formal mentoring services are provided through the Innovation office located in the same building as the Discovery Park incubator. Informal mentoring is made available in the incubator through an open door policy. If the tenants do not come to see the manager, then he generally drops by their location at least every couple of weeks. When the tenants have specific problems the manager usually directs them to people who can help.

The incubator provides meeting rooms and conference rooms free of cost. It does not provide shared services but rather acts as a broker for various tenants to share services among themselves. Discovery Park operates a business club that is open to tenants and any entrepreneurs. It brings in guest speakers on a variety of business related topics. The incubator runs luncheon meetings exclusively for the tenants once a month at which two tenant companies give presentations to other tenants. These are very popular sessions. Technologies and applications are the topics generally discussed.

Progress of the incubator:

In three and a half years only five companies of the 50 that have been involved with the incubator program have failed. Companies have gone from two employees to 20-30 in two and a half years. The incubator has processed 250 applications, accepting 55 tenants of which 45 are presently in the incubator, 5 have graduated and 5 have failed. Approximately 200 new jobs have been created.

The incubator began leasing space in 1982 and filled the 70,000 sq.ft. by 1984. There is now a waiting list. Discovery Park has become a prestige address. Although they charge market rates for space, they are fully leased while prime real estate remains vacant in downtown Vancouver. Discovery Park is expanding to a nearby building that will allow tenants to increase the size of their operations but still benefit from the incubator program. They are finding that tenants need more space even though they are not yet self sufficient.

Relationship with the investment community:

Managers of Discovery Park have worked closely with the private investment community and through these efforts feel they have established credibility with the investment community. The Foundation can provide technical assessments for potential investors who do not have experience in the technology field and may be unsure of how to assess these new companies. Investors see the Park as a candy store. The new companies are being well marketed to the investment community (the tenants are often labeled as "intellectual Gretzkys") and as a result tenants are doing well at accessing money.

Discovery Park management often find government funding programs slow, sometimes poorly directed, and frequently with too many strings attached. They feel that government money is not the answer. To be successful, tenants must impress private investors.

Evaluation of the incubator:

Job creation and the lack of failure are the key indicators of the success of the incubator according to the management of Discovery Park. It feels that 70% of the companies in the incubator wouldn't have made it without assistance.

In the early days, the Board was concerned that the building would become a white elephant but Discovery Park found tenants. Today, the Board is pleased with full leasing and few failures. Companies are doubling their space requirements every three years. Discovery Park management is sure that growth is accelerated as result of incubation, perhaps by twice the normal rate.

CALGARY RESEARCH AND DEVELOPMENT INCUBATOR - Calgary, Alberta

Formation of the incubator:

The incubator was established in June, 1985 by the Calgary Research and Development Authority. The CRDA is an initiative of the City of Calgary, the Calgary Chamber of Commerce and the University of Calgary. They wanted to develop Calgary as a centre for advanced technology and they ultimately decided to grow their own advanced technology companies. In the process of studying how to foster small business activity they learned about incubators. An initial survey was

done to determine the extent of entrepreneurship in the city. Although not formally reported, the survey indicated that there were adequate sources of support for an incubator. The program is principally funded by the city of Calgary with support from the University of Calgary, Alberta Economic Development and the private sector.

Goals of the incubator:

The goal of the incubator is the creation of companies applying advanced technology. Job creation is secondary. The stated two year goal of the incubator is to develop the full 30,000 square feet and house approximately 40 start-up companies.

Structure of the incubator:

The incubator is operated by a manager assisted by a receptionist. About 20% of the time of the President of CRDA is also committed to the incubator operation. The manager of the incubator reports to the President of CRDA. The Board of the CRDA oversees the incubator. The City, the Chamber, the university and industry have members on the Board. There is an Executive Committee of the CRDA Board which actively oversees the incubator.

The Calgary Advanced Technology Centre is a co-operative initiative of CRDA, the ARC and the NRC. The incubator is located in the same building that houses the ARC and the NRC. The tenants gain access to technological mentoring and the NRC plays a mentoring role offering advice about funding programs and innovation assessment.

The incubator budget is not split out from the funding of CRDA which receives \$200,000 from the city plus money from the private sector. CRDA commits about \$75,000 annually to the incubator. Petro Canada made a one-time donation of \$25,000 and Alta Can Telecom committed \$50,000 per year for three years to the operation of the incubator. The remaining operating money comes from leases. The incubator space is leased from a private developer. The incubator has an option on 30,000 square feet of space but if it does not use the space, it will not pay for it.

Policies of the incubator:

Entry: There are two written rules for admitting tenants into the incubator. One is that the company utilizes advanced technology, the other is that the company must undertake research and development as a component of their business. If these requirements are met then the incubator manager and the president of CRDA determine whether the business concept is sound and whether the company has the resources to survive at least one year.

Exit: The incubator has no forced or formal graduation policy. It feels that rapid growth will force graduation because of lack of space. It has an escalating rent mechanism to encourage companies to graduate. If the tenant fails to live up to the commitment for research and development activity in advanced technology then the

lease is not renewed.

Services available through the incubator:

Space is at market value but extensive shared services are rolled into the rental price. The shared services provided include:

- reception facilities
- limited free photocopying
- telephone answering at reduced cost
- conference rooms
- limited word processing support
- access to the technical library and the on-line database research facilities of the ARC and NRC.
- subsidized access to computer services with various agencies and companies donating free time on their computer systems.

Mentoring: The "Entrepreneurship Assistance Program" has been designed for tenants and external entrepreneurs. It offers assistance with the development of business concepts, the preparation of business plans, the formation of a company and the raising of capital. The program has a series of self-help manuals. Informal mentoring is available through the staff at the incubator or through a network of government and business contacts. Business assistance is available to tenants through the New Venture Development Program at the University of Calgary. This is an entrepreneur assistance program that utilizes MBA students. Subsidized consulting services are offered to the tenants of the incubator by four major national consulting firms and a legal firm.

Progress of the incubator:

The incubator has 14 tenants at the present time but can house about 40 tenants when it is full. Two-thirds of tenants are start-up companies. There have been no graduations and no business failures in the first year of operation and the new companies are growing.

Promotion of the incubator program has been through word of mouth and media coverage. The incubator will be self-sufficient with 30 tenants, and to meet this target it is now accepting established technology-based firms as tenants.

Relationship with investment community:

The incubator does not have a pool of investment capital to draw on, nor is there an informal investment network connected with the incubator. CRDA has a connection with the seed capital fund SPURT 1. But minimum loans are \$100,000 under this program and the tenants are usually looking for smaller amounts

Bankers have not shown any interest in the incubator as a mechanism to reduce risk for investment in tenants. The manager of the incubator feels that venture capitalists

are almost as conservative as banks when it comes to investing in start-up companies. Most tenants have relied on "love" money although one tenant is looking for venture capital. The NRC's IRAP has played an important role for most of the tenants in the incubator.

Evaluation of the incubator:

The management of the incubator feel that the program has been very successful to date from a growth point of view. Many of the present tenants would not have started their companies without the assistance of the incubator program. Having only been functioning for one year, the program has not yet experienced a formal evaluation.

**WINNIPEG BUSINESS DEVELOPMENT CENTRE - Winnipeg,
Manitoba****Formation of the incubator:**

The present incubator program evolved out of a previous federal/provincial economic development program that had an incubator as a component. The previous incubator (Advanced Factory Space Program) was geared to assisting new small manufacturing and service companies. It offered the traditional elements of an incubator program and was considered quite successful. However many of the new start-up companies had great difficulty getting financial assistance or direct investment in their companies.

Following a review of the program, the provincial government decided to establish a venture capital program for new small businesses. However the focus of the program was to be electronics-based companies and the priorities and policies of the former incubator program were changed. The incubator program is nested in a series of other programs that stimulate technology transfer, foster entrepreneurial development and provide financial support to new firms. The overall program is identified as the Technology Commercialization Program.

Goals of the incubator:

The objective of the incubator is to foster new electronics-based companies and keep them going. The goal of the program is to create a viable electronics-based small business sector in the region.

Structure of the incubator:

The incubator is operated by the Manitoba Department of Industry, Trade and Technology. It is a component of the Technology Commercialization Program. The incubator is staffed by one manager and an office worker.

Policies of the incubator:

Entry: The TCP is an outreach program as well as an incubator program. Any entrepreneur who meets the qualifications is welcome to take up residence in the incubator. However the manager frequently encourages those entrepreneurs who are border-line in terms of their enterprise to come into the incubator. The incubator houses the more critical cases that might not otherwise develop and survive.

Potential tenants are screened to determine whether their business seems viable, has growth potential and will create jobs. There must be an electronics component to the enterprise to qualify for the TCP.

Exit: The program provides for a three year tenure in the incubator. Rents escalate over that time period to ease tenants out of the facility. When they feel a company is ready to leave, they set a date and give the tenant lots of notice. Given that many of the companies in the incubator are fragile, there is no enormous pressure to move them through quickly. The emphasis is on nurturing and sheltering the companies while they grow to self-sufficiency. There is a review for each tenant once a year.

Services available through the incubator:

The tenant is offered reduced rent and flexible leasing. The rent increases each year until it meets market rates in the third year. Tenants have access to shared office facilities and services. Informal mentoring is provided by the incubator staff. Formal mentoring and consulting is provided by the government's small business development office. There is no community network of advisors or mentors associated with the incubator.

Progress of the incubator:

The incubator has been in operation for a year. It has thirty tenants and has experienced only one business failure to date.

Relationship to the investment community:

There is little or no contact with the private investment sector. The companies are small and many of them are too marginal to attract private investors. The investment component of the TCP is the major financial resource for the tenants. The program appears to meet all the financial needs of the entrepreneurs involved in the incubator.

Evaluation of the incubator:

Although the program has not been formally evaluated, the management is pleased with the results to date. They have assisted in the formation of several new electronics companies. Many if not all of the companies would not have developed or survived without the assistance of the incubator program.

INNOVATION PLACE INC. - Waterloo, Ontario**Formation of the incubator:**

The incubator was created in 1981 as a natural outgrowth of the University of Waterloo's Innovation Centre. The incubator was funded by DRIE. The incubator has 24 office and 4 manufacturing modules.

Goals of incubator:

With the opportunity for technology transfer from the University of Waterloo, the incubator was created to foster new technology-based companies.

Structure of the incubator:

Innovation Place was a for-profit incubator. It had its own Board of Directors which in turn reported to the Innovation Centre. The incubator was operated by a general manager, an administrative manager, an operations manager and office staff.

Policies of the incubator:

Entry: Companies that were admitted to the incubator program had to have a technology base to their enterprise and they had to be a new small business. Very few of their tenants spent any substantial time on R&D. The incubator looked for tenants who were ready to be in the marketplace. Applicants did not need to present a business plan. The incubator staff analyzed the business through interviews and helped the tenants develop a business plan once they were in the incubator.

Exit: The tenants were encouraged to move through the incubator program quickly. The incubator staff stayed in close touch with the tenants and through managing the accounts for all the tenants they had a good idea of how each business was faring. If a company is doing well it moves out quickly to rent larger facilities. Those companies that are not prospering are encouraged to withdraw.

Services available through the incubator:

The tenants were provided with reduced rents, short term leases and shared office services. The incubator staff maintained the accounting services and provided access to any specialty services not available directly from the staff. The mentoring service was contained in the Executive Development Program which they developed. It was structured to provide interaction between the tenants and business specialists from the community. Because the tenants were well equipped to handle the technology component of their enterprise, the incubator program focused almost exclusively on learning mentoring.

Progress of the incubator:

There was no difficulty filling the incubator and there was a waiting list to enter. The incubator was too small to cope with the demand. 35 tenants have been through the incubator with about 65% of the tenants coming through the Innovation Centre. Twenty tenants successfully graduated, the others failed. About 130 jobs were created.

The average stay of tenants was less than a year. A new technology-based company has an idea and tries to make it grow fast or it does not grow at all. Rapid graduation or exit was also a result of the incubator management philosophy. They didn't want to keep the losers around. If the company was not growing they sat down with it and analyzed and suggested modifications. If it was not possible to improve the situation then the incubator manager asked the entrepreneur to leave.

Relationship to investment community:

The Innovation Centre helped secure funding. Neither the incubator nor the Centre had direct funds to invest in the tenants. They established a good network of contacts including private community investment as well as government programs. The tenants did not appear to lack financial support.

Evaluation of incubator:

The incubator program was very successful and there was more demand for entry than could be satisfied. But it was not large enough to achieve the economies of scale needed to make a profit. The management found they could not profitably provide the services needed without being larger and since they would not compromise on the services they were not making a profit on them.

Companies in the incubator should either be growing or dying but they should not be sitting still. The good ones grew themselves out of the incubator, the bad ones were forced to face reality. Dealing with highly educated people who had a solid understanding of their product allowed for very effective communication. The major hurdle the incubator helped the tenants overcome was credibility. It provided the tenants with professional facilities and a respectable address. The confidence hurdle was the other key. Tenants saw others just like themselves achieve success.

The staff of Innovation Place was instrumental in encouraging the Ontario government to establish an incubator program. Under this new program, Innovation Place will close down and a new, much larger incubator will be established in the city of Waterloo. It will be one of three incubators established in the region, all of which will share one central Board of Directors. The new incubators will have a more diverse set of tenants and will adapt many of the procedures and practices established at Innovation Place. Innovation Place itself will be leased to a current tenant of the incubator who now uses 80% of the facility.

L'INCUBATEUR INDUSTRIEL DE GRAND-MÈRE - Grand-Mère, Québec

Formation of the incubator:

The incubator is the result of the co-operative efforts of the cities of Grand-Mère, Shawinigan and Shawinigan-Sud. These cities have formed inter-urban economic development committees that co-ordinate and assist in realizing economic goals for the region. These committees have been the major professional resource for establishing and operating the incubator.

The mayor was the driving force behind the creation of the incubator along with a couple of city counselors. The city bought a deserted factory from Wabasso. The mayor, using the town's economic develop funds, offered one tenth of the asking price and Wabasso sold to the city. The town knew nothing about incubators but it created the program from its own sense of how to assist new business start-ups. Including the \$180,000 purchase price, the city has invested \$1.25 million on establishing the incubator. They will eventually spend \$2.5 million to fully complete the facility. To date these funds have come from the community, but they are seeking federal funds to assist in the operating costs.

The incubator has been operating since April, 1985. The facility will house both established companies and the incubator. As well, there is a one million sq.ft. serviced industrial park surrounding the incubator.

Goals of the incubator:

At one time the region was one of the most industrialized areas of the country. The region lost four major industries that were the major employers in the area. The city is attempting to replace the lost jobs through stimulating the creation of 60 to 80 small businesses. The ultimate goal is job creation.

Structure of the incubator:

The City of Grand-Mère owns the incubator under the auspices of the Industrial Committee. The incubator has a Board of Directors as well as a Board of Administration. There are no political appointments to any board. The incubator is operated by a general manager along with technical, accounting, and administrative personnel. The general manager reports to the Board of Directors.

The incubator is supported by inter-urban development committees: - CODICEM (Corporation de Développement Industriel du Centre-Mauricie) is responsible for regional economic promotion and development; SOFICAR (Société de Financement à Capital Risque) assists in securing adequate financing for start-up companies; and CCECM (Centre de Création d'Entreprises au Centre-Mauricie Inc.) provides management consulting, mentoring and project evaluation. Each of these organizations has contractual arrangements to provide services for the incubator.

The incubator has a community network of retired business people who donate a significant amount of time helping tenants, advising the incubator management and promoting business opportunities to regional entrepreneurs.

Policies of the incubator:

Entry: Applicants are carefully screened before being admitted to the incubator. They select tenants that have business ventures compatible with the nature of industry in the area. Only those entrepreneurs who are ready to commence a viable business are admitted to the incubator. There are no specific criteria for the type of business selected, but as an industrial incubator, the majority of tenants are involved in light manufacturing.

Exit: The tenants are permitted to stay in the incubator for up to 5 years. The tenant can continue to lease the space after that time but the incubator services and subsidy are withdrawn. If there are tenants on a waiting list, then companies that are doing well will be asked to leave and move into the industrial park surrounding the incubator.

Services available through the incubator:

The common services available to all tenants include secretarial support, purchasing, reception, photocopying, meeting rooms, courier service, maintenance, security, insurance and cafeteria facilities. These common services are available at a modest cost reviewed regularly by the tenants.

Each tenant arranges an agreement with the incubator management concerning specialized services required by the enterprise. These include accounting, business management and technical support. Payment for these services are calculated on a percentage of business activity of the tenant so that newer companies pay less than more established tenants. If the tenant has a particular need that cannot be met by the incubator staff, then external professional services will be sought at reduced rates. All services for the tenants are co-coordinated through the incubator management.

Along with the services provided by the incubator staff, mentoring is available from the community network of business advisors. There is no university or research centre in the area so the network is made up of community business people. They are prepared to act as a contact and resource for any aspect of the operation. It is assumed that the tenants understand the nature of the enterprise they are operating and the mentoring focuses on business training. They are planning to have an innovation centre on site with classrooms, and job training to assist potential entrepreneurs.

Progress of incubator:

There have been 50 applications for admission into the incubator. There are 14 tenants presently in the incubator and 4 more tenants have been approved to enter

the incubator next month. Some of the tenants have expanded their space three times in one year. They have had two failures to date, both as a result of partnership circumstances.

Relationship to investment community:

The incubator utilizes SOFICAR to identify and secure financing for its tenants. They seek private investment and also maintain contacts with various government programs offering investment opportunities for the tenants. The local Caisse Populaire has access to a special \$4 million fund for investment in the area. Incubator approval assists the tenants in getting loans from the Caisse. They plan to establish a local network of private investors.

Evaluation of the incubator:

The Grand-Mère incubator is a sophisticated and comprehensive structure based on the commitment and insight of the citizens of the region. They say they have worked slowly but carefully to avoid the mistakes of over enthusiasm. Nevertheless there is much to be enthusiastic about with this incubator program. The managers of the incubator hired external consultants to evaluate their incubator operation. The incubator was well-rated and the consultants agree that the incubator should be self-sufficient within three years.

CHALEUR INDUSTRIAL MALL INCUBATOR - Bathurst, New Brunswick

Formation of the incubator:

The incubator opened in January, 1982. The provincial government initiated the incubator in Bathurst. The planning began in 1978 when the Bathurst Industrial Commission studied the province's proposal and other incubators in the Maritimes. Surveys showed that there was entrepreneurial potential in the area. There were several cottage industry businesses already established in the community. Initially they looked only at an outreach program to assist local entrepreneurs but finally they decided to establish the incubator. The incubator cost \$735,000 and was funded by DRIE and the provincial government.

Goals of the incubator:

The goal of the incubator is to foster the development of a small manufacturing sector that will locate in the industrial park.

Structure of the incubator:

The incubator is owned and managed by the Industrial Commission. The Commission has a Board of Directors which sets the rental rates and policies for the incubator. The manager of the Industrial Park is also the on-site manager of the

incubator. The incubator is operated by the manager and a secretary. It hopes to attract an additional manager so that the present manager can concentrate on promoting and managing the Industrial Park. There is no formal community advisory network associated with the incubator.

Policies of the incubator:

Entry: Most of the tenants apply to the province's Small Business Assistance Program for financial assistance to start-up a business. This program provides a screening process for potential tenants in the incubator.

Exit: There is no formal exit or graduation policy. It is hoped that after 3 to 4 years the tenants will move out into the industrial park because they need more space for their companies. The rent in the incubator gradually escalates to above market rates to encourage tenants to graduate.

Services available through the incubator:

There is a two tier rental system. Service companies are charged the market rate for space and manufacturing companies receive a 20% reduction in rental costs. The incubator only offers shared office equipment as there is no common reception or administration area in the building. The manager of the industrial park provides general advice and referrals to provincial assistance programs and agencies. The local community college has a small business resource centre that does provide some counselling to the tenants but there is no local community network for providing assistance or counselling. The incubator program is limited by fact that it must be financially self-sufficient.

Progress of the incubator:

The incubator has been financially self-sufficient since June 1985. It has six manufacturing tenants and five office tenants with one vacancy in the manufacturing area. They had hoped to have the incubator fully leased in two years, but it took three and a half years. They planned for two-thirds of the tenants to be in the manufacturing sector but have only filled half the incubator with manufacturing companies.

There have been thirteen tenants involved with the incubator program. No tenants have graduated but one tenant will move in the next six months to his own building. There are no applications and no waiting list at the present time. New businesses are starting up but not coming to the incubator. They are expanding from their homes to new buildings frequently next to their homes if they live on the outskirts of town.

Relationship to investment community:

The Industrial Commission is in the process of applying to establish an investment company through the federal government's LEAD Program. At the present time,

tenants receive financial assistance through various provincial government investment programs. There is no community network of private investors associated with the incubator. However the incubator manager does have an informal arrangement with some people who are willing to invest. He is very cautious about exploiting the contacts.

Evaluation of incubator:

The manager feels that the incubator has been a good project but in light of its experience he would now do it differently. He would build a more efficient building where the tenants share common space rather than have each unit self-contained. He would design the building with greater flexibility in allocating space. If he could rent smaller amounts of space he could attract more tenants. The present modules are too large for most start-up companies. There is no formal evaluation program for the tenants or the incubator.

REGIONAL SMALL BUSINESS CENTRE - Dieppe, New Brunswick**Formation of incubator:**

The incubator was opened in the fall of 1984. Small business development was stagnant in the area and entrepreneurs were seeking assistance to establish in the city's industrial park. The city's industrial park manager studied other incubators in Canada and worked to have one established in Dieppe. The city donated the land for the incubator and DRIE and the province funded the construction and operation of the incubator. There was no private investment.

Goals of incubator:

The goal of the incubator is to encourage the development of manufacturing and industrial service businesses.

Structure of the incubator:

The manager of the Industrial Park also manages the incubator. He has the support of the assistant manager and a secretary who works for the Park and the incubator. The incubator manager reports to the Industrial Park Commission. The manager sits on the Board of the Commission. There is no formal community network for business or financial advice to the incubator manager or the tenants. This is provided by the Board of the Industrial Commission.

Policies of the incubator:

Entry: A business plan is not required from a tenant on entering the incubator. Until the incubator was filled, little discrimination was applied other than a realistic business proposal. Now that the incubator is relatively full more discretion is

applied to screening applicants.

Exit: The by-laws state that 4 years is the limit of occupancy in the incubator.

Services available through the incubator:

The rent is fixed at 30% below market rates. The tenants receive clerical support and counselling from the incubator manager. Mentoring is provided by the incubator staff. Although there is no community network of special advisors, the incubator manager has several contacts throughout the province that he can utilize to assist tenants.

Progress of the incubator:

The incubator houses 13 companies and is presently filled. It took about one year to fully lease the facility. Two companies will graduate in the near future because they have grown so rapidly. Although the incubator is nearing financially self-sufficiency, it still receives modest grants from the province and the city for operating costs. If it leased the space at market rates it would be self-sufficient. It is not obvious that companies develop faster in the incubator but 75% of the tenants are growing. There is no waiting list of entrepreneurs to rent space in the incubator. However they are considering establishing another incubator in the Park.

Relationship to investment community:

Financial assistance and investment for the tenants comes principally through government agencies both provincial and federal. There is no established local network of private investors but, some companies have secured private investment through the incubator manager's contacts

Evaluation of incubator:

The manager feels that the incubator program has been successful. It has assisted thirteen companies in establishing viable businesses of which only about three would have survived without the help of the incubator program. There is no formal evaluation program in place for the tenants or the incubator.

CHARLOTTETOWN INDUSTRIAL MALL - Charlottetown, Prince Edward Island

Formation of the incubator:

The general manager of the province's Industrial Enterprise Program had heard about incubators in Europe and felt that it was an appropriate strategy for PEI. The first incubator on the island was created in 1976. Two more buildings were added in 1978 and 1980. There were a couple of foundries in PEI at the time and the goal of the incubator program was to establish a series of small metal works companies to expand the industrial base. Based on studies and surveys it was felt that

sufficient potential and talent existed on the island. Although the incubator attracted entrepreneurs, the strategy of creating a metal works sector was never realized.

Goals of the incubator:

The goal of the incubator is to stimulate economic activity. It is felt that by assisting small businesses to develop and survive, new jobs would be created.

Structure of the incubator:

The incubator is now operated by the PEI Development Agency. The Agency has a board of directors comprised of businessmen and government officials from across the island. The manager of the incubator reports to the Chief Executive Officer of the PEI Development Agency who in turn reports to the provincial Minister of Industry. The on-site manager of the incubator handles the day to day operation including the leasing of facilities to tenants. The incubator is housed in an industrial park. The incubator receives 90% of its funding from the federal government and 10% from the provincial government. The incubator is owned by the province and there is no formal relationship with the city of Charlottetown.

Policies of the incubator:

Entry: Entrepreneurs seeking entry into the incubator program are offered a package of space and start-up funding from the PEI Development Agency. The manager reviews the business proposal and decides "Like any other lender" on the merits of the proposal. There does not appear to be any formal assessment or criteria for entry.

Exit: There is no formal graduation or exit policy. There is a five year occupancy limit but it is not enforced. If the business is in trouble then the incubator management tries to help in what ever way it can. It only encourages a company to fold if it is getting into real financial trouble.

Services available through the incubator:

The incubator manager is on site to offer informal mentoring to the tenants. The units are designed to be self-sufficient and no shared services are offered. The incubator management maintains the outside of the units but the tenants are responsible for the maintenance of the inside.

The PEI Development Agency is well represented in the industrial park. Although it is not located inside the incubator, tenants can easily access support for marketing and finance through special Agency programs. The industrial park has a business club that meets regularly and provides speakers on various business related topics. The Agency provides employee training courses to assist tenants in the incubator.

Progress of the incubator:

About 75 tenants have been involved in the incubator program since its inception.

Most are either still in the incubator or they have gone out of business. Although no specific number was available it would appear that very few companies have graduated and still function today. Many of the people who worked for one tenant have moved on to work for other tenants when their original employer went out of business. The incubator has one unit vacant at the present time.

Relationship to investment community:

The PEI Development Agency used to lend money directly but found that it required too many people to police the loans. Now it utilizes the provincial Small Business Development Corporation. This is a program that provides a 30% grant to investors investing in small business. However some tenants are too small to take advantage of the program. The PEI Development Corporation does have a grant and forgivable loan program that funds 50% of the cost of capital equipment and wages. This program is used by the tenants in the incubator.

Evaluation of the incubator:

Although there has been no formal evaluation of the incubator program, the manager feels it has been a success because it has trained and upgraded employee skills. He feels that relative to other Maritime incubator programs theirs has been a success. He does not know why so few companies have graduated and survived in the ten year history of the program. He thinks that the 1981-2 recession wiped out all progress to date and they have had to start over again.

**CAMROSE REGIONAL ECONOMIC DEVELOPMENT CENTRE -
Camrose, Alberta**

Formation of the incubator:

The city's Economic Development department initially examined the incubator concept. The city held an incubator conference and they found several potential entrepreneurs. They received a grant to study incubators which resulted in a proposal to the federal Ministry of Employment and Immigration. Under the Infrastructure Project they received \$350,000 for the construction of a building and diminishing operating funds for 5 years.

The manager of the incubator was instrumental in the design of the Camrose incubator. He designed and adapted his model based on the Winnipeg and Minnesota incubators. They had originally hoped to utilize existing facilities for the incubator, but they couldn't finance buying an existing building. The City of Camrose donated land for a new building. The Incubator opened in Feb. 1986 with one tenant. The building is still being completed.

Goals of the incubator:

Because of high unemployment in the area, job creation through small business

development is the goal of the incubator program. The city had tried to attract industry but this had not worked so they wanted to try small business development. They felt that people in the area had good business ideas and the city wanted to help them establish self-sufficient companies that would create employment.

Structure of the incubator:

The incubator is a non-profit community corporation. They have a ten member Board of Directors made up of community representatives from business and finance and various government representatives as well as academics. The Board directs the operation of the incubator. The manager is on the Board.

The manager interviews prospective tenants and helps them prepare a business plan. The application goes to a business review committee that then recommends to the Board. The Board makes the final decision. The manager has a secretary and will have an assistant when the incubator gains more tenants.

Policies of the incubator:

The facility is appropriate for light manufacturing as it is located in the industrial sector of the city. The incubator does not accept companies that will compete with existing businesses. Entrepreneurs applying for space in the incubator are required to present a modest business plan. The business proposal has to show job creation potential.

The incubator program does not have a set graduation or exit policy. After two years, if the business is stable and there are potential tenants waiting to enter, then the company will be asked to leave. However the new business will continue to receive support after it leaves the incubator through an outreach program.

Services available through the incubator:

The members of the Board will provide some mentoring or they will hire expertise for the tenant at a reduced rate. They feel that tenants should face the fact that companies need to hire expertise. Space is rented on a six month basis. It starts at 50 cents/sq.ft. and increases every six months. At the end of 2 years the tenants are paying roughly the commercial rate. This makes leaving the incubator less of a financial shock. The incubator provides shared office resources for the tenants. Some of the services have a slight charge and the costs rise as the new business grows.

Progress of the incubator:

They have one tenant located in the incubator and two other tenants approved for entry. But one of the potential tenants can not proceed unless he can secure some financial backing. The incubator can house 5 tenants and they feel it will take a about one and a half years to fill the facility. They get one or two business proposals from entrepreneurs each month.

Relationship to investment community:

The incubator program does not have a network of local investors, but is planning to establish one. Provincial small business loans program can be utilized but it is a long bureaucratic process. The manager of the incubator fears that dealing with the government can waste more time and money than can be recovered. His advice is to avoid government programs because the uncertainty can completely undermine a small business.

The Small Equity Business Corporations is a provincial program to provide incentives to investors to invest in small business. However, many of the new start-up businesses have not been able to access money to date. It is hoped that incubator approval will help tenants raise equity at the bank, but they are not optimistic about bank flexibility. They encourage tenants to find partners who will complement their needs in business expertise or financial resources.

Evaluation of the incubator:

The incubator will be evaluated on the basis of job creation. It will be measured against the objective to create 30 - 35 jobs per year. Anything over 25 jobs annually would be a success. Long term evaluation would consist of tracking the number of companies that have continued to prosper and grow after leaving the incubator.

KANATA ENTERPRISES - Kanata, Ontario**Formation of the incubator:**

The idea for the incubator came from the Economic Development Committee of the Kanata City Council. The three man EDC held a series of meetings with key businessmen in the community. The EDC established an advisory council consisting of bankers, lawyers, accountants, engineers, and venture capitalists. Each representative had experience dealing with start-up companies. The Economic Development Committee commissioned a local survey of entrepreneurial activity in the area. The survey revealed 50 small businesses operating in houses and garages. They felt that Kanata and surrounding regions had sufficient entrepreneurial activity and economic opportunity to justify an incubator program.

Under the provincial government incubator funding program, the community was expected to raise one dollar for every three dollars granted by the province. Kanata sought \$750,000 from the province and raised \$300,000 in private investment. They raised the private funds by offering shares in the incubator, but some local established businesses simply contributed cash with no strings attached and other businesses contributed in kind by donating computer systems, telephone systems etc.

The funding from the provincial government and the private investors plus rental and service fees is expected to finance the incubator operation for three years. By

that time the incubator should be self sufficient. If there is a shortfall, additional funds would be sought from the private sector. They have leased 70,000 sq. ft. of space with an average rental of 600 sq. ft. per tenant.

Goals of the incubator:

The incubator will not specialize in any particular type of business operation. The goal of the incubator is to increase the success rate of small business start-ups. They feel that encouraging small business development will help diversify the local economy. As well they feel that economic opportunities are plentiful for small businesses that want to service the larger established firms in the area.

Structure of the incubator:

Kanata Enterprises is a private for-profit incubator. It has a Board of Directors that includes the mayor of Kanata, a provincial government representative, private investors and community business people. As well as a Board of Directors, the incubator has a number of business specialists on an advisory council. The advisory council provides advice to the incubator management and helps with the screening and evaluation criteria for potential tenants. The Board of Directors approves all policies including the criteria for entry and financing of tenants. The manager of the incubator has the initial screening role and questionable applications are referred to the advisory council. The incubator has strong links to various community business organizations and is associated with the Innovation Centre at the University of Ottawa.

Initially the incubator will be operated by three people and then five people by the end of the first year of operation. There will be a property manager, an administration manager, the general manager and two office workers. By the end of the second year of operation they plan to add two more staff to service an outreach program.

Policies of the incubator:

It is a natural tendency in incubators to move to a core of specialties dependent on the community's strengths. Kanata will have high level of "high tech" because of the nature of businesses in Kanata. Already 60% of the applicants are in the "high tech" category.

Entry: Tenants are screened thoroughly and their business proposal carefully assessed to determine the potential of the product or service for future growth. The prospective tenant must present a business plan and have financing in place. The business must indicate some job creation potential and must be compatible with other tenants (noise etc. as well as networking and synergy). The incubator manager is also trying to determine whether the entrepreneur will be able to pay the rent and will graduate on time. The incubator hopes to have one or two high growth companies in every ten tenants they incubate.

Exit Criteria: Companies that are clear winners will want to leave the incubator because of limited space for expansion and increased rents. Companies that are clearly not prospering and have no success with the finances or the product will want to cut their losses and leave the incubator.

The greatest concern of the incubator manager is what he calls the "walking dead". These are companies that are not clear winners and not clear losers. They always need more money, time and favors. The question is do you give them an extra push or do you trip them? Because Kanata Enterprises is a for-profit incubator, the Board of Directors wants to see companies growing and graduating not stagnating in the incubator.

Services available through the incubator:

The basic package offered to incoming tenants is space initially below market rates, reception facilities, general maintenance of their business unit, access to the research library and informal mentoring from the incubator staff. Additional services are provided for tenants on an escalating cost basis. They include use of board rooms, computer service and consultant services.

Progress of the incubator:

Estimates and projections have been done on the first three years of operation. They plan to have 30 tenants and outreach clients by the end of the first year. This should double the second year and have 90 tenants either in or through the incubator by the end of the third year. They hope to have assisted in creating 400 jobs by the end of year three. Although the incubator has not yet opened, they have had 45 applications.

Relationship with investment community:

The incubator management have carefully cultivated investor interest. Some large investment firms are already offering to give investment seminars to the tenants. The investment community sees the incubator as a pre-screening agent that provides one stop shopping for investment opportunities in small businesses. The incubator will provide recommendations for specific tenants to investors. This will be done through the advisory council but its recommendations will not be given lightly.

The incubator does not have a venture capital arm at the present time but they are planning to establish one. In the mean time they have assembled a quasi-shopping list of community based small investors who have indicated a willingness to invest in incubator tenants. As well, the regional government has published a list of potential area investors.

Evaluation of the incubator:

Success for the incubator program is the creation of small businesses that can stand on their own two feet within three years of start-up. They plan to measure how many companies survive over time and how many companies meet or exceed their targets for growth.

THE VENTURE CENTRE - Pasadena, Newfoundland**Formation of the incubator:**

In 1978 DRIE encouraged the town to look at the incubator concept. The province commissioned a study and recommended an incubator for St. John's. Pasadena argued that incubators were to stimulate economic activity in under-developed areas like Pasadena. The town has population of 3,500 but here are 60,000 people within a 30 mile radius. They put together a comprehensive proposal and presented it to the provincial cabinet. The Pasadena incubator was approved. The incubator was funded by DRIE (\$3 million for the construction of the facility) and the site was purchased by the province. The building is 40,000 sq. ft. with a central administration area. It can house 12 tenants.

Goals of the incubator:

The goal of the incubator is to stimulate a small business base in the region around Pasadena.

Structure of the incubator:

The incubator is owned by the town of Pasadena. It is administered by an advisory board on which the three levels of government are represented. The incubator manager reports to the advisory board. The incubator program has a business advisory committee consisting of an accountant, a lawyer and three business people. Their role is to help entrepreneurs explore possible business ideas for new start-ups. With the assistance of the local NRC liaison officer, various committee members have travelled around the province and outside the province searching for viable ideas for business opportunities for the Pasadena area. The incubator is operated by a manager and a secretary. It also has the services of a summer business student from Memorial University.

Policies of the incubator:

The incubator program is principally aimed at manufacturing and processing start-ups. Potential tenants must not compete with already established businesses. The incubator manager helps entrepreneurs prepare business plans with three year projections and identified funding. This is then presented to the advisory board for approval. There is no formal exit policy at the present time, but there is a five year limit on occupancy.

Services available through the incubator:

The incubator program is designed to lower the start-up costs for new businesses. The incubator provides common office services and accounting services. While the rental rate is calculated on the market average, the tenant only pays 25% of the rate for the first two years. The rent gradually increases until the tenant is paying 110% of the market average in the fifth year as an incentive to exit.

The incubator has established a regionally based mentoring network. Business, academic and technical resource people are involved in the network. Along with the mentoring services, the incubator has established an extensive stimulus program. It has produced an operations plan that identifies opportunities for business. It holds brain storming sessions with entrepreneurs and the business community to propose potential business opportunities.

Progress of the incubator:

The incubator opened with one tenant and it is hoped to have a few more tenants in the near future. Given that the incubator's goal is economic stimulus it is felt that a lot of work is needed in providing business opportunities before the community can reap the benefits of a healthy small business sector.

Relationship to the investment community:

The incubator management is in the process of establishing a local investment network. However tenants will look to the provincial government investment fund for most of their financial needs. The incubator will be able to direct tenants to various government programs for funding.

Evaluation of the incubator:

There is no formal evaluation program at the present time.

APPENDIX C: INCUBATOR TENANT INTERVIEWS

A sampling of tenants were interviewed by telephone. They were asked about their business operation and the reasons for entering an incubator program. The names of the tenants were supplied by the incubator managers.

Tenant One - Discovery Park

Nature of the enterprise:

This electro-optics company does custom research and development for other companies in order to finance the development of their own product. It will take three years to develop. The mission is to become a manufacturer of a high technology proprietary product. They hope to be in production by 1989. The two partners own 98% of the company and they have just started an employee share program.

Previous business experience:

The partner interviewed had been a senior executive in two of the larger high tech firms in Vancouver. He knew that he wanted to own his own company. He met his partner while working in a previous company. Neither partner had previously operated their own business.

Reasons for entering incubator:

Because he was in the industry, he had heard about Discovery Park and came to the opening. When he and his partner started their business they chose the incubator because of its flexible leasing arrangements, its appearance, and because they could both walk to work. The mentoring and shared services were not a factor. They are the leading edge company in the incubator and have helped other tenants in the building with advice and access to their equipment.

Progress of the enterprise:

They were negotiating their first contract when they entered the Park in January, 1984. The company has grown very well. They originally leased 800 sq.ft, expanded twice and now have 4300 sq.ft. There were only two people originally and now 15 people work in the company. They put \$60,000 into adapting the facility and \$30,000 in lease improvements. They feel they will be in the incubator for about seven years.

Financing the enterprise:

They have not had to invest in the start-up of the company. They have financed

their R&D through consulting contracts. They do about a million dollars in consulting each year. The revenues would be higher if they had not committed so much time to their own product development. They have funded their business from the contract profits and from government grants - B.C. Science Council and NRC. They feel they have enough sources of funding to see them through the R&D stage of the business. Though they have had offers from venture capital firms they are not interested at the present time.

Evaluation of the incubator program:

The proprietors have found it harder to establish their business in Vancouver because there is no high tech infrastructure to assist developing companies. Discovery Park has been helpful along with the B.C. Science Council in helping to establish an advanced technology base in Vancouver. They have met a lot of people through the Discovery Park office. The contacts and prestige of the facility add to their sense of security inasmuch as the landlord can be called upon for help. They would certainly recommend the incubator to other advanced technology entrepreneurs.

Tenant Two - Discovery Park

Nature of the enterprise:

This company does R&D, manufactures and markets gas detection systems for the recreational vehicle industry. They have developed an alarm unit that can detect a propane leak, automatically set off an alarm, and shut off the propane. The manufacturing facilities are located outside the incubator and only the R&D unit is located in the Park. They spend almost every penny of retained earnings on R&D. The goal is to be able to finance internal R&D from the revenues of the company and still pay dividends. The company has created a core of R&D people who can be brought into the rest of the company and leave the incubator. It will spend 3 or 4 years in the incubator, but knows it is important to move out.

Previous business experience:

All the partners had previous business experience. Two of the partners had founded an earlier company. This company still exists and is doing well. The third partner was a senior executive in a large corporation who left to establish his own company. Two of the partners had Ph.Ds in physics. They got involved in starting their own businesses because they could not secure positions in an academic or government institution. They now wish they had been better prepared to be entrepreneurs.

Reasons for entering the incubator:

They came to Discovery Park in order to separate the R&D from the manufacturing component of the company. They felt that it was important to show investors that

they were serious about undertaking R&D. The reputation of Discovery Park is an asset in securing finance for research.

Progress of the enterprise:

The company was started in 1981. The early product was only a minor innovation with limited R&D. Since entering the incubator in 1983, they have been able to raise money for more extensive research. The company has grown through increased marketing financed initially through private investment and then through a public issue of shares on the Vancouver Stock Exchange.

Financing of the enterprise:

The company was started with a loan from the FBDB and \$120,000 from the two original partners and friends. When they needed more money, they found a new partner with money. Since then they have financed the business through the limited partnership scheme. In 1983 they went public and were able to use the Scientific Research tax credit.

Evaluation of the incubator program:

They feel that Discovery Park is helpful in giving PR support to those hoping to raise capital. The facility enhances the company's image. But they feel the facility could function better if it had been designed to accommodate specific research activities. It should have built or leased buildings for different entry research so that applied research could be handled in one building and software research in another. One facility cannot accommodate all physical requirements. Pulp and paper and mining research cannot be done in such a "pretty" building as Discovery Park. They feel that the incubator program is a good way for the government to invest in R&D firms by providing such facilities. They would recommend Discovery Park to other entrepreneurs.

Tenant Three - Discovery Park

Nature of the enterprise:

The company is in the process of developing a data communication wide area network for the country. Its is a partnership which is about to do a reverse takeover of a public company (having a public company buy them and then they will take over the company.)

Previous business experience:

Both the partners were previously self employed, one as an electronics consultant and the other as a data communications consultant. They developed the idea for the

company five years ago.

Reasons for entering the incubator:

The partners knew tenants in Discovery Park and they thought they could benefit from being with other entrepreneurs. They also felt that the Park provided good exposure for the company. Although they could have rented for less elsewhere, the flexibility of the leases was important. Principally they wanted their investors to see them in a respectable place. If they leave the incubator they would want at least as good an image somewhere else.

Progress of the enterprise:

They entered the incubator two years ago. Prior to that they spent three years building the prototype and raising the funding. They plan to finish the development of the product and hope to be profitable this year. The staff has not expanded since entering the incubator beyond the two working partners and other limited partners. They are opening up an office in downtown Vancouver, but they will stay at the Park for a couple of more years because of image. The company is still very tenuous. They know there is a market and they know that the product works but it will take another \$100,000 to finish the product.

Financing of the enterprise:

They have invested \$30,000 in the company and used their consulting contracts to finance the development of their product. Following several years of application and review the Discovery Foundation offered \$68,000 in funding. They decided not to take it because it was too expensive - the Foundation wanted too large a share of the company for the investment. They have received funds from private investors but not from venture capitalists. One partner has refinanced his home and both have put all their resources into the company. They have had to drop the technical development for months at a time because they could not afford to do it. Few if any government programs have been helpful in their development. They are happy to pay back any loans and they are not seeking grants.

Evaluation of the incubator program:

They feel that Discovery Park is not an incubator but rather a luxury nest. There have been no shared services and no mentoring from the Park and only one session from the innovation office. The one session was very helpful and resulted in a new partner. They could use more advice and mentoring. Investors are impressed when they come to Discovery park and the incubator manager is always looking for new investors in the firm. They do not feel that the company has developed faster as a result of the incubator but the contacts have helped.

Tenant Four - Calgary Advanced Technology Centre**Nature of the enterprise:**

The company is a computer graphics modeling and consulting firm. He is working to develop a new algorithm process for data compression. He is the sole owner of the company.

Previous business experience:

He worked with computers in a federal government agency. The owner realized that if he developed his new algorithm process while working for the government the government would own it so he decided to pursue the research on his own. He did not have any previous business experience.

Reasons for entering the incubator:

He had a friend at the ARC who showed him the Calgary incubator. He applied for admission and moved to Calgary. He was attracted to the incubator because it was located in the same building as the ARC and because the incubator offered reasonably priced space with shared services that kept the overhead down.

Progress of the enterprise:

He started the company when he entered the incubator six months ago. He had the business idea for three years and amassed equipment in the interim. He sees this early stage as a learning opportunity since he has not had previous business experience. He is doing more business than he anticipated thanks to his proximity to other high tech companies and the contacts through ARC. He does contract work for the research council and has had access to their research facilities and networks. He contracts work out but does not have any employees. The consulting pays the bills for the R&D. The R&D will create the new business he wishes to start. His goal is to apply more time and equipment to the R&D aspect of his business so that he can develop a finished product. He will stay in the incubator at least another two years while he completes his preliminary research. If his research is successful then he will be able to hire about ten people and expand his company.

Financing of the enterprise:

He has invested about \$150,000 of his own money in the company, and has no debt or investors. He has a grant for computer time on the super computer for his research. He will need a couple of million dollars in investment. Once preliminary research results are in, he will use it to attract investors but he is not ready to seek investors until he has initial results. He would consider a partner if the right person came along.

Evaluation of the incubator:

He finds the exposure of being in the incubator is an asset. The name of the incubator is an asset and is a good selling point. He has found very little synergy among the tenants in the incubator. The incubator manager runs monthly seminars on business issues with outside speakers. It is a relaxing and helpful environment and he finds it reassuring to know support is available. When he is ready to launch his business he will make more use of the mentoring services.

Tenant Five - Calgary Advanced Technology Centre**Nature of the enterprise:**

The tenants's company provides computer consulting in the area of software development. It specializes in technical graphics applications on personal computers. He does R&D for his clients and establishes prototypes for them. Consulting takes away time from the R&D for his own products. The company is a corporation owned jointly by the tenant and his brother. The partner is not active in the business.

Previous business experience:

While he has had a long term interest in computer programming, he has no previous business experience. He has a degree in experimental psychology which has helped in the human factors of computer software design. Rather than go to graduate school, he took engineering electronics and went to work for Digital.

Reasons for entering the incubator:

He is a member of the Calgary Council for Advanced Technology and had heard about the plans to start an incubator. He joined it six months after it opened. Entering the incubator was a commitment to expand the business he had been operating part time. The incubator offered exposure and provided contacts with business specialists.

Progress of the enterprise:

He established the business two years ago and operated out of his home on a part time basis. He started the company to learn about business management. He entered the incubator eight months ago. The company has developed faster since entering the incubator through encouragement from the management. He has gained confidence and exposure and they have encouraged him to undertake some marketing of his service.

He does not have any employees at the present time but plans to hire when he has secured a larger contract. In five years he would like to have a six man company and plans to have about six products for sale. He sees leaving the incubator in about a year, after establishing a couple of major contracts and some products that he can market.

Financing of the enterprise:

The contract work finances the R&D component of the business. He has a \$15,000 shareholder loan from his brother. He is in the process of learning about the investment process as well as government grant and loan programs, but he is very tentative about this area at the present time.

Evaluation of the incubator program:

The access to the management information, the exposure to interested business people and the motivation is better than working alone. He feels the emotional support of the incubator is critical when you are trying to earn money to invest in your research and buying equipment. Seeing other people in the same situation or being encouraged by the staff is very important. However he feels there is added pressure. If he was in his basement no one would notice if he failed. Any success will be a lot more solid as a result of the incubator's help in planning his business. Corporate identity will encourage him to leave. He feels a stigma attached to being in an incubator. He says some people consider it glamorous and others see it as a form of welfare. He plans to stay a year at best and two years at worst.

Tenant Six - Winnipeg Business Development Centre

Nature of the enterprise:

The company makes wiring harnesses and cable assembly for farm equipment, boats, aerospace and telecommunications applications. There is about \$2 million worth of business being done in Winnipeg. It is either coming in from the U.S. or being done locally. This company was the first firm established in Winnipeg to serve the region. The company is organized as a cooperative. Presently there are four members each of whom owns a share of the business.

Previous business experience:

One of the members had a maintenance and electronics design background. Another was a carpenter. He had worked in a lot of different companies and has a degree in business administration. He wanted to start his own company and put some of his employee management theories into practice.

Reasons for entering the incubator:

Had some friends who worked in a large Winnipeg electronics company. The company was receiving harnesses from the U.S. and they were looking for a new supplier. The one firm does about a million dollars in harness purchasing a year. While doing a feasibility study they came across a major contract and needed a place to set up. They were aware of the incubator program and knew there was space available. It was the cheapest space available and easily accessed.

Progress of the enterprise:

The basic goal of the company is to stay alive and the objective is job creation and expansion. Because the original contract did not materialize, they are about 25% below the sales they had expected. They are a marginal operation and so they will remain in the incubator until they achieve viability, but they know the incubator will demand they leave after two years.

Financing of the enterprise:

They have had to invest relatively little in the company. They have put in \$15,000 through a payroll deduction program, but they have principally relied on the provincial government investment programs. The TCP has financed the purchase of tools and paid a percentage of the marketing costs. They cannot seek private investment because they are a cooperative.

Evaluation of the incubator program:

Although some people see the incubator as a collection of small, struggling fragile companies, they support the incubator idea. They have found that rents and overheads are cheap, money is available, and a lot of headaches in establishing a business are alleviated. The business library has been a big help. The mentoring service has not been a major factor although they think the annual review process is important.

Tenant Seven - Winnipeg Business Development Centre**Nature of the enterprise:**

The company develops electrical engineering software. It has a computer aided electrical engineering package in the market. There are two partners and they both actively work in the business.

Previous business experience:

This is the first company for both the partners. They were at university prior to the business start-up and developed the product during their graduate studies. The idea of starting a business was appealing, they felt they were young enough to take a risk, and the product was worth the gamble.

Reasons for entering the incubator:

They saw an advertisement in the newspaper for the incubator and they applied. They received help to put together a business plan. They sought the lower rent and shared services. They wanted the mentoring but did not get much from the program.

Progress of the enterprise:

The first year of operation was spent working from their homes commercializing their research into a marketable product. They came into the incubator in July of 1985 and began marketing the product. The plan was to sell six packages in 1986, but they have already sold five. They think they can sell another six to ten packages this year. Consequently, they have hired two summer students and will hire a full time programmer in the fall, confident the company will survive. They can see a team of fifteen people looking after one product line and they plan to develop more products. They feel the company would not have developed as quickly or been as organized without the incubator help. They will leave the incubator in a year to 18 months. They hope to be self-supporting by then.

Financing of the enterprise:

They have invested \$75-100,00 from their own savings. At the time they entered the incubator they received an IRAP grant and they received funding through the TCP for marketing and promotion. They are not sure about seeking private investment. They are very tentative and have not been pointed in that direction. They know they will need money for expansion but do not know where the money will come from. When they are ready they will probably apply to the provincial government venture capital program.

Evaluation of the incubator program:

The funding and subsidy has been important to the company. The provision of office equipment was important because they couldn't have afforded it at the time. They were able to invest in computer equipment instead. The business advice and mentoring has been and will be important. They think the annual reviews are helpful but the people are not that familiar with the nature of their business. They are happy with the program and feel it has been helpful.

Tenant Eight - Chaleur Industrial Park**Nature of the enterprise:**

The company manufactures hydraulic hoses. They buy hoses, fittings, and adapters, assembling the hoses for wood contractors, fishermen and heavy equipment users. The interviewee is the sole owner of the company.

Previous business experience:

He owned an air charter service and flight school for 10 years and sold the business in 1979. He saw an opportunity in the hydraulics field but had no previous experience in this area.

Reasons for entering the incubator:

The reason for entering the incubator was that the space was available and it was a good location. He was not interested in the mentoring aspect of the incubator.

Progress of the enterprise:

He started the business in October, 1985, at the time he entered the incubator. The company is small, with only two people, but they have marketed aggressively. A major company has opened in direct competition in the same area and although he will continue to compete he is also looking at diversifying his products.

Financing the enterprise:

He put \$40,000 of his own money into the business and received a government loan of \$18,000. When he expands he will use his own money.

Evaluation of the enterprise:

He was simply accessing available space in a good location and was not interested in the incubator program.

Tenant Nine - Charlottetown Industrial Mall**Nature of the enterprise:**

The company is a small manufacturer of woolen knitwear, mainly sweaters. It is owned by a man in Halifax and managed on site by the general manager. He bought the business after it was in the incubator.

Previous business experience:

The owner lives in Halifax and owns other businesses besides the one in the Charlottetown incubator.

Reasons for entering the incubator:

The original owner came to the incubator because of the low rents and the subsidies. They have found the management support and services available in the industrial park from the PEI Development Agency an important factor. The accountant for the incubator did the accounts until 3 or 4 years ago.

Progress of the enterprise:

The company operated for a few months in an old warehouse before entering the incubator. The business has been in the incubator since late 1977. The company had four people working in the business when it entered the incubator. There are now 15 people employed by the business. They plan to employ four more people but they will use the equipment in their homes and be paid on a per piece basis. They expect to increase sales by 50% this year. They turn out a high quality product and they market across eastern and central Canada. They have considered leaving the incubator but have not found suitable commercial real estate.

Financing the enterprise:

The new owner took over the company and invested money in the enterprise. They have not been successful in securing bank loans and have not sought government grants.

Evaluation of the incubator program:

They feel that the company would not have succeeded without the help of the incubator. They say that many of the companies would not have made it without the assistance of the Development Agency. They do not distinguish between the

industrial park and the actual incubator in terms of assistance to small businesses.

Tenant Ten - Charlottetown Industrial Mall

Nature of the enterprise:

The company does custom embroidery on sport jackets and makes crests. He is the sole owner of the company. .

Previous business experience:

He had previously owned a retail furniture business and after selling it he worked for someone else for a while but he found that he wanted to run his own business.

Reasons for entering the incubator:

New businesses have rent free for a year. The incubator also provided mentoring for new business owners through the Development Agency in the park.

Progress of the enterprise:

He spent a year surveying the market and gathering equipment before beginning the business in October, 1984. He had to train people to use the equipment and spent the first four months on training. He gradually got some product to the market and because he made sure that they delivered good quality, the product sold itself. He began with four people and they now have five. The company is planning to embark on another training program with the help of government training schemes. He hopes to expand the operation soon and add 3 or 4 new people. The company met its target of \$100,000 in sales in the first year. In the second year they are at 67% of the previous year's sales in the first 5 months of this year. He does not plan to leave the incubator before the five year tenancy is over.

Financing the enterprise:

He has invested about \$140,000 to start the business. This has been raised from personal funds and grants from DRIE and the PEI Development Agency. About 70% of the investment is his own and about 30% is through government grants. He is hoping the Agency will help fund his planned expansion. He has not sought private investment and does not want others involved in his business.

Evaluation of the incubator program:

The incubator has given him peace of mind knowing that the Agency was there to help him. He feels he has received good advice at the right price.

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