Needs Assessment
for a Yukon
Technology Incubator/Accelerator

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Executive Summary

Overview of incubators

- There are many examples of small incubators in rural or small areas across North America and Australia. No specific measures of their success were found.

- The literature claims that success of incubators depends on meeting best practice. Common themes in the best practice literature include:
  - focus on growing the clients,
  - a proper feasibility study that creates financial self-sustainability,
  - a focus on client support, not building operation,
  - frequent evaluations, and
  - too much focus on bricks and mortar and not enough on clients can lead to failure.

- No strict "incubators without walls" were found — they were either attached to educational institutions or to existing incubators with walls. These offer incubator-type services to non-tenants.

Yukon offerings

A number of scattered organizations already offer some incubator-type services including:

- Däna Näye Ventures
- Entrepreneurship Centre
- IRAP/Canada Technology Network
- Canada-Yukon Business Service Centre
- YTIC
- Association Franco-Yukonnaise (AFY)

Needs of Yukon technology start-ups

- Genuine one-stop shop for accessing information & services
- Help with marketing especially, business planning, and patent and copyright issues
- "Free" money (venture capital and government assistance)
- Mentoring and networking
- Access to R&D facilities & shops (i.e. Yukon College)

Recommendations

1. To promote co-ordination and efficient delivery, the Canada Yukon Business Services Centre, the Entrepreneurship Centre, YTIC, IRAP and Däna Näye should be in the same premises.
2. Any incubator initiative cannot be limited to high technology enterprises.
3. YTIC should work with Yukon College to make lab and workshop facilities available to screened entrepreneurs.
4. Organisations should improve services offered, especially in marketing advice, mentorship, and networking opportunities.

Needs Assessment for a Yukon Technology Incubator/Accelerator

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1.0 Introduction

Over the past 15 years, an increasing number of economists — led by Michael Porter and Paul Krugman — have argued that one of the core reasons why one nation or region is more economically successful than another is the increased production of innovations and new technologies, products, and services. A national or regional system of innovation, partially planned and wholly encouraged by governments and industry, will do much to increase a nation's competitiveness and hence economic success. The incubation of technology-based and innovative new firms is an important component in the development of such a system of innovation — either nationally or regionally.

The use of business incubators in a variety of forms has been common in the developed world for decades. Business incubators focussing on high-tech clients have become increasingly common over the past decade.

This study is commissioned by the Yukon Technology Innovation Centre to take a preliminary look at the need for technology incubator services in the Yukon. There is a plethora of programs, courses, and sources of funding for business start-ups in general and technology-based start-ups in particular, in the Yukon. The collective experience derived from these initiatives suggested that some form of incubator should be considered.

The goals of this study are to:

1. Identify the key dimensions of technology incubators instituted in other jurisdictions.
2. Analyse the issue of scale, i.e. how factors and dimensions of incubation in larger centres might affect the potential of an incubator in the Yukon.
3. Evaluate the various incubator models and the factors that make for success.
4. Describe the current Yukon situation for incubation type services — what resources are available and who provides them.
5. Suggest what form a Yukon technology incubator could take and what role(s) it would best perform.

2.0 Types of Incubators & Services Offered

2.1. What is a technology incubator?

A technology incubator is a facility that assists technology-based companies during their start-up and fledgling phases. Incubators usually provide some combination of shared facilities (office space and services), business support and advice (everything from legal advice to marketing), and sometimes venture capital or access to financing, for their clients. The theory behind technology incubators is that they will leverage entrepreneurial talent by linking it with other talent, technology, business know-how and financial capital to speed the commercialisation of business ideas.

It appears that a large proportion of incubators are "technology" incubators in the sense that most seem to cater to small firms involved in different technologies. In a 1995 study, 42% of US incubators catered to mixed uses (including technology) and another 30% catered exclusively to technology firms (OECD, 1999, p.152). Kumar & Kumar (1997) found that 29% of Canadian incubators were technology incubators.

Technology incubators can come in many forms, but have in common that they are business incubators first and technology incubators second. The reason is that no matter how brilliant the idea or the technical know-how, commercial success requires business know-how, marketing, and solid management in order to secure financing. The factors that make a successful incubator — one whose clients are successful — are discussed in more detail in section 3 below, but it is generally recognised that start-ups assisted by an incubator have a much higher survival rate than the average for new businesses.

It should be noted that a start-up firm needs a certain amount of cash flow (either start-up capital or ongoing sales) to be able to afford incubator services and fees. Also, most incubators require at least a draft business plan before accepting clients. Thus, many incubators cater to firms or individuals that are actually starting operations and have some cash flow, rather than those that are at the idea or research stages. Exceptions to this rule are incubators based at post-secondary education institutions, which typically accept participants early in the business planning phase. The institution then offers some form of business training aimed at completing the plan and eventually preparing the fledgling for launch.

2.2. Incubator typology & examples

2.2.1. Non-profit incubators

This is perhaps the most common type of incubator and is used as an economic development tool across North America, Europe, and Australia (51% of all incubators are in North America). Sponsors vary from national or local government economic development agencies to local organizations concerned with economic development such as Chambers of Commerce. The construction cost of the facilities is subsidised or totally funded by the government, and the operations may also be continue to be subsidised, although most of them are expected to pay their own way through rents or fees paid by tenants and/or users of the incubator services. In smaller centres, incubators often have "anchor" tenants such as business development offices, lawyers, accountants or business consultants.

2.2.2. Private sector

Private sector for profit incubators fall into two categories: stand-alone companies, or quasi-independent operations within a large, usually high-tech, firm. The private incubators embedded in a larger firm have much more in common with a non-profit incubator, such as those attached to a university, than to a stand-alone incubator. The payoff for running them is seen as long-term and hard to measure. The parent firm needs to be prepared to be patient in getting returns from incubating and eventually spinning off in-house ideas. The parent firm also tends to subsidise the operations of such in-house incubators. Stand-alone incubators, on the other hand, must make money and do so fairly quickly unless their founders have very deep pockets.

Private sector incubators — and particularly stand-alones — make their money either through the rents and fees they charge or by providing venture capital or a combination of the two. Although charging market rents for shared offices is common in all types of incubators, market rents alone will not cover all the incubator's costs, let alone allow for a profit. Hence, private incubators have tended to require that the clients turn over a share — and sometimes a substantial share — of the firm whether the incubator provides venture capital or not.

Stand-alone, for-profit business incubators specialising in high tech companies were very rare until the Internet boom of the late 1990s. The first Internet-only incubator was begun in Los Angeles in 1996 but by 1999 they were springing up everywhere. Between August 1999 and August 2000, more than 300 new private Internet incubators were started — two thirds of them in the United States. Most of these new incubators were simply taking advantage of the speculative bubble and many were purely speculative themselves — with little ability to properly assist their start-up clients. Indeed, it was said that most of the incubators needed incubation themselves. Not surprisingly, many of these incubators have closed up shop now that the high tech equities boom has gone bust.

2.2.3. University based

Universities have traditionally been the home of general research, research that would then be in the public domain and would form the basis for much of the commercially applied research and development done in the private sector. Although universities would occasionally spin off a successful commercial application of its research, there was little focus on the potential of incubating firms that would commercially apply the university's research. This has been particularly true in Canada; in the U.S. university-based incubation has always been more common, especially in military and weapons research. The situation in Canada, however, is changing. UBC is now recognized as being particularly effective in parlaying its $140 million annual research budget into commercial and industrial applications. SFU is pursuing similar initiatives, and several regional colleges have started "venture centres" aimed at building partnerships and collaborations with industry. University College of the Cariboo, for example, has a program that researches and develops value-added products for the forestry industry.

University based incubators can be either distinct entities attached to the university that benefit from its proximity and expertise network or they can be less formalised entities that concentrate on incubating ideas generated internally. The first model might well have a university lab or other body as a permanent anchor tenant, but which recruits outside client start-ups to incubate. The second model might, for example, allow a professor to use his or her existing offices and labs and perhaps graduate students to pursue the commercialisation of a product, with the university sharing in any success of that commercialisation. A key component of most university incubators is some form of technical or other research capability not available in the private sector.

2.2.4. Laboratories

Incubators that are attached to, or part of, government and para-government research laboratories are common in both Canada and the United States. Publicly funded bodies of all kinds are under increasing pressure to find independent sources of funding and to justify the funding that they do receive. The successful commercialisation of innovative products and services developed by these labs are an obvious means of doing so. These incubators tend to be similar to the university-based model. Examples include the Environmental Technology Centre of Environment Canada and CANAMET.

2.2.5. Technology Corporation

In this model, a large corporation creates an in-house incubator. Usually such in-house incubators exist in order to capitalise on the ideas and energy of employees who cannot push ahead with their ideas due to concerns over compromising existing work or rigid management structures. Employees with ideas that are judged to have potential are taken into the incubator to develop those ideas and they are often able to recruit a small team from the mother firm as well. An additional benefit is the access to at least some of the research resources of the large company. The mother firm stands to benefit over the long term as it eventually either spins off the incubated firms (and naturally, owning part of each) or takes a developed idea back in-house.

2.2.6. "Without walls"

Incubators without walls or virtual incubators are a relatively recent phenomenon. Some of the models discussed above have or can have a virtual component — where most of the incubator's clients are in the shared space provided, but some clients use all the other services provided but do not need or want the shared space. The increased ability to send and receive documents and drawings via email has made this option an increasingly attractive means of offering incubation services. The OECD argues that its cost effectiveness will ensure that it is widely applied wherever incubation services are wanted.

One version of the incubator without walls concept has a university's business school students act as facilitators and advisors to small businesses as part of their courses. This is done in San Jose and Calgary, for example. One of the problems with this particular approach is that it is not client driven — it is the students who find the clients and offer the assistance they feel is most needed. And when the course ends so does the assistance.

2.3. Incubator Services

Incubators offer a number of services to their tenants or clients. These will be subsumed under seven headings in this report.

1. Shared space
2. R&D facilities & equipment
3. Mentoring
4. Networking
5. Financing
6. Business advice
7. Business services

In 1998, the US-based National Business Incubator Association conducted a survey of 597 North American incubators on its database. The following table presents the results from that survey. Note that the response rate was 67 percent.

PERCENT OF INCUBATORS OFFERING VARIOUS SERVICES		
Business Assistance Services	**# of incubators offering**	**% of responding incubators that offer**
Help with Business Basics	249	96
Marketing Assistance	232	89
Accounting/Financial Management	200	77
General Legal Services	122	47
Intellectual Property Management	97	37
Help with Access to Commercial Loans/Loan Funds/Loan Guarantee Programs	201	77
Management Team Development	114	44
Shadow Boards/Mentoring Programs	109	42
Investor/Strategic Partner Linkages	151	58
Affiliate Programs	163	63
New Product Assessment	106	41
Management Information Systems	66	25
Manufacturing Practices Assistance	97	37
Product Design Assistance	59	23
Networking Activities	224	86
Technology Commercialisation	105	40
Links to Higher Education Institute	197	76
Help with Regulatory Compliance	80	31
International Trade Assistance	110	42
Federal Contract Procurement Assistance	113	43
Comprehensive Business Training Program	127	49
General Office Services		
Conference Room	238	92
Custom Equipment/Custom Leasing	116	45
Shared Administrative Services	229	88
Video Conferencing	50	19
Telephone System/Phone Answering	170	65
Internet Access	162	62
Computer Labs	103	40

Source: National Business Incubator Association
www.nbia.org/info/fact_sheet.html

2.3.1. Shared space

For many years, shared space was a fundamental part of the definition of a business incubator. Although the idea of "incubators without walls" is gaining considerable credence in the literature, the only incubators we have found that are completely without walls are a number of programs offered by universities/colleges. The physical proximity of the start-up client to both the staff of the incubator and to each other is considered to increase the likelihood of success in launching the fledgling client companies. Shared space allows the incubator staff to closely monitor progress and to step in with advice and direction when needed.

Shared space need not be limited to office space. Some incubators, especially those targeted to different industries (manufacturing, biotechnology, food production, arts & crafts) also offer laboratories, light manufacturing space, warehousing, and loading docks.

The standard practice of shared space incubators is to charge market or near-market rents (sometimes slightly higher than market) for the space client companies occupy. While this may appear counter-intuitive to some — after all, start-ups are usually cash-starved — a subsidised rent will almost inevitably cause problems further along in the process. It is very difficult to wean new firms off the below market rent. Sometimes, incubators become filled with what are called "lifestyle" companies where one individual or a small number of partners stay on without any intention of growing and moving out. One solution used in the UK and emulated by some in the US is to sell the incubator space to real estate operators and use the proceeds to buy or build new space.

The experience of BC incubators is that shared office space is not a critical service to "venturepreneurs," particularly after the planning phase. Securing adequate space should be part of the business launch process. Incubator managers in BC were unanimous in their view that shared space — at any price — is difficult to justify and onerous to manage in small incubator settings. None of the smaller "venture centres" in BC offer shared office or other space, and have no intention of doing so in future. A valued service, on the other hand, is a desk, phone, copier, meeting space and so on available for use during the planning and early launch phases. Such facilities encourage cross-fertilization and networking, and provide a businesslike appearance to those entrepreneurs who may be working out of their homes or in substandard space.

2.3.2. R&D facilities & equipment

Some facilities — particularly those connected with universities and research labs — provide their clients with access to research facilities and equipment. This ranges from specialised electronic equipment to bio-medical facilities.

2.3.3. Mentoring

Mentoring, and especially mentoring in business management needs of clients, is considered one of the most important tasks an incubator performs. Client firms almost always lack management, marketing and other business expertise — their strengths tend to lie in their inventiveness and technical expertise. This syndrome can be particularly pronounced among "techies," who may become so preoccupied with technical issues that they overlook or ignore basic business concepts. Mentoring becomes especially important during the launch phase, which typically lasts 18 months to five years. It is during this phase that the business is most vulnerable, unexpected challenges occur, and prompt corrections are needed. Experienced advice and coaching are invaluable during this period.

2.3.4. Networking

Networking is another key service that an incubator offers its clients. Whether in a shared space or in an incubator without walls, the contacts the incubator has with expertise of all kinds that it does not have in-house are offered to the client. This enhanced ability to network is of great benefit to start-ups. A further opportunity to network occurs in shared facility incubators among the clients themselves. That interaction also tends to spur the start-ups as they learn from or even compete with the others. However, there is often some fear from potential clients that others in the incubator might steal their ideas.

2.3.5. Financing

Some incubators operate on the venture capital model — they not only provide space and business mentoring and services, but venture capital to their clients as well. If a venture capital model of incubator is to become financially self-sustaining, it must be very well financed up-front because the pay-off from most ventures is five to ten years (if at all). In most cases, however, incubators help identify potential sources of financing, and provide advice and/or training designed to make a business idea attractive to venture capitalists or lending institutions.

2.3.6. Business advice

One of the basic services offered by incubators is business advice. Start-up companies tend to be long on ideas, technical expertise and entrepreneurial drive but short on business expertise. Business advice includes help with preparation of business plans, market studies and marketing plans, as well as facilitating access to legal and accounting services. Such advice takes many forms, ranging from informal talks instigated by the entrepreneur to structured training sessions. The Venture Development Centre at BCIT, for example, offers Entrepreneurial Skills Training through (1) a full-time, three-month intensive program; (2) part-time (night school); (3) contract programs for EI recipients and other groups; and (4) in the near future, on-line training.

2.3.7. Business services

Business support services are another of the basic services offered by shared space incubators. Along with the office or shared space for clients come shared services such as a receptionist, photocopiers, a phone system, fax, Internet access, etc. The following is a list of business services potentially offered by incubators:

- Conference rooms
- Office furnishings
- Internet access
- Secretarial services
- Telephone answering service
- Fax machine
- Copier
- Receptionist
- Audio-Visual equipment
- Mailing and packaging
- Janitorial services

3.0 Success Factors

Measuring the success of incubators has proved a difficult task. One obvious measure of success is survival rates of incubator clients compared to new businesses in general. However, given the fairly rigorous selection process in most incubators, it is likely that many of incubator client firms would have survived anyway. Another measure of success often cited is the number of jobs created. However, once again, it is not clear that the jobs created by companies that use incubators would not have been created otherwise. The difficulty stems from the very nature of incubators: (1) the costs and benefits of the wide range of services are intangible; (2) different goals and different priorities among incubators makes it impossible to obtain a single measure of success, and (3) it takes many years before the effect of incubation make themselves felt. (Kumar & Kumar)

Although an objective, empirical means of measuring what constitutes success for incubators is lacking, this has not prevented their continued popularity and proliferation both in the private and the public sectors. They share their lack of empirical measures of success with almost every other form of economic development program, for example, and even with such things as societal investment in extensive specialised education. It appears that incubators make intuitive sense to many, if not most, in the business and public sector worlds. Thus much of the literature on incubation takes its value somewhat for granted (provided it is done efficiently and effectively) and concentrates on what the best practices are.

3.1. Best practice

Most of the literature tries to identify the "best practices" that will help an incubator survive and perhaps prosper. The common themes that emerge from the descriptions of best practices are: a focus on growing the clients, a proper feasibility study that creates financial self-sustainability, a focus on client support — not building the operation — and frequent evaluations. Failure is often attributed to excessive focus on bricks and mortar and not enough on clients. Survival of the incubator is thus considered a more important measure — or at least a more usable one — than success of the business ventures or entrepreneurs.

Most of the best practice literature seems to stem from the Rice & Matthews manual. Rice and Matthews identify the three core principles of successful business incubation as:

1. *Focus the energy and resources of the incubator on developing companies.*
2. *Manage the incubator as a business, i.e., minimise the resources spent on overhead and develop a self-sustaining, efficient business operation.*
3. *Develop a sophisticated array of services and programs that can be targeted to companies depending on their needs and stage of development.*

Rice et al. follow up on the core principles with the following ten best practices of business incubation:

- *Commit to the core principles as the first step.*
- *Decide whether the planned incubator is feasible — or not.*
- *Structure the incubator to be financially self-sustainable.*
- *Structure the organisation to minimise governance and maximise assistance to client companies.*
- *Engage stakeholders to help companies and support the incubator.*
- *Recruit staff who will mange the incubator like a business and a president who has the capacity to help companies grow.*

- *Choose a building that will enable the incubator to generate sufficient revenue.*
- *Recruit and select client companies that provide the revenue required in the financial model and have the potential to grow and create jobs.*
- *Customise the delivery of assistance and address the development needs of each company.*
- *Engage in continual evaluation and improvement of the incubator.*

Similarly, the Australian best practice experience is summarized in the OECD report as:

Incubator set-up

1. *Focus the incubator program on nurturing and growing businesses*
2. *Ensure the needs of the incubator program dictate building requirements*
3. *Structure the incubator program to become financially self-sustainable*

Incubator management

4. *Use a planned and structured approach to develop the incubator program*
5. *Recruit Staff who fit the incubator program and are able to help businesses grow*
6. *Understand the needs of the tenant businesses*

Incubator Services

7. *Focus the incubator's space, business services and advice on the needs of the tenant businesses*
8. *Support the incubator with a wide network of business support services*

Incubator performance

9. *Regularly evaluate and improve the incubator program's performance*

In Canada, Kumar & Kumar identified the following as best practice for stand-alone incubators:

1. *The incubator has a minimum of 30,000 square feet of rental space or at least with room to expand in order to be able to generate enough income to become self-sustainable. The space is flexible with movable walls to manage tenants' variable needs.*
2. *There are at least 10 in-residence members for generating enough networking activity and sustaining the variety of shared services and support operations.*
3. *The incubator is located either near a university or near a research laboratory so that tenants have easy access to technical facilities. Incubators located near a university get added advantage of access to students, faculty members, research labs and libraries. Similarly, proximity to a federal lab provides access to scientists, engineers and state-of-the-art equipment/testing facilities. In both cases "image" is an added bonus.*
4. *The incubator is situated in a high-tech, top quality building, preferably with a telecommunications infrastructure to electronically connect companies with each other and the outside world.*
5. *The incubator has a practice of enrolling non-resident clients who would get all services provided to resident clients except a lab or office space.*
6. *A selection committee is set up to pre-screen the clients. The selection criteria include: i) the homology between the incubator services offered and the clients' needs; ii) a business plan that covers the key focus, market information on competitors and customers, costs, pricing and cash flow forecasts; iii) technology sophistication; iv) potential for growth and job creation; v) R&D intensity; vi) occupational mix of the management team; vii) practical experience; and viii) personal commitment.*

7. *An advisory committee, consisting of 5 or 6 experts from different business areas has been established for each tenant company to assist in developing business plan, in obtaining funding, and for marketing and legal issues.*
8. *The incubator has created an opportunity for its tenants to network among themselves, with the industry, and with contacts of the advisory/mentor group members.*
9. *The funding and support from private, public or government organizations, specifically to pay off the heavy costs associated with the real estate component is already in place.*
10. *The manager is a highly motivated visionary individual whose goal is to see their tenant firms succeed.*
11. *Boards of directors are generally responsible for policy development and not day-to-day operations, which are left to the incubator manager. Bureaucracy, in case of government-sponsored incubators, is kept at a minimum.*
12. *The incubator focuses more on support programs than on space or physical infrastructure.*

3.2. Scale factors

As discussed above, the literature on best practice advocates a minimum size of 30,000 ft^2 (2,800m^2) for an incubator. Such a building would cost about $3 million to build in the Yukon.

Most incubators, however, are smaller than the supposed best practice. While the average incubator in North America has 36,000ft^2 of rental space, the median is less than half as large at 16,000ft^2. Similarly, the average number of tenants is 20 but the median is12 tenants. (www.NBIA.org).

In Australia, 45% of incubators are between 100 and 500m^2 (1,100-5,400 ft^2). In non-urban "regional towns" mean rental space is under 900 m^2 (1,000 ft^2). (OECD)

Incubators need not be in major urban centres. The NBIA found that 36% of incubators in North America were in "rural" areas. In Australia, 29% are in regional towns as opposed to cities. (OECD)

A one stop-shop is generally advocated, especially for small areas. The OECD report states:

> It is beneficial for both small and large incubators to amalgamate with other organisations involved in enterprise development or local economic development. From a financial perspective there are cost savings, particularly in small areas where community resources are limited. Most importantly, the development of a "one-stop shop" for small business support and training can be particularly beneficial. (OECD, p.38)

3.3. The British Columbia Experience

There was strong consensus regarding key success factors among the managers of the small business incubators or "venture centres" we visited in BC. These managers are a knowledgeable group; all of them have extensive experience in the business development/incubator field, and all have advanced knowledge of managing technology. Their list of factors includes:

- An effective screening process for applicants. Procedures varied, but the essential component is an assessment of the applicant's "persistence and vigour" (P&V) quotient. On average, about 40% of applicants are accepted into these programs.

- Sound business planning. Without a thorough plan, the "venturepreneur" has not thought through his idea and the venture will not secure financing. This is true for any business venture, including technology-based ideas. The areas of greatest weakness are market planning and finance.
- Cross-fertilization of ideas. Technology businesses benefit from this area as much as anyone — and they benefit from exchanges with non-technical businesses. Isolating technology businesses does them a disservice because it reinforces their tendency to ignore basic business planning. Our contacts strongly advised against creating a "technology-only" centre for this reason.
- Follow-up mentoring during the launch phase. As discussed above, it is during the critical start-up period that mentoring and advice are most needed. Some entrepreneurs use this service for periods up to five years. An added benefit is that successful people then provide a valuable resource to the centre in terms of referrals, teaching, speaking and mentoring others.
- Business support services. As discussed above, providing office or other space is not a critical service and often represents more cost and aggravation than benefit. The services most valued are basic services (desk, phone, fax, copier, computer); a meeting room for getting together with clients, suppliers and the like; and "mixers" that provide ongoing opportunities for networking, learning and exploring ideas.
- Management dominated by private sector leadership. Even those incubators based at universities are relatively independent operations that do NOT take direction from either academic leaders or the public sector. Not only is the thinking on the part of these sources different from and inappropriate for "venturepreneurship," but leadership from academics or public servants often discourages private sector involvement and support.

The Venture Development Centre at BCIT has operated for 14 years, and currently enrols several hundred students in its various entrepreneurial skills training programs. The full-time program features 80 students in each of two or three courses per year. VDC's experience is that 65% of these students eventually operate successful businesses, another 20% are in launch mode, and about 15% walk away from their venture for various reasons. Even this 15%, however, completes the training program because of the learning value it provides.

4.0 Current Yukon Situation

This section reviews the current Yukon situation with respect of each of the services that could be part of a tech incubator. The following organizations offer incubator-related services.

- Däna Näye Ventures
- Entrepreneurship Centre
- IRAP/Canada Technology Network
- Canada-Yukon Business Service Centre
- YTIC
- Association Franco-Yukonnaise (AFY)

4.1. Shared Space

There does not appear to be any facility in Whitehorse that provides shared space for business start-ups or fledglings. The Business Service Centre does provide access to computers on a drop in basis, as do the Entrepreneurship Centre and the Association Franco-Yukonnaise.

4.2. R&D facilities & equipment

In the Yukon, access by innovators to facilities and equipment is very limited. Yukon College has a range of facilities that are open to its students but not to others. A number of entrepreneurs look with envy at the metalworking, woodworking, electronic and multimedia workshops at the College which are currently only used for instructional purposes.

4.3. Communications, Internet & research

There is some access to communications and Internet facilities for entrepreneurs and innovators in the Yukon. The Business Service Centre, Entrepreneurship Centre and the AFY all offer public access to Internet services.

4.4. Mentoring

Däna Näye Ventures provides an informal mentorship service to graduates of its business planning course. The Entrepreneurship Centre maintains a list of mentors who are willing to work with EC students. Because these are primarily high school or slightly older students, the mentorship is often oriented to building a fundamental knowledge of business rather than counselling about strategy or start-up problems.

4.5. Networking

Most networking in the Yukon — as anywhere — is conducted informally and often by happenstance. The Canada Yukon Business Service Centre exists in part to facilitate contacts between businesses and between businesses and their customers. Likewise, one of the roles of the Chambers of Commerce is to provide some contacts and opportunities to network by business people.

4.6. Financing

Financing for start-ups is available in a variety of forms in Whitehorse. Both YTIC and IRAP provide seed money to help innovators get to the prototype phase in developing their ideas. Loans are available in a wide variety of forms.

Däna Näye offers

- micro loans of under $2,000
- commercial financing up to $500,000
- help in finding venture capital (for a fee).

BDC offers

- loans of $10,000 to $25,000 to start-up ventures
- up to $50,000 to existing companies
- top ups on existing lines of credit up to an additional $100,000
- “venture loan” and patient financing for innovative businesses, from $100,000 to $1 million

Most entrepreneurs, however, indicate a need for "free" money, venture capital or government grants. The Canada Yukon Business Service Centre, who informed us that most of their inquiries were about financing, confirmed this. There was concern over the apparent demise of the Tourism Investment Fund and the Trade and Investment Fund which provided funding for market research. The Yukon Technology Innovation Centre continues to offer product development grants.

4.7. Business advice

Extensive information on how to obtain business advice is available from the Business Services Centre library and web site, including a number of information guides regarding numerous aspects of business start-up. Däna Näye Ventures offers a variety of business advice and training courses, including business planning courses. Most of these courses are targeted at a fairly elementary level.

Courses Offered by Däna Näye Ventures

Management Workshops
- Board/Directors Roles & Responsibilities
- People Management
- Stress Management
- Time Management
- Personnel Policies Development
- Conflict Resolution & Negotiation
- Decision-Making Skills
- Planning & Organizing

Planning Workshops/Courses
- Pre-Business, Marketing Research
- Venture Feasibility Study
- Business Planning
- Marketing Strategy

Techniques Workshops
- Personal Selling/Presentation
- Trade Show

Finance Workshops
- Proposal Writing
- Contract Bidding
- Financial Management
- Taxes
- Bookkeeping
- Understanding Financial Statements
- Cost Controls
- Pricing
- Inventory Controls

Various Software Courses
- Database
- Word Processing
- Spreadsheet Development
- Computerized Accounting
- Web Page Development
- Internet/E-mail

4.8. Business services

Most business services are available commercially in Whitehorse, servicing the large number of small businesses. However, other than Internet access, these are not offered by the organizations offering incubator-type services.

5.0 Technology Incubator Needs in the Yukon

We interviewed seven technology-based Yukon businesses, ranging from established firms to fledgling pre-launch operations. The businesses all had applied to YTIC for product development funding. The needs analysis presented here is based mainly on these interviews.

5.1. Shared space & facilities

Based on our interviews, there appears to be little or no demand for a shared-space incubator model in the Yukon. None of those interviewed would have used or will use such space. The reasons vary from already having a full-time job and hence no way of using such space effectively, to fear that sharing space might lead to the piracy of ideas. This feedback correlates strongly with the advice we received from the managers of BC facilities.

5.2. R&D facilities & equipment

The possibility of using certain of the College's physical facilities for research and development was of considerable interest to some of those interviewed. A number of innovators saw considerable value in incubator clients having access to facilities at Yukon College, assuming the College could be brought in as a partner in an incubator. The multimedia lab, the electronics shop, and the metal shop (e.g. when building a prototype) were all mentioned.

5.3. Mentoring

Some of the innovators would like to see an incubator provide business and management mentoring. This would not be in the form of courses but rather a longer term effort tailored to the individual.

5.4. Networking

The inability to find good contacts in a wide variety of fields is one of the biggest stumbling blocks to the development of innovative products and services in the Yukon. Being able to connect with expertise in a variety of technical fields was important to some of the innovators. The biggest advantage of doing so through an incubator would be that the experts would not only have been vetted on their expertise, but also on their legitimacy. Especially in information technology it seems, there is considerable distrust and fear that someone may pirate one's idea.

Facilitator of seminars/workshops plus informal networking
Some of the innovators saw the need for seminars and workshops specifically geared to high-technology issues. Examples included: copyright and patent law for non-lawyers and software distribution options. Suggestions for informal networking included simply hosting a get-together once a month for all those involved in the incubator to simply bounce ideas around and share experiences.

5.5. Financing

For most interviewees, financing and especially access to "free" money was seen as a major issue. Interviewees referred to both government grants and venture capital. This was confirmed by the Business Service Centre. Our interviews tried to steer the discussion away from financing to what non-financial needs they had that an incubator could provide.

5.6. Business advice

The most common response by far to the question of what was needed to assist innovators in the Yukon was a true one-stop shop. There are many programs and services offered by both government and non-governmental organisations to innovators in the Yukon — a confusing and often overlapping array. If an incubator of whatever kind is set up in the territory, one of its most useful functions would be to know exactly what all the possibly helpful services are and how to access them. In simple terms it would be the incubator as facilitator.

Another very common response was that finding expert help on marketing was the biggest need of the innovators. Nearly all are at the stage of attempting to push their product from prototype to commercial product. Having access to professional marketing advice and assistance through an incubator would be a high priority.

Some mentioned needing help with patent and copyright laws.

There was little mention of need for assistance with business plans. Most felt they knew what they were doing or had hired the appropriate help.

5.7. Business services

The respondents did not see access to business services as a major issue.

6.0 Conclusions and Recommendations

6.1. Conclusion: Can small incubators work?

The qualified answer is yes. There are a large number of "rural" incubators in the North America, although we have not been able to find any information of their relative success rates. The Kelowna and Kamloops facilities have both developed slowly during their initial 5-8 years for a variety of reasons, some unrelated to the incubator concept. Kamloops ATC, for example, pursued its value-added wood products and similar programs rather than focus on the business incubator segment of the centre; those priorities are now changing to devote more energy to the incubator side. Despite their technical orientation, they will pursue a full business incubator rather than a technology centre.

6.2. What kind of incubation could work in the Yukon?

Could some form of technology incubator contribute to the success of business start-ups in the Yukon? Most of the needs identified in Section 5 above clearly overlap with both specific best practices identified in the literature and with the experience of the smaller BC incubators. These overlaps point to where an incubator would work and could contribute to successful start-ups. The overlaps are:

- The oft-repeated request for a true one-stop shop for business start-ups in the Yukon. A Yukon incubator should bring together the many local agencies that currently provide business services. As described above, there are many agencies but their programs tend to be quite independent from one another. In such a small community, these resources need to be rationalised to increase effectiveness and avoid overlap. A business incubator could be the mechanism to do so. This overlaps with the best practice recommendation of tying an incubator in very closely to agencies concerned with business development.
- The need for mentorship and networking. These are two of the basics that any incubator following the accepted best practices must offer and interviewees often mentioned the need for such programs in the Yukon.
- The need for solid business planning and advice, and particularly specialised marketing advice. As with the point above, offering needed advice is one the requirements of incubator best practices.
- The requests for access to the Yukon College R&D facilities. This request parallels the findings that many of the most successful (and longest operating) incubators are connected with post-secondary institutions where they have access to R&D facilities.

6.3. Recommendations

1. There is a clear and unquestioned need for a one-stop shop for business information, mentoring and access to program. It is therefore recommended that, if at all possible, the Business Services Centre, the Entrepreneurship Centre, YTIC, IRAP and Däna Näye should be in the same premises. These premises could serve as the focus for networking among business start-ups and would end the confusion many potential entrepreneurs feel when trying to obtain assistance and information. They might also offer some very basic shared business services for clients (e.g. meeting room, photocopying) as recommended by the BC incubator managers.

2. Any incubator initiative cannot be limited to high tech for two reasons: the Yukon market is far too small, and technology businesses need the cross-fertilisation that comes from working with ventures in other fields. The managers of BC incubators stressed the latter point as being particularly important. The literature as well as the interviews with incubators point out that techies in particular seem to need exposure to and training in business fundamentals.

3. YTIC should work with Yukon College to make lab and workshop facilities available to screened entrepreneurs.

4. The organisations involved in providing incubator-type services should develop facilitated mentoring and networking programs. The mentoring should be consistent and long-term if necessary.

5. Involved organisations should work to improve the specialised marketing info/advice available to entrepreneurs who are beyond the pre-launch phase.

6. Explore the opportunity for Yukon College (in cooperation with this study's client group) to participate in the on-line training soon to be offered by BCIT's Venture Development Centre. It makes little sense for Yukon to re-invent an advanced training program that has been proved effective for more than a decade, and is available on-line.

7. In general, our interviews with incubators and individuals as well as the literature review dictate that organisations involved in providing incubating services should:
    - Focus on intensive business training and advice aimed at preparing a sound business plan and getting the idea finance-ready
    - Screen applicants for the "Persistence &Vigour" quotient
    - Build a core of instructors/advisors who have solid business credentials
    - Provide mentorship throughout the launch phase and after
    - Provide opportunities for broad networking and collaboration with business

Appendix – Summary of Yukon Interviews

The Client Perspective

A total of seven people who are currently developing a variety of technology-based businesses in the Yukon were interviewed. All have received seed money from the Yukon Technology Innovation Centre. Below is a summary of the responses broken out by subject.

A one-stop shop
The most common response by far to the question of what was needed to assist innovators in the Yukon was a true one-stop shop. There are many programs and services offered by both government and non-governmental organisations to innovators in the Yukon — a confusing and often overlapping array. If an incubator of whatever kind is set up in the territory, one of its most useful functions would be to know exactly what all the possibly helpful services are and how to access them. In simple terms it would be the incubator as facilitator.

Marketing
Another very common response was that finding expert help on marketing was the biggest need of the innovators. Nearly all are at the stage of attempting to push their product from prototype to commercial product. Having access to professional marketing advice and assistance through an incubator would be a high priority.

Other contacts
Being able to connect with expertise in a variety of technical fields was important to some of the innovators. The biggest advantage of doing so through an incubator would be that the experts would not only have been vetted on their expertise, but also on their legitimacy. Especially in information technology it seems, there is considerable distrust and fear that someone may pirate one's idea.

Mentoring
Some of the innovators would like to see an incubator provide business and management mentoring. This would not be in the form of courses but rather a longer-term effort tailored to the individual.

Facilitator of seminars/workshops plus informal networking
Some of the innovators saw the need for seminars and workshops specifically geared to high-technology issues. Examples included: copyright and patent law for non-lawyers and software distribution options. Suggestions for informal networking included simply hosting a get-together once a month for all those involved in the incubator to simply bounce ideas around and share experiences.

Use of College facilities
A number of innovators saw considerable value in incubator clients having access to facilities at Yukon College, assuming the College could be brought in as a partner in an incubator. The multimedia lab, the electronics shop, and the metal shop (e.g. when building a prototype) were all mentioned.

A specific suggestion for a panel of experts
Regarding assistance for Yukoners with innovative ideas, I think there is one thing that could be done that would address virtually all the issues.

Establish a group (not a group as in all together in one spot, but in contact with one another) of professionals who together are capable of vetting innovative ideas to determine their merit, determining any design changes that are required, assessing the market and recommending the manufacturing process. There are groups like this in Vancouver and probably Toronto. They come together to look at new "inventions/ideas" with the thought of assisting in their development and investing in them for mutual gain. There are also groups made up of retired professionals who are still interested in their line of expertise and are willing share that expertise (for some small gain) in order assist.

An official group like this for "Yukon inventors" would be of major asset, as ideas could be vetted by professionals and either given a thumbs up or a thumbs down and so save a huge amount of time no matter the merit of the invention. If an invention was deemed to have good merit, the group would be expected to lend their expertise to aid in any design changes, manufacture, right through to marketing.

Since a group like this need only be in contact via the net, the members could be located anywhere in Canada. The cost therefore could be kept to a minimum while the calibre of professional could be maximised. If YTG were to set this up and foot the bill, they could then expect Yukon inventors to share with them any successes by way of a percentage of profits i.e. a royalty. This potential income over the long haul should more than cover the cost of the group, and would probably end up producing a fund that could be used to assist in development of say, "made in Yukon" type innovations.

A suggestion on cost
A number of the innovators strongly urged that any incubator not be available to all and sundry free of charge. There is the fear that whatever resources are available will then be over used causing problems. One suggestion is that any client of the incubator pay a monthly fee that could start as a fairly nominal sum but quickly rise month by month. The client would then have an incentive to use whatever services the incubator is providing efficiently and then to move on. This also ties in with a point made by many, that the incubator must walk the fine line between offering assistance and nannying. Too much handholding will encourage a lack of initiative rather than the reverse.

The Yukon Service Provider Perspective

The following providers of service to entrepreneurs and innovators were interviewed. Their comments are summed up below.

Josée Belisle — Industrial Research Assistance Program and Canadian Technology Network

Josée is relatively new to the Yukon but she has worked for both the Canada Yukon Business Service Centre and now IRAP and CTN.

Her view is that the biggest problem with all the services and programs offered in the Yukon is the lack of a central core, there even seems to be ambivalence about communicating. She suggests that an incubator of sorts could be formed by moving some of the services into shared space. For example, if her office moved in with the Entrepreneurship Centre, the Business Service Centre, and YTIC they could continue

with their respective programs but their proximity would create its own synergies. Costs would be minimal and existing resources would be leveraged.

Even if an incubator is not formed, Josée would like to see more and better communication between the various service providers. As part of that, she is working on a updated list of experts and consultants in a wide variety of fields. The Yukon list could then also be part of the CTN and so provide access to many specialists not available in the territory.

Margaret Lea Phillips — Business Development Bank of Canada

BDC is the lead institution in Canada in high tech lending and does do pure venture capital (i.e. with a clear exit strategy rather than venture capital that is converted to a shareholder loan) but not in the Yukon. Margaret believes that there is always a perceived lack of venture capital but that usually means a lack of angel investors. BDC has a consulting arm specializing in established, often larger companies e.g. help to expand exports..

Ideas on incubator

Margaret does not see the need for a high tech business incubator in the Yukon or even a facilitator/access point to existing programs. The Canada Yukon Business Service Centre, she says, already plays the facilitator role. The CYBSC could certainly be beefed up to provide better support in technical fields but there is no need for another agency or group.

However, she sees a need and value in the Yukon for regular facilitated discussion groups for innovators. These kinds of discussion groups force participants to take responsibility to learn for themselves. In general, she believes that the independence of innovators needs to be fostered, and that offering too much can stunt them.

Doug Carnegie — Däna Näye Ventures

Däna Näye Ventures is, in effect, a business incubator already offering youth training, First Nation business training, the business plan writing course, loans from micro to $250K, venture capital for First Nation business and a facilitation/referral service to other programs such as YTIC, IRAP etc.

Doug believes that any incubator type arrangement should not duplicate what DNV already does. What is needed is simply better co-ordination among the various service providers, perhaps a more formal facilitation process with DNV as the entry point.

Doug argues that an incubator focussed strictly on high tech and innovation is too narrow for the Yukon. He sees a need for a business incubator in the Yukon, but not a high tech incubator as there are not enough potential clients to make it work.

Jeanne Beaudoin – Association Franco-Yukonnaise

The AFY intends to provide the similar services as däna Näye ventures, except they are offered in French. Space in their new building is almost entirely taken up.

Appendix – Literature Review

The economic literature on technology incubators is quite limited, no surprising given that such incubators are a relatively recent phenomenon. There is more in the literature on business incubators in general as the ideas behind them have been tried out over decades around the world — mostly in the form of efforts to revitalise depressed areas. The sections below review a selection of the literature based on the following breakdown: basic principles of business incubation, the international experience, the Canadian experience and incubators without walls.

Basic principles of business incubation

In their 1995 book *Growing New Ventures, Creating New Jobs*, authors Mark Rice et al. have written what has been referred to as the basic text on business incubation. This despite its publication well before the explosion of business incubators — and particularly technology incubators — in the late 1990s. Even at the time they were writing, the growth of business incubators was seen to be very fast, with the number in the U.S. growing from 10 in 1980 to approximately 500 in 1994. The authors were concerned with the instability and failure of many of the incubators being formed and set out to lay out the basic principles of successful business incubation. The principles they outlined have been reiterated in one form or another by other studies of incubators, namely Kumar & Kumar's Canadian study.

The fundamental purpose of incubators is to find and screen promising new ventures then give them the assistance they need and help them grow. With this purpose in mind, Rice et al. state that the three core principles of successful business incubation are:

1. Focus the energy and resources of the incubator on developing companies.
2. Manage the incubator as a business, i.e., minimise the resources spent on overhead and develop a self-sustaining, efficient business operation.
3. Develop a sophisticated array of services and programs that can be targeted to companies depending on their needs and stage of development.

Rice et al. follow up on the core principles with the following ten best practices of business incubation:

1. Commit to the core principles as the first step.
2. Decide whether the planned incubator is feasible — or not.
3. Structure the incubator to be financially self-sustainable.
4. Structure the organisation to minimise governance and maximise assistance to client companies.
5. Engage stakeholders to help companies and support the incubator.
6. Recruit staff who will mange the incubator like a business and a president who has the capacity to help companies grow.
7. Choose a building that will enable the incubator to generate sufficient revenue.
8. Recruit and select client companies that provide the revenue required in the financial model and have the potential to grow and create jobs.
9. Customise the delivery of assistance and address the development needs of each company.
10. Engage in continual evaluation and improvement of the incubator.

Rice et al. write fairly extensively on the nuts and bolts of accomplishing each of the ten best practices. As can be seen from practice number 7, they are focussed on the most common of the incubator models

— one with office (and perhaps lab) space available for client companies. But the authors do touch on the idea of an incubator without walls as will be discussed in a section below.

The international experience

The Organisation for Economic Co-operation and Development commissioned a set of studies on business incubators that resulted in *Business Incubators: International Case Studies* being published in 1999. The case studies are of business incubation in Australia, the United States, Italy, and Germany.

Overall, the OECD offers a cautious approval of the incubator concept with a number of caveats. The largest problem is how to measure the success or failures of incubators. There is a lack of rigorous, methodologically sound studies on the economic success of incubated companies versus an equivalent control group, and sometimes differing overall objectives for an incubator (e.g. neighbourhood revitalisation) make comparisons difficult. A tentative conclusion is that in the United States, incubated companies have a substantially higher survival rate than their non-incubated brethren. (Judging success in this way brings up the obvious question of whether it is the incubators that are making the difference or if it is the selection process picking out those companies most likely to succeed in any case). In Germany, in contrast, the overall conclusion is that incubators have been of dubious worth, with much public investment for little return. German incubators appear to have had the distressing tendency to turn themselves into strictly real estate businesses.

The OECD advises policymakers and sponsors promoting business incubation to:
1. make explicit the goals of the incubation scheme based on a thorough analysis of local economic circumstances and of the problems which the incubator is intended to address.
2. ensure the highest possible quality of incubator management.
3. establish and develop a range of linkages with the local business community, educational and training bodies, sources of finance and other relevant organisations.
4. select a mix of services appropriate to the profile of tenant firms, whether these originate with the incubator or are provided externally.
5. take advantage of evolving experience in the incubation industry by affiliating with relevant industry bodies.
6. ensure proper evaluation and monitoring of the incubation program.

On the difference between not for profit and profit seeking incubators, the Australian experience (along with the current sorry state of for-profit incubators in the U.S.) indicates that the profit seeking incubators do not have a great deal of success in surviving themselves. An overall conclusion the OECD comes to is that not for profit incubators attached to post-secondary institutions — and research universities in particular — are most likely to not only survive themselves but also to be most successful.

The Canadian experience

Kumar & Kumar looked at best practices in Canada. Using a wide range of interviews and case studies, they examined technology incubation within the context of a national system of innovation. They looked at technology incubation within research organizations as well as incubators with shared facilities and enterprise development programs. They also present 22 case studies of organizations providing technology incubation type services.

They outline the difficulties and concerns with measuring success of incubators and identify best practices. The best practices they identified for incubators with shared facilities seem to rely heavily on Rice & Matthews' work. These best practices include:

- The incubator has a minimum of 30,000 square feet of rental space or at least with room to expand in order to be able to generate enough income to become self-sustainable. The space is flexible with movable walls to manage tenants' variable needs.
- There are at least 10 in-residence members for generating enough networking activity and sustaining the variety of shared services and support operations.
- The incubator is located either near a university or near a research laboratory so that tenants have easy access to technical facilities. Incubators located near a university get added advantage of access to students, faculty members, research labs and libraries. Similarly, proximity to a federal lab provides access to scientists, engineers and state-of-the-art equipment/testing facilities. In both cases "image" is an added bonus.
- The incubator is situated in a high-tech, top quality building, preferably with a telecommunications infrastructure to electronically connect companies with each other and the outside world.
- The incubator has a practice of enrolling non-resident clients who would get all services provided to resident clients except a lab or office space.
- A selection committee is set up to pre-screen the clients. The selection criteria include: i) the homology between the incubator services offered and the clients' needs; ii) a business plan that covers the key focus, market information on competitors and customers, costs, pricing and cash flow forecasts; iii) technology sophistication; iv) potential for growth and job creation; v) R&D intensity; vi) occupational mix of the management team; vii) practical experience; and viii) personal commitment.
- An advisory committee, consisting of 5 or 6 experts from different business areas has been established for each tenant company to assist in developing business plan, in obtaining funding, and for marketing and legal issues.
- The incubator has created an opportunity for its tenants to network among themselves, with the industry, and with contacts of the advisory/mentor group members.
- The funding and support from private, public or government organizations, specifically to pay off the heavy costs associated with the real estate component is already in place.
- The manager is a highly motivated visionary individual whose goal is to see their tenant firms succeed.
- Boards of directors are generally responsible for policy development and not day-to-day operations, which are left to the incubator manager. Bureaucracy, in case of government-sponsored incubators, is kept at a minimum.
- The incubator focuses more on support programs than on space or physical infrastructure.

Incubators without walls

Rice et al., in *Growing New Ventures, Creating New Jobs*, give a brief mention to incubators without walls or virtual incubators in the emerging trends chapter of their book. Obviously a very new concept at the time of writing, the authors point out that the handful of examples they were aware of played a very valuable role as facilitators for entrepreneurs in their communities without actually offering the services

themselves. The OECD concludes that virtual incubators might well be the best choice in many circumstances because of their relatively low cost and ability to leverage existing services and programs.

Although the virtual incubator concept is mentioned in some of the economic literature, an extensive search found only one paper specifically focussed on the topic. That paper — *Incubator Without Walls (IWW): A University-Business Partnership for Neighbourhood Redevelopment* (Burton Dean et al., 2000) — attempts to measure the success of the program carried out by the San Jose State University School of Business in San Jose's city centre. The school offers course credits for business students who work with local small business people to develop business plans, provide marketing strategies, and generally assist in developing the business. The paper concludes that the program is a success as measured by the level of satisfaction of the local business people with it. Unfortunately, the paper does not address the large potential flaw in such a program — that it is driven by the students seeking out projects rather than by the client seeking assistance. A participant in a very similar program at the University of Calgary has stated that this is a very real and crippling flaw in the approach.

Appendix – The BC Experience

BCIT Development Centre

INTERVIEW:
Peter Thompson
Director, Venture Development Centre
BCIT Downtown Campus

Background
The VDC was established 14 years ago, primarily as a technology centre/incubator under Dr. Pat McGeer's (the Minister of the day) science and technology initiatives. Provincial money built an elaborate and expensive building on the BCIT campus that was supposed to act as a draw for larger corporations; it didn't. Nevertheless, the VDC enjoyed success in that it attracted entrepreneurs who subsequently developed successful businesses. One early technology venture housed in the centre is now an international business that will have sales of $1 billion this year.

Centre Profile
The Centre now operates in both the Burnaby and downtown campuses. It focuses on business training for entrepreneurs; the core program is a three-month, full-time Entrepreneurial Skills Training (EST) program, offered twice per year. Similar programs are offered at night school, under contract for specialised groups such as income-assisted or EI recipients, and for the not-for-profit sector (these are considered quite different markets and therefore receive different, less intensive programs). In addition, the VDC offers support services including technical research and consulting services.

About 80 students are admitted per term, for three terms per year; a fourth term is being considered. The VDC budget is currently $685K per year of which $365K is recovered from HRDC and others for the contract programs. There are six full-time staff and many part-time instructors.

Candidates are thoroughly screened even though selection involves a lot of "gut feel" about the individual's potential. They look primarily for "Perception and Vigor" (P&V) and some related experience; age and formal education are not considered. Tuition is $2,500, which is about half the actual cost per student. About 40% of applicants are accepted and 98% graduate.

Additional information about the Centre and its programs can be seen in the written material and found at its website:
www.bcitventure.com

Success Factors
Although the Centre was intended to be a technology incubator, it included other businesses as well. In the years since, the VDC has approached high tech companies several times with the idea of establishing a technology incubator; the universal response has been, "No – keep the format of mixing all business types in the same incubator; do not single out technology." The Centre's experience has been that "venturepreneurs" primarily need exposure to business planning and basics; technology businesses are no different in this regard from any other business. Separating them out implies some special status and can

work against the techie's need for a business plan. Furthermore, the interaction among venturepreneurs from all types of businesses is extremely healthy and a significant part of the ES Training.

The two key success factors in any business incubator:

1) Get participants to prepare a solid business plan
2) Provide follow-up advice and assistance once they leave the formal training.

The latter is particularly important as venturepreneurs launch their businesses; the first 1-3 years are critical to success, and regular mentorship is critical. A supplementary benefit to the VDC is the growing number of alumni who now provide advice, referrals, speakers, instructors and support for the program (see profiles in the info package).

VDC's record is that 65% of graduates launch successful businesses; 20% are in launch mode at a given time; and the remaining 15% decide not to proceed for various reasons. Even those who choose not to launch business ventures, however, complete the program because the training is valuable to their career choices.

A final factor is senior management or direction for the centre – it must be dominated by private sector rather than academic (university) or public sector leadership. These sectors can play a supportive role, but they should not represent the primary thrust in directing and controlling the facility. The thinking stemming from these sources is quite different from – sometimes the opposite of – what works in an entrepreneurial setting. Furthermore, control from these sectors will almost certainly discourage private sector involvement in and support for the centre.

An Opportunity for Yukon

VDC is in the process of building on-line training as part of its entrepreneurial skills program (OLT-EST). They intend to pilot the on-line program this year. Thompson expressed interest in the Whitehorse situation and indicated that Yukon College or some other body would have an opportunity to join in this trial phase. BCIT (which has a mandate and a goal for outreach throughout the province) would like to have a partner outside the province, and Yukon might fit this need quite well.

This opportunity is worth pursuing. BCIT is well established in the venture development/ incubator business, certainly the most advanced, experienced and organized of the three centres we visited. It makes sense for Yukon to partner with someone like this, who has developed the detailed program and has extensive support systems in place. Furthermore, simply participating in the trial phase of the on-line training will provide valuable feedback for proponents of the business incubator about program scope and meeting local needs.

Technology Access Centre: Okanagan University College, Kelowna

The TAC was founded in 1995 but remained only a concept and an office shell until the arrival of its first Director, Ray Filipiak. It serves the entire Okanagan, which has an area population of about 350,000. The Centre has two primary purposes:

- Build the capacity of OUC in terms of skills, research and funding for technology;
- Work with industry to build collaborations and encourage use of OUC services, research (technology transfer) and students.

Although the original concept called for a traditional business incubator, Filipiak quashed that concept because it didn't fit either local business needs or the role of OUC. Instead, he focused on assisting technology ventures and ideas to become viable.

To make technology work as a viable business, you need two things:

- Human capital in the form of business knowledge and acumen; and
- Financing, which will be available if the human capital is present.

TAC provides a variety of business assistance and advice, all of which is aimed at building this "human capital" on the part of participating entrepreneurs. Technology-oriented entrepreneurs rarely have such business knowledge or skills; it is singularly lacking. Hence, TAC concentrates on this aspect before tackling the area of finance. In some cases, technological entrepreneurs are resistant or reluctant to build business knowledge because their orientation is not in this direction; they need help the most.

Providing physical space is not a major service of the incubator. A business may use space at TAC if it has a direct research or other connection to OUC, but these cases are in the minority. Services are provided on an outreach or virtual basis in most cases. In Filipiak's view, providing space is NOT a key success factor of an incubator; it is often more expense and trouble than it is worth to either the program or the entrepreneur.

The Director is the only employee of the TAC; he uses consultants as project managers in many cases, rather than hiring additional staff. The budget is lean and not locked in; he doesn't know from year to year how much money he has to work with. The TAC offices also house the local Science Council and the IRAP representative. The offices are in the ground/basement floor of a modern but modest building on the OUC campus that contains the Environment Canada Weather Office on the main floor.

In 4_ years, Filipiak has dealt with approximately 110 project files that received significant attention and assistance. Of these, about 15-20 went on to become viable businesses or at least survived the start-up phase.

Additional information about TAC programs and services is available on its website: www.rstac.org The website is reasonably current and accurate (unlike the ATC in Kamloops, which describes services and programs that do not exist).

Advanced Technology Centre in Kamloops

Background

Established in 1994, the ATC is a division of the University College of the Cariboo (UCC). Its primary purpose is to serve an outreach function with local business and industry on behalf of UCC. It features four "centres of excellence" whose purposes are described as follows:

- Information Technology Centre – developing software applications, Internet and e-commerce, process controls and databases.
- Business Incubation Centre – providing assistance and support to new businesses in most fields.
- Value Added Centre – improving secondary manufacturing processes, primarily in the wood products industry.

- Life Sciences Centre – leading edge sciences in the areas of nutraceuticals, biotechnology and environmental technology.

The IT Centre has assisted some local entrepreneurs with advice and technical assistance, albeit in a virtual rather than a physical incubator setting. The business incubator does not yet exist, either in terms of physical space or programming. After a period of several years' inactivity on the incubation front, ATC is currently pursuing development of this Centre. The VAC and the LSC have been active and have supported the development of a handful of new ventures in the region.

Additional background on these existing and planned program areas can be found on the ATC's website: www.advancedtechnologycntr.com/

Management Interviews

Paul Webb, Ph.D., R.P.Bio., P.Ag. is a primary instigator and the founding Director of the ATC. He left UCC in 1997 to pursue a consulting business, but was recently hired back on a short-term contract to replace the departed Executive Director. He stated that, over the past three or four years, the incubator side of the ATC has languished. Part of his mandate, however, is to revitalise these programs and actively pursue the business incubation centre. As a consultant, he assisted several technology-based businesses in Victoria, including start-up situations. He is quite familiar with business and technology incubation models and practices, and offered a number of insights of interest to the Yukon concept.

Catharine L. Wright is the Executive Director of the Interior Science Innovation Council; she works out of the ATC office. The SIC is a provincial initiative that provides leadership, promotion and some funding for innovative applications of science and technology.

Interview Highlights

1. Any "technology incubator" is first and foremost a business incubator; any technology applications are secondary to its purpose and merely describe a specific application of the business incubator approach. The technical knowledge and skills employed in the IT sector are different from those in other sectors, but this difference does not change the fundamental notion that it is a business incubator and should be managed as such.

2. There are many business incubator models that work – and don't work – in given situations. No one model is superior. Both the public and private sectors have tried many different models and approaches in the US; there are many lessons to be learned (see articles). When considering such an incubator, for example, it is critical to build on local business strengths and abilities/competencies rather than attempting to import technologies that do not exist, e.g. "let's start manufacturing aircraft."

3. An incubator must be based on addressing local needs for assistance in business development. It should not be considered an "engine" that drives business development, job creation or a financial return on investment for its sponsors.

4. ATC has tried to do this by focusing on value added wood products (lots of logging and sawmills in the region) and nutraceuticals (ginseng is a major crop in the area and related products are being introduced). A success case study is All Tech Processing, in which a (Kelowna) entrepreneur sought out ATC's help in applying known technology for measuring the contents of various nutraceutical products. All Tech developed a laboratory and now offers this service to local producers.

5. Further to #3, the rationale for college involvement in or sponsorship of an incubator must be well thought out. UCC and others take the view that it is a long term investment in the community in the same vein as mainstream education programs. There are many benefits that accrue to college students and faculty, such as opportunities for real-life projects and learning in the private sector, some jobs for graduates, and feedback that is useful in designing education programs. If some financial benefit comes to the college from the arrangement (such as a royalty payment or a capital gain on a sale of shares), it is a pleasant bonus; it is not the intended outcome. Larger universities, on the other hand, may well derive financial benefits from such incubator programs due to their research activities. An example is UBC, which is quite successful at brokering their research services and findings with industry. UBC, however, has a research budget of $150 million per year, whereas colleges devote virtually no resources to, and have little expertise in, this area.

6. The typical needs in any community for business incubation services are well known and rarely vary a great deal. They are:
    - Marketing: research, planning, strategies, implementation
    - Networking and management mentoring
    - Financing/access to capital

    These services are fundamental to any incubator, technology-oriented or otherwise. Another issue that needs to be addressed early is the form of the incubator: virtual or offering physical space? Both can be viable; they lead to quite different types of programs; they have many implications regarding operations, staffing, influence, finances and so on. Space can be provided by either the public or private sector, but it is seldom cost-recoverable from participants, particularly in the short term.

7. A key success factor for any business incubator is an effective initial screening system for applicants. The aim is to pick winners, not "let the market decide." This means that one must screen and assess individual entrepreneurs more than their ideas in the same manner as venture capitalists assess investment possibilities. The essential screening questions are:
    - Does this person have the business skill to carry the venture forward?
    - Does he have the needed entrepreneurial drive/desire?
    - Does she have sufficient seed money? (If the individual is still looking for seed money, they will have little time left to develop the business.)

8. Some infrastructure is necessary in order for the business incubator to succeed. The nature of the infrastructure will vary with the types of businesses being incubated. Although there is considerable debate over this point (does/should infrastructure precede or follow business development?), some of the things that have been identified as required in Kamloops for the ATC are:
    - High speed connectivity
    - Efficient airport and air service (technology clients are located all around the world, and firms need to get to them efficiently)
    - Access to capital (the money is in Vancouver or farther afield, and venture capitalists are reluctant to consider small-town ventures
    - Technical knowledge and skills in the form of service providers and "system integrators" – specialist engineers and others who provide the various pieces that go towards constructing a given technological innovation or idea.

    Furthermore, an incubator needs a solid pool of businesses and business people to provide mentoring to entrepreneurs. These should be successful, medium-sized businesses with seasoned (and community-minded) managers, not the owners of mom-and-pop retail shops.

9. In the case of financing, both public and private sources are needed. In BC, there is a growing pool of venture capital (still hard to get outside the lower mainland) as well as government programs that can be levered. Provincial examples are the Technology BC Program for new technology; Technical Assistance Program; and MART, a market assistance program that funds 75% of market research for technology ventures up to $30,000. An incubator helps entrepreneurs to lever their money by accessing such programs.

Observations and Notes

1. The rationale issue is interesting and important, if nothing else because it tends to be assumed and given little thought in planning. Is the current thinking or expectation that an incubator can become an engine for economic development? In settings such as with small colleges, this rationale does not appear to work, according to several sources. Unlike a UBC situation, one simply cannot assess a small-town/college incubator in terms of direct economic impact, e.g. businesses or jobs created, investment stimulated, etc. If you try, the thing quickly goes awry. Far better to think of it as "business education and mentorship" and couch expectations in those terms.

2. To the extent that Yukon College is involved in planning for a technology incubator, it will have to think about the types of technology it wishes to house in such an incubator. As a college, it does not do technical or pure research, so it will not be in the business (a la UBC) of brokering such research with the private sector. In fact, virtually no technical or technological research is carried out in the Yukon. Hence, the only technology that might be incubated is *adapted* technology. This type of technology innovation is less appealing than applied research to funding sources such as IRAP and other government programs.

List of Contacts

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Bibliography

Dean, Burton V. et al. 2000. "Incubator Without Walls (IWW): A University-Business Partnership for Neighborhood Redevelopment." Cityscape: A Journal of Policy Development and Research 5(1). U.S. Department of Housing and Urban Development, Washington D.C.

The Economist. August 12, 2000. "Hatching a new plan: The Internet incubator is dead. Long live the Internet incubator." New York.

Kumar, U. and V. Kumar. Incubating Technology: Best Practices. Fall, 1997. Prepared for the Federal Partners in Technology Transfer, Ottawa.

Organisation for Economic Co-operation and Development. 1999. Business Incubation: International Case Studies. OECD, Paris.

Rice, Mark P. and Jana B. Matthews. 1995. Growing New Ventures, Creating New Jobs: Principles and Practices of Successful Business Incubation. Quorum Books, Westport, Connecticut.

Ellen Gerl, "Lessons From Rural Incubators", NBIA Review, vol. 10. No. 6. Reprinted in www.sandpoint.org/pride/library