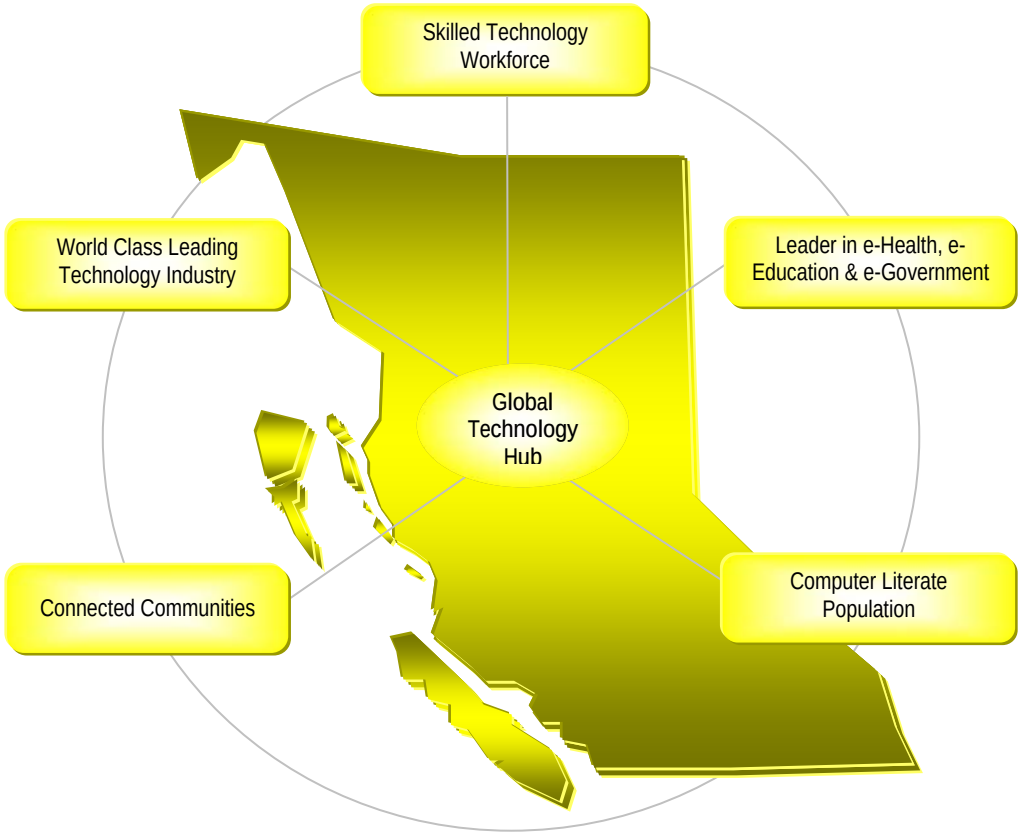
6th REPORT

JUNE 25, 2004

PREMIER'S TECHNOLOGY COUNCIL



We believe that with strong cooperation between the provincial government and private enterprise, British Columbia will be one of the world's top ten technology centres.

Every effort has been made to consider all information obtained and to be as accurate and consistent as possible in our use and analysis of all research materials. However, errors or omissions may have occurred. Please notify the Premier's Technology Council of any significant inaccuracies by e-mail at:

Premiers.TechnologyCouncil@gems8.gov.bc.ca

Premier's Technology Council
795-999 Canada Place
Vancouver, British Columbia V6C 3E1
http://www.gov.bc.ca/prem/popt/technology_council/

Table of Contents

This page has been left blank intentionally

Foreword

The Premier's Technology Council (PTC) was created in August 2001 to provide advice to the Premier on technology-related issues. The mission of the Council is to help make British Columbia one of the world's top ten technology centres.

The Honourable Gordon Campbell is Chair of the Council, a position shared with the Co-Chair, Paul Lee, Executive Vice-President and Worldwide Studios Chief Operation Officer, Electronic Arts Inc. The Council is fortunate to draw its membership from sixteen other leaders of BC's technology industry and from senior levels of the academic sector.

In preparing this sixth report, the PTC renewed its network of contacts across British Columbia, holding regional consultations in 10 communities and meeting with 245 stakeholders in the course of 140 presentations, in order to gain an understanding of their high-tech achievements and challenges. The PTC last consulted with British Columbians two years ago, and we wanted to ensure that we were keeping pace with progress throughout the province, which is especially important in view of the dynamism of the high-tech sector.

The response was enthusiastic and encouraging. The overall tone of the consultations was upbeat. Presenters felt that the government is making clear strides towards the PTC's goal, although we clearly heard that some challenges still remain in such areas as broadband access for all communities, sufficient capital and investment, and opportunities to compete for government procurement. The PTC was impressed with the extent of collaboration among high-tech stakeholders at the local level, as well as their keen understanding of the issues. Their feedback has contributed toward the fourteen recommendations the PTC is making to the government.

The PTC would like to thank the government for its ongoing support and the stakeholders for their "on the ground" perspectives. We are confident that the many British Columbians who have so generously offered us their ideas will find their voices heard in this report.

Jim Mutter
President, Premier's Technology Council

This page has been left blank intentionally

Executive Summary

The Premier's Technology Council's (PTC) goal of making British Columbia one of the top ten technology centres in the world will be possible only if the stakeholders across the province are committed to the goal and if the provincial government is sensitive to their concerns. Keeping these fundamental realities in mind, the PTC renewed and widened its extensive network of contacts across BC through a series of ten regional consultations. The Council's last time "on the road" was two years ago, and in the dynamic field of high-tech, much has changed over that time period.

These regional forums, plus an important e-Learning Roundtable and ongoing discussions with high-tech stakeholders, contributed to the 14 recommendations that the PTC proposes to the Government of British Columbia in this sixth report. Summaries of the regional meetings and the e-Learning Roundtable are included on the PTC's website. In posting these summaries, the PTC encourages dialogue within and between communities. This dialogue will foster collaborative effort which is essential to attaining stakeholders' objectives.

The PTC heard that the foundations to make British Columbia a top technology centre are in place and that they need to be extended. Broadband reaches much of the province. BC has highly respected universities and colleges. Our workforce is innovative and entrepreneurial. BC's quality of life is second-to-none, attracting the "creative class" from all over the globe. The provincial government has listened to the Council's recommendations, and has implemented a significant number in the areas of digital divide, information technology (IT) procurement, the *Small Business Venture Capital (SBVC) Act* and the creation of Leading Edge British Columbia as the province's technology marketing agency. There are many encouraging signs of progress.

From the regional consultations, the PTC learned that citizens feel the government should continue to tailor its high-tech strategy to reflect the economic and social diversity of British Columbia. In a field as flexible as high-tech, a one-size-fits-all approach is a straightjacket that is bound to fail.

One striking theme in the consultations was that not all parts of the province are benefiting equally from the opportunities of high technology. Smaller communities, in particular, do not all have access to broadband, and feel that their economic horizons are narrower.

When the PTC traveled the province two years ago, requests for broadband were polite; now the demands are blunt but rooted in arguments of economic development.

First Nations communities, which are often among these smaller locales and suffer above-average unemployment, do not yet have the capacity to leverage high technology as a way to help achieve prosperity. They also would like to use technology to preserve their heritage and the memories of their elders, uniting the past with the future. Firms outside of the major cities do not believe that they are on a level playing field with their counterparts in Vancouver and Victoria in competition for government IT procurement. They believe that alternative solutions need to be considered and that new providers should be given a chance.

To ensure that everyone benefits, the PTC has previously made recommendations to expand broadband throughout BC, to encourage marketing of the regions as high-tech centres so as to attract talent throughout the province, and to ensure government procurement that is accessible to all firms. It is important to note that concerning broadband, government has listened and taken significant action. A high-level, focused team called NetWork BC has been created and a detailed broadband implementation plan is now underway. Of the 168 BC communities last identified as lacking broadband, five have been connected since February of this year. Sixty-five more will be connected by the end of 2004 and all will be connected by the end of 2006.

Capital and investment was raised a number of times throughout the province. In the 5th Report, the PTC addressed the issues of capital and investment extensively, and in the 2nd Report, the PTC recommended changes to the *SBVC Act*. Government responded vigorously to the latter by implementing most of the recommended changes and the results have been startling. For the first time in years, program tax credits available under the *SBVC Act* were quickly used up, resulting in a large increase in the amount of capital available for early stage investments. Increased investment means greater sector activity and new jobs.

Success with the *SBVC Act* program, unfortunately, came at a price. Some who qualified under the *Act* had allocations reduced or denied with little warning. The result was not only a loss of capital investment but also an impact on the credibility of fund managers. Doubly unfortunate is the fact that a portion of the tax credits available for Labour Sponsored funds went unused and no means currently exists to transfer unused credits. In this report, the Council recommends that the government increase the program tax credits and also change appropriate regulations so that tax credits exist as a total allocation over multiple years, and that unused credits can be transferred between programs as needed. In addition, to encourage experienced, angel investors to get more involved in the high-tech sector, where their management expertise is as valuable as their capital, the PTC renews its recommendation that the individual limit in the provincial *Income Tax Act* be removed.

As with all PTC reports, the 6th Report is structured to feature some of the PTC's original four themes – the digital divide, government operations, industry development and marketing. The digital divide is discussed in the context of the regional consultations. The remainder of the report includes a number of thematically focused sections, examining particular dimensions of high-tech in both the public and private sectors - including e-learning and e-health in the government operations section, and capital and investment, human resources, fuel cells, and life sciences in the industry development section.

British Columbia has already made real progress in opening up e-learning opportunities, such as revising the funding model to ensure that students enrolled in electronic programs receive the same per-pupil funding as students enrolled in neighbourhood schools. During the regional consultations, the PTC found a clear expression of confidence in the vision and leadership that government has shown in its support for such institutions as BCcampus and BCEd Online. In this report, the PTC makes recommendations to continue the progress that has been made and to move to the next level.

In earlier reports, the PTC called for telehealth expansion and government has responded. The PTC learned about the impressive use of technology that is already in use in areas such as cancer care, dermatology and wound care, and adult mental health services, to name a few. Over 100 patients per month receive medical care using telehealth and over 50 communities have access to established clinical programs. However, as the PTC pointed out in earlier reports, the billing code system does not always allow providers to charge for e-health services, creating a barrier to its more extensive usage. The PTC reiterates that this impediment must be resolved. The Council also recommends that the government establish a body to implement an electronic health record (EHR). Action in both areas would result in better patient care and greater efficiencies. A focus on patient outcomes, as well as on engaging health practitioners early in the process and getting their "buy in", is essential.

In terms of the private sector, the PTC heard about developments that were specific to the fuel cells sector, one of BC's most prominent high-tech success stories. The Council supports efforts to complete the Hydrogen Highway™ prior to the 2010 Olympics.

As early as its second report, the PTC recommended that government focus its marketing strategy on key sectors in which the province has noticeable strengths, one of which was biotechnology. British Columbia has the fastest growing biotechnology industry in Canada with 90 private sector firms plus a host of university researchers, teaching hospitals and research institutes. To showcase BC and help develop the sector further, the Premier and the Minister of Small Business and Economic Development led a delegation of the province's biotech community to BIO2004 in San Francisco in June 2004.

The power of collaboration was evident when the government and over 16 organizations - representing academia, the research community, early stage and established biotechnology companies and related industry associations - worked together to highlight BC's leadership in biotechnology and its extraordinary business climate for technology enterprise. Among the high profile activities that took place were a large collaborative exhibit in the BC pavilion, a Leading Edge British Columbia-sponsored private CEO and investor dinner hosted by Paul Hastings, the CEO of Quadra Logic Technologies (QLT), at his San Francisco home, and an open reception in the BC pavilion that featured the best of BC's lifestyle.

The range of issues raised in the regional consultations reflected the diversity of our province. The PTC was in "listening mode" and did not insist that presenters stick to its own set agenda. What most impressed the PTC was the pride and passion with which citizens spoke and their enthusiasm for the future of British Columbia, the role high technology will play in realizing that vision, and the thought and thoroughness devoted to their submissions. The prospects for achieving the PTC's goal are indeed bright.

Regional Consultations

Between February and April 2004, the PTC retraced its steps of two years ago by traveling the province to hear about concerns on technology related matters. The consultations involved a ten-city tour in which the PTC received 140 presentations and met with 245 people. A list of those consulted is presented in Appendix A. The schedule was:

City	Date
Cranbrook	February 5
Nanaimo	February 9
Nelson	February 12
Kelowna	February 17
Kamloops	February 18
Terrace	February 24
Prince George	February 26
Fort St. John	March 2
Surrey	April 6
Victoria	April 8

Ably assisted by coordinators from the province's regional science and technology network, the National Research Council's Industrial Research Assistance Program in Terrace, the Surrey Chamber of Commerce and the Vancouver Island Advanced Technology Centre (VIATeC), the PTC invited leaders from local industry, community groups, as well as health and education facilities to make presentations. Although the PTC intended to focus on the key themes of e-health and e-learning applications, local high-tech industry development and the digital divide, participants chose to articulate their own priorities. In the regions the digital divide was the primary focus, while in the Lower Mainland and Victoria, capital and investment was the issue identified as key to growing the sector.

Council members were extremely impressed by the quality of the presentations and creativity of proposed solutions. Also impressive was the clarity of thought that tied the digital divide to economic development. Overall, the consultations were an extremely valuable experience for the PTC.

In order of the frequency raised, the issues were: digital divide, capital and investment, and government IT procurement.

Digital Divide

Two years after the PTC first visited the regions, this highly charged issue continues to be the most often raised item in the majority of communities.

- If the regions were loud in their demand/need for broadband two years ago, they are screaming for it today. They want broadband and they want it now.

> *"Broadband is the single most important tool that can support rural communities by providing access to education and health services and opportunities for economic diversification and growth. Communities in these regions are dying and problems are compounded by a lack of this critical infrastructure."*
>
> ***Susan Chew**, Manager, Project Development, Columbia Mountain Open Network (CMON)*

- In community after community, citizens told the PTC that connectivity and economic development are linked. With the downturn in resource industries, communities see technology-related business as their future. Broadband is needed to spur local industry growth and attract outside companies and expertise.

> *"Broadband provides opportunities for young people to return to rural communities and bring their jobs with them. Their "knowledge economy" jobs are important to our communities and more young families will help our schools which are suffering due to declining enrollments."*
>
> ***Jeff Roberts,** CEO, Columbia Mountain Open Network*

- While broadband is needed, the services it facilitates are equally important. There is a strong belief that broadband means improved health and education services, among others.
- Several presenters advised the PTC that its broadband standard of 1.5MB (download) was in danger of being overtaken by the rapid evolution of common applications that demand much greater bandwidths.

> *"Broadband can bring about tremendous change. It can help save as much as 70% of telecommunication costs, with various departments connected through it (Police, Fire, etc)."*
>
> ***Doug Jay**, Councillor, The Corporation of the City of Nelson*

- Last mile solutions are required. In other words, while it is important to accomplish the task of providing broadband to communities, the capability cannot be fully exploited until people within them can get access too. That makes the next point particularly important.
- Many presenters stated that government needs to support regional/community network initiatives. All stakeholders have to work together to provide broadband access to and within the rural and remote communities of BC. There continues to be a lack of communication with local stakeholders during the decision-making process on provincial network development and government must establish a communication process with the local community networks/players.

In the Second Quarterly Report, the PTC stated that local community capacity, entrepreneurship and innovation should be engaged wherever possible in bridging the digital divide. It further recommended that government find ways to open up its network (SPAN/BC) to allow small communities to take advantage of the government's broadband infrastructure since the private sector is unlikely to provide high speed Internet access.

In 2004, government acted on this recommendation by announcing a partnership with the Columbia Mountain Open Network (CMON) to provide people in the Kootenay region with access to broadband connectivity. Eleven of the province's voice and data network centres will be opened to CMON, which will in turn sell services to the community-based network.

The number of high-speed circuits to the network centres will be doubled and the process accelerated to allow CMON to connect all communities in the region to the network centres and to provide the "last mile" connectivity to homes, schools, and workplaces.

The Government's contribution of providing 11 connection points is an example of its support to a community-led network, which is being matched with $6 million in funding from federal government's Broadband Pilot Program.

The PTC applauds these measures, but it also cautions that while government is prepared to bring broadband to communities and to help facilitate last mile solutions, communities must take an active role in helping to find the solution. Last mile service within many communities will only be obtained by local effort and leadership.

NETWORK BC

To address the digital divide government has taken bold, decisive action. A new and focused organization called NetWork BC has been created with the sole function of extending broadband service to the communities of British Columbia. Of the 168 BC communities last identified as lacking broadband, five have been connected since February of this year. Sixty-five more will be connected by the end of 2004 and all will be connected by the end of 2006. The PTC fully supports this important measure. Details on the role and structure of NetWork BC are contained in Appendix B.

"The potential for innovative approaches to providing affordable broadband as described has become much more limited under PLNet. This appears to be changing with the Province's Digital Divide enterprise. This new direction deserves praise."

***John Savage**, Director of Technology, School District #74 (Gold Trail)*

The following map shows the 47 communities that have received broadband access since 2002. For maps showing more broadband information, please visit the NetWork BC website at www.network.gov.bc.ca.

Communities With Access to Broadband Since 2002

June 2004
Prepared by BC STATS for
NETWORK BC,
Ministry of Management Services

Capital and Investment

Capital and investment was the main issue raised by people in the Lower Mainland and Victoria and is well covered in the Industry Development section of this report. However, the subject also came up several times in the regions and a brief summary of the discussion is included here.

- **Capital shortage** – Special measures are required to attract investment. Nearly every community indicated that it faced difficulty in attracting capital. Suggested solutions or assistance required included aggressive marketing, as well as tax incentives, wage subsidy programs and angel forums.
- ***Small Business Venture Capital (SBVC) Act* tax credit reduction** – The decision to limit the tax credits was strongly criticized. Many of the presenters had gone to considerable lengths to line up investment only to have the "rug pulled out" at a very late stage. As a result, a number of ventures failed to capitalize on the momentum to raise funds under the program.

Government IT Procurement

Two years ago, the PTC held a procurement symposium to address concerns raised during the extensive consultations it undertook in the winter and spring of 2002. PTC recommendations and subsequent government action has accommodated many of the larger, most pressing concerns. For example, the Joint Solution Procurement (JSP) process has been implemented which allows government to work directly with industry to address business solutions rather than technology solutions. IT Procurement across government has been centralized which allows for more efficient and cost-effective purchasing. A joint government/industry task group has been created and through continuing dialogue, has initiated many smaller changes in such areas as vendor liability.

While major progress has been made, there are other refinements needed, especially for small, regional companies which still face obstacles in obtaining contracts from the provincial government. They perceive that anyone outside of Vancouver and Victoria will not be considered. This issue has not changed despite considerable recent procurement reform.

"Regional technology companies have expressed their concern about access to provincial government contracts. This concern is especially acute around the procurement of goods and services for the 2010 Olympics. Regional companies in North Central BC are concerned that they will not be included in information sessions about how to bid, will not receive RFPs, and will not have equal opportunity to benefit from this event."

***Dawn Miller**, Executive Director, Innovation Research Centre*

Some suggestions for government action include:

- Developing processes so that all companies have the information on how to participate and are included in procurement processes.
- Recognizing alternate solutions for smaller projects and not continuing to rely on previous providers. Alternate solutions can be innovative and more economical.
- Supporting products and services of BC companies. The government should consider requiring larger vendors to subcontract small BC companies on a points system. In the Joint Solution Procurement process, large tenders preclude smaller players from participating.

To further address the procurement issue, the PTC, in cooperation with government and industry, is considering holding additional procurement symposiums/seminars in the fall. Procurement policies should continue to follow the principle that government and taxpayers obtain the best value for money and that these policies not serve as subsidies or work creation programs.

Other Issues

Communities discussed many other issues with the PTC. Although these may not have been raised as loudly nor as often as those described above, they are, nonetheless, important to the communities that identified them. What follows is a summary of the more prominent ones. Note that e-learning and e-health matters are discussed in the appropriate sections of this report.

INDUSTRY DEVELOPMENT

Besides the issues discussed above, the following suggestions were made by local experts to help develop high-tech industry in the regions of the province. Specifically, there are needs for:

- Improved education for local companies about leveraging financing opportunities.
- A strategy to bridge the gap between the early stage/seed funding and the next level.
- Expertise in North via investor forums and conferences by working with Leading Edge British Columbia.
- New research facilities in regional areas of the province as well as the relocation of existing research facilities to appropriate regional locations.

> *"Among the key elements of an innovation support system is the presence of research institutes and organizations. Of the 103 S&T related research facilities in BC, only 15 are located in the regions and most have limited research budgets. This is important because of the highest percentage of technology commercialization happens within an hour's drive of the research facility."*
>
> ***Dawn Miller**, Executive Director, Innovation Research Centre*

- Continued funding for local technology councils which are essential to developing local high-tech industry. A council in the Northwest is needed. Furthermore, people in the Lower Mainland cannot determine the needs of local communities in the regions. The Province should not fence in organizations like the regional councils and should allow for flexibility to be innovative and to provide services.

> *"Organizations such as VIATeC are crucial to the developments of BC as a top technology center. These support organizations need to be maintained so that they can, in turn, support the high-tech companies at all levels thus turning BC into a top technology center."*
>
> ***Anna Junge**, Human Resources Manager, Daniels Electronics Ltd.*

- Inclusion of BC regions in Leading Edge British Columbia's efforts to market the technology industry to raise their profile and highlight their potential.

FIRST NATIONS

The PTC made a point of inviting First Nations groups to discuss their issues. They share most of the concerns of other stakeholders on matters such as the digital divide, industry development, e-learning, and e-health. There are, however, a few special items that are unique to First Nations. Their priorities include:

- Broadband in all First Nations communities to access education and health care services, to improve the economy, and to support cultural legacy (i.e. preservation of languages).

> *"If we don't capture the Elders' knowledge before they go home, it will be like burning our own encyclopedia."*
>
> ***Chief Garry Oker**, Doig River First Nations*

- Technology as a possible subject for treaty negotiations. First Nations are often remote and the need for support and infrastructure is acute. Fibre is nearly as important as paved roads.

> *"Encourage the Premier to put technology on the table for treaty negotiations. …Fibre communications could have a bigger impact than paved roads."*
>
> ***Gary Patsey**, Manager – Information Technology, Nisga'a Lisims Government*

- Long-term goals and support, including development, encouragement and support of champions and technicians within each aboriginal community.

> *"Many communities in Gold Trail are First Nations. There is a general distrust of "white man bearing gifts" and for a good reason. Established policy for most project implementation uses typical tendering processes and administrative oversight that seldom provides any lasting benefit for the community. A home or a school or facility is built where the contracts are awarded to outside interests and few, if any, band members are involved in the project. Any profit leaves the community, and seldom are any skills or on-going activities left behind. Similarly, the activities involved in providing broadband to First Nations homes typically involve outside consultants. "*
>
> ***John Savage**, Director of Technology, School District #74 (Gold Trail)*

Human resources, e-learning and e-health items are discussed in the appropriate sections of this report. First Nations recommendations are made in the e-learning section.

Taking stock of the insightful comments from the many diverse communities across the province, the PTC concludes this section of the report with two recommendations.

Recommendations

DIGITAL DIVIDE

6.1 The PTC recommends that government:

- **Keep up the momentum to extend broadband to the remaining communities as quickly as possible.**
- **Work with communities to identify last mile solutions.**

INDUSTRY DEVELOPMENT

6.2 The PTC recommends that government:

- **Recognize and support the important role that regional technology councils play in fostering innovation and small business development within their region.**
- **Support the formation of a regional technology council in the Northwest.**
- **Provide incentives to encourage growth and development of technology companies in the regions.**
- **Market the technology innovations and opportunities for the province as a whole through Leading Edge British Columbia.**

Government Operations

e-Learning

INTRODUCTION

The PTC began its examination of e-learning in the 4th Report in early 2003 and later made a number of recommendations in the 5th Report. Due to the complexity of the subject, the Council felt a need for a more in-depth review to identify key actionable items for government. Consequently, the PTC decided to host an e-Learning Roundtable. In support of that event, it conducted an extensive round of prior consultations to identify major issues and obstacles to the growth of e-learning.

The consultations, supplemented by a questionnaire, were conducted in December 2003 and January 2004. Information obtained from educators, industry senior executives and government officials as well as from over 100 responses to the e-learning questionnaire, resulted in the identification of 24 key issues. These issues were divided into four streams: K-12, Post-Secondary Education, First Nations and Industry and are listed in Appendix C.

E-LEARNING ROUNDTABLE

The Council held an e-Learning Roundtable on February 3, 2004 at Royal Roads University. This invitation-only event was so popular that only 154 of the over 200 people who applied could be accommodated. The PTC is greatly indebted to the President of Royal Roads University, Dr. Richard Skinner, and members of his executive who helped organize and stage this highly successful event. The Council also expresses gratitude to its sponsor, TELUS, which made this meeting possible.

To make the Roundtable as productive as possible, prior to the gathering the PTC sent each attendee the lists of issues. At the Roundtable members were asked to briefly confirm the issues then spent most of the day identifying solutions. The focus was on the four streams.

Premier Gordon Campbell set the tone for the event, stating in his opening remarks the objective of making BC a leader in all aspects of e-learning. The government would like to promote and encourage technology to be used to extend and enhance education in the province; to maximize learning opportunities in schools, colleges and universities; to encourage the British Columbia e-learning industry and support it in its efforts to build a

viable e-learning business sector here in the province; and to include First Nations in the province's e-learning initiatives.

The Honourable Tom Christensen, Minister of Education, confirmed in his speech at the day-ending plenary that his ministry is committed to improving electronic learning opportunities to help BC students achieve their best – no matter where they live. He outlined a number of steps the Ministry of Education has already undertaken to support the development of e-learning:

- The Ministry has leveled the playing field for electronic programs. Its actions have included:
  - Removing the cap on the number of students taking online courses.
    Prior to 2002, a limited number of districts were piloting the use of electronic learning, and the number of students that could participate was capped at 2,000. In May 2002, the Ministry removed the cap and allowed all districts to offer electronic programs, provided they followed flexible but clear policy guidelines set by the Ministry.
  - Revising the funding model so that students enrolled in electronic programs receive the same per-pupil funding as students enrolled in neighbourhood schools.
  - Funding research for three pilot e-learning projects in Alberni, Coast Mountain and Prince George school districts to research the use of Internet Protocol (IP) video and other technology for full course delivery between rural schools.
  - Providing $20,000 in seed funding to BCEd Online, the provincial consortium to address quality content development, professional development and partnerships with the private sector.
- In addition, other activities related to e-learning are:
  - Policy: A Ministry review committee has been tasked with clarifying the legislative framework for distance education and electronic programs.
  - Standards: In January 2004, the Ministry distributed a policy clarification that provided standards for electronic learning programs. This policy clarification has been well received in the field.

FINDINGS ON E-LEARNING

The comments from the Roundtable and the number of applicants who wanted to attend it make it clear that e-learning is important to British Columbia's future. Opportunities for life long learning should be made available in this knowledge-based economy for people to be competitive and for the economy to prosper.

Roundtable participants and those the PTC met during its regional consultations were clearly impressed with the government's commitment to e-learning and with the steps that have already been taken. However, the consensus is that more can and should be done.

> *"Prior to the implementation of the Provincial Learning Network, the district established a fibre-optic network in Ashcroft and Cache Creek connecting school sites, libraries, government offices, and some businesses through a partnership with the local cable company. ….The PLNet implementation improved on this. The existing T1 Internet access was replaced with a 10mbs fibre link to Kamloops. The local fibre network was improved with equipment from PLNet which established a Gigabit Ethernet backbone from Cache Creek Elementary to Ashcroft Secondary to the cable company. This is the first Gigabit Ethernet between schools in BC which allowed us to centralize services and has been flawless since inception."*
>
> ***John Savage**, Director of Technology, School District #74 (Gold Trail)*

CONNECTIVITY

The most pressing issue or inhibitor for e-learning is connectivity - that is, broadband. While e-learning stands to improve education services for everyone, anywhere in the province, those in rural, remote areas will benefit most because e-learning improves course accessibility. Unfortunately, those who stand to benefit most have the least when it comes to the ability to utilize the services. e-Learning is a vital resource for students in the regions and broadband connectivity is essential for its delivery.

> *"In the Fraser Canyon area, there are no post-secondary education options. Anyone wanting higher education has to leave the community and their support systems behind. Distance Education programs are valuable assets we are locked out of, simply due to lack of broadband service."*
>
> ***Christopher di Armani**, Village of Lytton*

During the consultations prior to the Roundtable and especially during the regional tour, the capacity of PLNet was often raised. It is important to note that there was high praise of government for creating the network in the first place and for its ongoing efforts to upgrade its capacity. For example, today 150 sites that were below T1/DSL (1.5 megabits per second) have been upgraded and another 150 sites will be upgraded before the end of March 2005. Once that is complete, T1/DSL will be the minimum connectivity level to all schools. PLNet is a key player in the government's digital divide strategy. PLNet objectives include upgrading all schools to fibre or the equivalent speed connection over 10 years.

> *"Northern Lights College has developed a partnership with Grand Prairie Regional College. We have agreed to share resources that are delivered by videoconferencing throughout the Peace Region. Currently, however, Northern Lights College is the "bottleneck" in the system because of our low bandwidth and old equipment. … We need support from PLNet for dedicated bandwidth with quality of service for videoconferencing."*
>
> ***Marjo Wheat**, Assistant Principal - Fort St. John Campus, Northern Lights College*

However, many believe that the network may be outpaced by technological change and that it may not keep up with expectations and evolving needs. Present

bandwidths for many schools are too low and inadequate for high bandwidth needs of universities and colleges. Many schools feel they can obtain better connectivity locally. Right or wrong, this gives rise to the impression that network integrity is more important than service to schools.

RECOMMENDATION

6.3 The PTC supports the PLNet initiative and recommends that its installation and capacity review continue to receive top priority to ensure it has the ability to meet ever-expanding needs.

K-12

Leadership was both a roundtable and regional issue. This was not an indictment of government or anyone else. Rather it is a call from the community for a focal point or central body that can develop an e-learning vision, recommend standards, serve as an e-learning champion, and act as a catalyst to accelerate e-learning in the province. At the Roundtable and in most cities the PTC visited around the province, BCEd Online was a respected organization and most believe it is one of the necessary elements to implement an effective distance learning strategy in British Columbia.

RECOMMENDATION

6.4 The PTC recommends that government, through the Ministry of Education, in cooperation with industry and the school districts, support the goals and financing needs of BCEd Online, and that the Ministry continue to monitor and promote the expansion of its activities to all school districts in the province.

As indicated by the Minister of Education in his address to those at the e-Learning Roundtable, and highlighted above, there are many initiatives the Ministry has started to promote technology introduction into the school system to advance e-learning. The government can build on these successes.

RECOMMENDATION

6.5 The PTC recommends that the Ministry of Education:

- **Continue research in e-learning for K-12 to include funding for school districts to use IP video and other telecommunications technology delivery systems.**
- **Conduct education programs for teachers to provide them with the skills necessary to utilize e-learning technology.**
- **Promote the use of technology in school districts.**

- **Continue to work with other provinces to research, evaluate, test, and cost-share in the implementation of e-learning strategies in the K-12 system.**

In its last report, the PTC expressed concern that BC is not producing enough skilled people for the innovation economy and that too few of our youth are opting for technical training and education or pursuing technology-related careers. The PTC believes it is important to introduce into the school system a program to help students discover and evaluate future job opportunities and determine the preparation required to qualify for these positions.

RECOMMENDATION

6.6 The PTC recommends that the Ministry of Education investigate providing a capability to encourage and assist students to enter high-tech careers. The Australian Skills Hub distance learning program, located on the web at www.itskillshub.com.au, is a good example of a resource that has been very successful.

POST-SECONDARY EDUCATION

Government's commitment to online learning is clear. Shirley Bond, the Minister of Advanced Education, has stated that:

> *"Online learning is more efficient and more flexible, and we are committed to using that technology to benefit BC students. BCcampus will help us move post-secondary education into the 21st century and pave the way for a more integrated, efficient and responsive system – one that will increase access, flexibility and choice for all students. BCcampus, a collaboration of BC's colleges, university colleges, universities and institutes, will build on existing programs and services, reducing costly duplication within the system and improving efficiency for students. It will provide a single access point for learners who want to take post-secondary courses and programs by distance. Students will also be able to receive online career counseling and educational advising services."*

At the Roundtable and in the regions, there was widespread support for BCcampus as well as praise for government for having the foresight to create such an important facility. In its 5th Report, the PTC endorsed BCcampus and encouraged government to press forward on its implementation. Having now undertaken extensive consultations on e-learning, the PTC can strongly reaffirm its endorsement of BCcampus and encourage government to not only continue with its implementation but also accelerate it where possible. The PTC heard that BCcampus is well respected for what it has achieved to date. There is also a sense of confidence

> *Northern Lights College has prepared and delivered courses through BCcampus. …Continued growth and development of BCcampus will mean more opportunities for students in our region and faculty.*
>
> ***Marjo Wheat**, Assistant Principal, Northern Lights College*

that as it matures, needs and capabilities will be identified and addressed.

RECOMMENDATION

6.7 The PTC recommends that government, through the Ministry of Advanced Education, continue to encourage and support the BCcampus initiative as the leading organization to promote e-learning concepts at the post-secondary education level.

FIRST NATIONS

At the e-Learning Roundtable and during the regional consultations, the PTC placed special emphasis on First Nations issues. There were two reasons. As a group, too many seem to be on the wrong side of the digital divide and as our early studies showed, collectively they have relatively low high school graduation rates. While PTC recommendations and subsequent government activity on matters such as broadband and e-learning generally will provide some remedy, the PTC believes that these will not be enough.

From the comments it heard, the PTC and First Nations themselves feel that technology offers considerable promise. First Nations were passionate and articulate that broadband will bring economic development, better health and education services, language preservation and other social services. However e-learning, or for that matter e-health, cannot be addressed in isolation. There is a range of broader issues that must be considered before these services can be contemplated in a substantive way.

For First Nations, the digital divide has expanded meaning. To be sure, it includes availability of broadband as discussed earlier. However, there are a number of remote First Nations settlements that do not meet the PTC definition of community and therefore risk not obtaining broadband service. There are also other issues such as computer availability, computer literacy and the lack of technical support in remote communities. Community leadership also needs to be deepened amongst both youth and elders. Unless these broader issues are addressed, the benefits of e-learning and other e-services will not be fully realized.

RECOMMENDATION

6.8 The PTC recommends that government, through NetWork BC, in cooperation with other ministries, lead a process whereby a comprehensive and focused team (possibly federal/provincial) work with First Nations to address digital divide issues and government services such as e-learning and e-health.

INDUSTRY

Our e-learning industry is young with the majority of companies under six years old. Most target the corporate sector, that is, the commercial e-learning sector, and since there is a limited local market, many look to the United States. Despite the small size of BC e-learning companies, the province is recognized globally as a leader in educational technologies and online learning. Industry believes that the key to success is to capitalize on this reputation (before other jurisdictions catch up) and market the industry. Because it is young and consists of small companies with limited resources, the industry is requesting government assistance to help it achieve critical mass.

To assist in developing this critical mass, the PTC encourages the advancement of an R&D component of e-learning in BC. This is important so industry can accomplish key business tasks within the province, such as obtaining qualified graduates in the right disciplines needed to expand their businesses; conducting research in the new media or e-learning area; and promoting the commercialization of technologies in BC which have market applications so the e-learning industry can expand. With the demise of the New Media Innovation Centre or "NewMIC" last year, a void now exists in the province in this area.

RECOMMENDATION

6.9 The PTC recommends that the government work with BC universities, both the federal and provincial governments and large and small business to promote the establishment of an R&D facility to advance the e-learning industry in BC.

e-Health

Since its inception, the PTC has viewed e-health as a means of improving access by the people of British Columbia to one of government's most important services. e-Health has the potential to better patient outcomes by providing more timely and accurate information thus creating opportunities for greater efficiencies and enhanced services. Technology is an enabler of e-health; however, people, both practitioners and patients, are crucial to realizing its potential. Accordingly, the successful development and deployment of e-health applications, such as an electronic health record and telehealth, requires the involvement of professionals, skill development and training, and sustained high level championing.

In the 2nd and 3rd reports, recommendations were made concerning strategic and structural measures needed to provide a framework. In the past two years, considerable progress has been made. The Premier, Minister of Health Services, health ministry and health authority executives have all recognized the importance and potential of e-health. A strategic

framework has been established, allowing recognition of the roles and tasks for such entities as the ministries, health authorities and medical schools.

At the operational level, telehealth has been assigned to the Provincial Health Services Authority (PHSA) and a steering committee has been formed to address telehealth on a priority basis. A Chief Information Officer (CIO) Council with senior representatives of the ministry and the six health authorities has also been formed and has made significant progress in establishing province-wide standards, future planning, and identifying areas of greatest opportunity in the short term. Problems of standards or interoperability are being solved by such initiatives as a secure health infrastructure, communications standardization, common directory services and common portals.

While pleased with the importance government has assigned to e-health and with the progress made in the last two years, the PTC decided to re-examine the subject to determine if other measures could be identified to accelerate implementation. Accordingly, in the summer of 2003, the e-Health Task Group was re-established. Its mission is to identify, prioritize and encourage the adoption of e-health standards and initiatives to enhance the quality, timeliness and accessibility of health services to the citizens of British Columbia.

The Task Group set three objectives:

- Identify a means to operationalize successful and sustainable e-health pilots.
- Accelerate the development of an EHR and identify the means to implement it.
- Find impediments to e-health and the means to overcome them.

Before proceeding further, it is important to note that the terms "telehealth" and "e-health" are not synonymous or interchangeable. Although the PTC has not formally defined either term, telehealth is used in the context of videoconferencing and is a subset of e-health. e-Health is a broader term and encompasses all electronic measures associated with health care including the electronic health record.

Through the deliberations of the e-Health Task Group and presentations made during the regional consultations, the PTC has made a number of observations and recommendations.

SUSTAINABLE PROJECTS

The sustainability of our health care system will require innovative approaches to care delivery. Advances in technology bring an ever-increasing range of service delivery opportunities to providers and patients.

Governments and industry have made significant investments in the technology and infrastructure that allow those living in rural, northern and isolated communities to be

connected to health care providers in other centres. Health authorities have taken advantage of these investments and turned them into sustainable ways of improving both access and quality of health care.

As the PTC highlighted in earlier reports, telehealth has shown to be a safe, reliable, cost-effective and secure way of delivering health care services. It is becoming an integral component of health care reform initiatives across the country. However, to be effective, telehealth programs must be based on the health care needs identified within the community, supported by an approved provider facility and sustained by an approved funding source. Quality of care is achieved through adhering to service standards and guidelines.

During its review of this subject, the PTC quickly discovered that there are a large number of successful telehealth activities in operation throughout the province. A hundred or more British Columbia patients receive medical care every month using telehealth with over 50 communities having access to established clinical programs. These patients receive the highest quality of care and avoid the cost and time of travel to a regional or tertiary care centre. While the expanded use of telehealth is encouraging, the PTC would like to see these services available to a wider range of both physicians and patients across all health authorities.

A few telehealth activities are highlighted below (and further detailed by organization in Appendix D).

CHILDREN'S AND WOMEN'S CARE

Over the past year, more than 40 communities connected with the BC Children's and Women's Health Centre (BCCW) through telehealth. The most frequent users included physicians and patients from 13 rural and remote communities within the Northern Health Authority. Fetal ultrasound interpretation is an example of a clinical service available to pregnant women, where specialists in Vancouver are able to see and review ultrasound images transmitted live from facilities located in different areas of the province to assist with diagnosis and care.

Telehealth services for children include pediatric cardiology, where child heart specialists can review ultrasound images of the heart sent real-time from health facilities many kilometres away. Practitioners treating children with life-limiting illness in communities outside of the Lower Mainland have used telehealth to connect with clinicians at the Canuck Place Children's Hospice regarding palliative care. Psychiatric counseling is provided via telehealth on a regular basis to children in Northwest BC. Adolescents involved with the Eating Disorders Program at the BCCW frequently use telehealth to link with community providers counseling sessions.

CANCER CARE

Clinical consultations, linking newly diagnosed gastrointestinal cancer patients in Nanaimo with a cancer specialist at the Victoria Cancer Centre, have been used successfully. There is a plan to continue this activity and expand it to patients in Campbell River. A similar service is being implemented between the Cancer Centre in Kelowna and patients in Cranbrook and Kamloops.

DERMATOLOGY/WOUND CARE

The Vancouver Coastal Health Authority is putting technology in place which allows clinicians to take a digital picture, upload it to a computer, fill out an electronic assessment of the wound and forward it to a wound care expert for review. The Fraser and Interior health authorities are also using this technology, called *Pixalere*, developed by a Lower Mainland physician.

ADULT MENTAL HEALTH SERVICES

Those suffering with substance abuse problems and other mental illness are able to receive counseling services from primary care, mental health and substance abuse health professionals using telehealth. Psychiatric assessments of people in the court system take place over distance using videoconferencing.

FIRST NATIONS HEALTH SERVICES

First Nations people with diabetes living in remote areas in the North can be tested for a condition called diabetic retinopathy. A vision technician and a diabetic nurse drive a mobile van to various communities where they perform the test and transmit digital images to an eye care specialist in Vancouver. Early detection of this condition allows for treatment and can prevent blindness.

DIAGNOSTIC IMAGING SERVICES

The electronic sharing of medical images (x-rays, CT scans, ultrasound, MRI, etc.), between health care facilities for the purpose of medical interpretation is a regular and growing application within and between health authorities. The BC Cancer Agency (BCCA) has for a number of years incorporated the transfer of digitized radiology images between partner hospitals, BCCA sites, and other facilities.

IMPEDIMENTS

Although progress is being made on e-health, there are still barriers that must be overcome. The key ones identified by the PTC include:

BROADBAND

Some hospitals and smaller rural health facilities do not have access to broadband, precluding them from opportunities to participate in e-health initiatives. The lack of broadband availability in many communities as well as in the homes of many BC citizens is also a major drawback and is denying many people access to important health services. Broadband was discussed earlier in this report but the PTC re-emphasizes here the importance of extending it throughout the province as quickly as possible.

> *"The proposed new health facility for Lytton will have an x-ray machine that does not create a physical print, only a digital image. The advantage, we're told, is that image can be transmitted to Kamloops, Kelowna or Vancouver where specialists can then advise local medical practitioners on treatment options. This sounds great, but how functional will such a system be when we don't have the ability to transfer those images in a timely fashion?"*
>
> ***Christopher di Armani**, Village of Lytton*

BILLING CODES

Expanded use of telehealth is hindered because specific billing codes have not been established. In its last report, the PTC identified this impediment and commented on it but made no formal recommendation. The PTC re-emphasizes that billing codes are essential for e-health implementation and must be considered a priority. The code structure should be viewed as an interim measure for a short, controlled and easily measured implementation. This would create confidence that a province-wide rollout will meet the needs of the practitioner community and assure government of the continuing integrity of the billing process.

6.10 The PTC recommends that government support the adoption of a fee code structure that allows health care providers to bill for e-health procedures.

STANDARDS

The PTC identified the issue of common standards in the 2nd and 3rd reports. These are measures that must be implemented throughout the province, that is, by all health authorities, to ensure interoperability between them. Through the leadership of the CIO Council, considerable progress has already been made; however, the PTC emphasizes the importance of continued action in this area. It urges both the CIO Council and health authority leaders to view this as a high priority and bear it in mind in their business plans so that e-health initiatives can be more easily and cost-effectively implemented. The work to date has identified elements of the electronic health record which form a base on which to build the functionality of the project. Necessary priority should be given to completing the development of this base to ensure a sound foundation for the work going on throughout the province.

COLLABORATION

The importance of health care provider involvement in the design and implementation of IT systems cannot be over emphasized. It is critical that there be sufficient involvement to ensure that practitioners view the final products of the e-health initiative as a welcomed aid in their delivery of care to their patients.

ELECTRONIC HEALTH RECORD (EHR)

This is the PTC's highest priority in e-health. The Council believes that the electronic health record has the potential to improve health care service, improve patient safety through a focus on patient outcomes and allow for better management by patients, providers and government. Judging by the experiences of those in other jurisdictions what on the surface appears simple and straightforward is in fact a mammoth and complex undertaking. While government has made some progress in designing a framework, implementation will take time. This should continue to be a top priority.

The magnitude of the task and the heavy day-to-day workloads faced by the ministries and the authorities in managing the health care system make it difficult to focus on a separate major initiative. Adopting electronic health records means not only addressing broadband availability and telecommunications interoperability issues, but also resolving a host of other impediments. Some of these include: the availability of computers in practitioners' offices; training and change management; integrating information such as lab results and diagnostic images; standardizing the terms labs use to identify the same test results; and taking into account the various terms practitioners use to describe the same ailment.

If an electronic health record is to be effectively designed and implemented, the PTC believes that a focused, dedicated team must be assigned responsibility for it. Also clear from advice the PTC received from practitioners is that their involvement at every stage of development is essential if practical, workable results are to be achieved. Further, the final product must be scalable; that is, the design must be flexible enough so that health authorities and possibility even individual practitioners can adapt it to suit particular needs.

RECOMMENDATION

6.11 The PTC recommends that the government establish a governance structure dedicated to the development and implementation of the EHR. Its structure and accountabilities would involve the following:

- **A pre-determined term (24-36 months, for example) be set, and clear, reasonable success criteria developed.**
- **A team leader who is a member of the ministry executive reporting to the deputy minister.**

- **Positioning so that it is acceptable to the entire community (the health ministries, health authorities and practitioners).**
- **A direct link between the success of the team and the success of the EHR implementation.**
- **A funding model utilizing resources from other bodies such as Canada Health Infoway. The model must allow for central decision making on the common or province-wide EHR infrastructure but also provide continued funding for specific health authority equipment and software.**
- **An advisory group with members from the ministry, health authorities and practitioners to guide development activities.**

Industry Development

Capital and Investment

As noted earlier in the report, this subject was often raised during the regional consultations, particularly in the Lower Mainland and Greater Victoria. In the last PTC report, special emphasis was placed on capital and investment and 13 recommendations were made to improve the availability of capital and spur development of the province's high-tech sector. The process undertaken involved listening to the many stakeholders and key industry leaders. The analysis conducted that led to that report also drew several conclusions upon which the recommendations were based. For emphasis, those conclusions are repeated here.

> *"There is progress in making British Columbia a more competitive home for growth-oriented entrepreneurial enterprise. However, more is required if British Columbia is to be one of the top technology centres in the world. Some of the issues confronting the province are:*
>
> ***AMOUNT OF FUNDING***
> *The Premier has set a target of tripling the amount of venture funding in the province in the next three years from the current $1.1 billion. This includes funding for all stages of entrepreneurial business development, from innovation funding to mezzanine funding for near fully developed enterprises as well as senior capital. This will require not only developing increased amounts of indigenous venture and other forms of capital (including angel investment), but also attracting additional capital from funds outside the province.*
>
> ***APPROPRIATE FUNDING OF VENTURE CAPITAL***
> *The Council believes that a larger pool of venture capital can be realized through the acceleration of funding to venture capital from "traditional sources." In essence, there must be a full maturation of the market for the funding of venture capital in British Columbia and Canada. Increased funding from various investment portfolios, including retirement and insurance, must be realized.*
>
> ***BREADTH OF CAPABILITIES***
> *There are three issues that impede technology sector growth:*
>
> - *The number of venture capitalists in British Columbia is low. There are a number of highly capable executives and firms, but not the critical mass of seasoned veterans that is required to meet the goals that the Council has set.*
> - *British Columbia does not have the breadth of specialist venture capital capabilities required. In regions with fully developed venture capital markets, there are both*

venture capital generalists and specialists – concentrating on one or more industrial sectors (e.g. biotech, bioinstrumentation, etc.). The more specialized funds offer additional capabilities to new or developing ventures and serve to coordinate and to further develop industry clusters, or companies, that create an industry "value chain."

- *The province does not have enough broad-based growth-management executives who understand the challenges of developing an entrepreneurial business and coordinating activities with various stakeholders, particularly financiers.*

VISIBILITY OF OPPORTUNITIES

British Columbia does not have an international business image as a centre for innovation and entrepreneurship. Discussions with major venture capital funds outside of Canada indicate that the province is perceived principally as a recreation destination. Messages need to be specifically designed to attract capital both into entrepreneurial enterprise and venture capital funds.

COORDINATED ACTION

There must be better mutual understanding between industry, government, advocacy groups (e.g. industry associations), and the financial sector, of the need to work together in order to fundamentally increase the depth and breadth of the venture financing pool in BC. A large expansion in the risk capital pool will only be realized through a collective effort that puts aside short-term self-interest."

The key conclusion is that the amount of investment capital available to industry in the province needs to increase dramatically (as stated, triple in three years). This will lead to a significant increase in industrial activity and jobs to enable British Columbia to be a major technology centre and build leadership and reputation. In the end, money drives investment, which in turn drives economic growth and jobs. Most of the recommendations in the last report were intended to do just that. While there is no intention of repeating the recommendations in this report, there are a few the PTC wishes to emphasize. **The Fund of Funds was the central recommendation made to generate capital and the PTC reiterates the need for government to implement this concept.**

TAX CREDITS

In the 5th Report, the PTC emphasized the important role the angel investor plays in industry development. In a province where 96% of the high-tech companies have fewer than 50 employees; 88% have fewer than 20 and 77% have under 10 employees, the angel investor is needed as much for strategic management insight and connections as for capital. To spur the involvement of more experienced angels, **the PTC reiterates the need to remove the individual annual limit in the provincial *Income Tax Act* for angel investors**. This would place them on par with corporations and funds neither of which have limits.

SMALL BUSINESS VENTURE CAPITAL (SBVC) ACT PROGRAM TAX CREDIT ALLOCATION

As pointed out in the Regional Consultations section, the decision to limit the tax credits created some serious difficulties in the financial community. Ironically, in one sense, the program was a great success. That is, changes made based on previous PTC recommendations, resulted in a take-up that was much greater than government anticipated and allocations that had been underutilized in the past were quickly used up. Unfortunately, this "success" undermined the efforts of many fund managers, putting their credibility at risk and a number of ventures failed to capitalize on the momentum to raise funds under the program.

Overall, as well, there was the underlying sense and tone from all that the program under the *SBVC Act* was particularly effective, that the administrative changes the government had made to reduce the red tape had worked extremely well, that there was a high demand for this program, that the payback to the government and the province was extremely positive and that the program should be expanded. While one fund allocation was used up, the labour-sponsored fund allocation under the *Employee Investment Act* was not. Many problems could have been overcome if unused credits in one area could have been transferred to the other.

RECOMMENDATION

6.12 The PTC recommends that government expand the tax credits under the *SBVC Act*. Further, government should change appropriate regulations so that the tax credits exist as a total allocation over multiple years and unused credits can be transferred between programs.

POSITIVE SIGNS IN BRITISH COLUMBIA

In a recent analysis BC was found to have fared better than any region in Canada in the past six years in generating shareholder value in technology companies. While BC only receives on average 14% of the venture capital invested nationally, it produces 26% of the exit value. BC's average exit value is US$256 million compared to the national average of US$201 million. Despite its leading performance since January 1, 2000, BC only received $1. 5 billion or 12.4% of Canada's venture capital funding. Clearly, industries in BC stand to benefit greatly from improved access to capital.

Despite the current challenges in accessing capital, recent deals indicate that BC's position is strengthening. While BC only managed to draw 7% of early stage venture capital in 2003, it

has attracted 31% for the first quarter of 2004. This marks a good start for 2004 and will hopefully continue for the remainder of the year.

Human Resources

During the winter of 2003/04, the PTC conducted a survey of technology companies throughout the province to identify the most pressing human resource issues faced by industry. The subject was also raised a number of times during the PTC's 2004 regional consultations.

The issues can be divided into two groups. There are a few that affect companies everywhere in the province and some unique to outlying regions. The common issues generally are finding senior talent and attracting experienced workers with specific skills. These were addressed, in part, by the PTC in its 5th Report through recommendations in capital and investment. Measures were proposed to make it more attractive for senior talent to choose to work in British Columbia. The creation of Leading Edge British Columbia was also intended to assist in recruitment, and the PTC makes the following recommendation to ensure that recruitment is specifically addressed.

RECOMMENDATION

6.13 The PTC recommends that government, through Leading Edge British Columbia, undertake special marketing initiatives to assist in recruiting talent for high-tech companies throughout the province.

"This brings us to the issue of attracting senior talent. MediaWeb is one of several companies that have remote or virtual offices so that we can attract and retain key talent. Many people are unwilling to relocate to what they perceive is an isolated location. The Regions can offer a great lifestyle and unmatched affordability but it is still a large perceived risk to move to a region with very few employers. As such, it has been almost inevitable that as senior staff gets concentrated in larger centres, the orbit shifts and companies migrate to larger centres despite our lifestyle advantages.

***Rob Stocks**. President. MediaWeb Solutions Inc.*

In areas outside the Lower Mainland or Greater Victoria, firms face special challenges in obtaining talent. Considered to be outside the mainstream or beyond "where the action is", communities not only find it difficult to attract talent, they tend to lose some of what they already have. They also face issues such as uncompetitive wages, limited access to human resources expertise, availability or accessibility of training programs for employees, and affordability of training due to the small size of most companies.

The greatest asset these communities have is quality of life, which is one of the most important factors or determinants for location decisions of employees in the highly mobile technology industry. In addition, compared to many other jurisdictions around the world, British Columbia is a safe, stable paradise that would be a destination of choice if widely known. The PTC re-emphasizes the importance of marketing, which must include the regions of the province. The Council also reiterates the recommendation made in the consultation section earlier that special measures are needed to encourage growth and development of businesses in the regions.

Alternative Energy: Fuel Cells

At Globe 2004, industry and the provincial and federal governments announced the Hydrogen Highway™ portion of the British Columbia Hydrogen and Fuel Cell Strategy. The strategy was the culmination of an 18 month collaborative effort by industry led by PTC member Denis Connor. The strategy provides a vision for British Columbia to become the world's leading hydrogen economy by 2020.

The strategy proposes to build on BC's leadership in fuel cells and make it a world centre for energy technology. The Hydrogen Highway™ is the centerpiece of the strategy that aims to:

- Develop a global energy technology cluster in BC by building knowledge, and strong companies and internal relationships that will provide the basis for global export.
- Revitalize the province's regions by providing economic opportunities to support a hydrogen economy through alternative energy production.

The highway, extending from Vancouver to Whistler, Surrey and Victoria, will serve as a legacy of the 2010 Olympic and Paralympic Winter Games. It will increase awareness about hydrogen technologies, support the development of infrastructure and expertise, and present invaluable applied research and development opportunities.

There are four areas of priority for the strategy, whose overall implementation is being led by Fuel Cells Canada. These four strategies will require championing, funding and policy support. They are:

- Securing BC's global leadership as a world centre for sustainable energy technology and expertise.
- Developing world markets for BC's products and services through partnerships.
- Investing in research and educational infrastructure to provide a strong knowledge base for the hydrogen economy.
- Sustaining resource-based sectors in the regions by developing and deploying clean energy technologies.

WHAT IS IN IT FOR BC?

There has been significant interest and investment in fuel cells in British Columbia. Due to our leadership, the eyes of the world are on the province. To date, $1.8 billion in private and venture capital has been invested, $133 million has been contributed by the federal and provincial governments since 1986, $20 million of which was recovered through Ballard share warrants. Over $200 million has been returned through corporate and personal income and capital tax gains on employees and shareholders.

The sector forecasts a world market of $46 billion by 2011, BC revenues at $3 billion, and a workforce of 10,000 by 2010. Other benefits are expected to include:

- Economic: Knowledge-based jobs, exportable goods and services, additional tax revenues, regional economic development.
- Social: Reduced emissions, more efficient and renewable energy, research investment.
- Others:
  - Raising our profile as world a technology centre and place for hydrogen economy innovations, creating and leveraging commercial and political partnership opportunities at the national and international level.
  - Drawing upon federal funds: $50 million for hydrogen economy demonstrations, 5-year pool of $160 million for climate change in the provinces, and $215 million available for R&D, demonstrations and early adopter programs.

The Premier's Technology Council reviewed the strategy on January 16, 2004, endorsing it and its key theme of the Hydrogen Highway™. The PTC advocates the investment of resources in the sector to enable continued global leadership.

RECOMMENDATION

6.14 The PTC recommends that government build on the record of success and work with the energy technology sector to complete the "Hydrogen Highway™" prior to the 2010 Olympics and to further develop the sector.

Life Sciences

As early as its second report, the PTC recommended that government focus its marketing strategy on key sectors in which the province has noticeable strengths, one of which was biotechnology. British Columbia has the fastest growing biotechnology industry in Canada with 90 private sector firms plus a host of university researchers, teaching hospitals and research institutes. To showcase BC and help develop the sector further, the Premier and the

Minister of Small Business and Economic Development led a delegation of the province's biotechnology community to BIO2004 in San Francisco in June 2004.

The PTC is pleased to note that the government and over 16 organizations representing academia, the research community, early stage and established biotechnology companies and related industry associations worked together to promote BC's leadership in biotechnology and its extraordinary business climate for technology enterprise. Among the high profile activities that took place were a large collaborative exhibit in the BC pavilion, a Leading Edge British Columbia-sponsored private CEO and investor dinner hosted by QLT CEO Paul Hastings at his San Francisco home, and an open reception in the BC pavilion that featured the best of BC's lifestyle.

Concluding Remarks and Next Steps

The wide-ranging topics in this report reflect how fully British Columbians from all walks of life and from all regions have embraced our high-tech future. The PTC was pleased that the stakeholders themselves helped to set the agenda for our consultations and believe that this shows the initiative they are taking to make the most out of the province's economic potential.

The recommendations in this report are as diverse as BC itself. Some are specific to smaller communities, focused on expanding broadband access (using a cooperative effort among government, industry and local stakeholders) and providing First Nations with e-learning solutions tailored to their own needs and culture (through a dedicated task force); others relate to larger centres, particularly expanding the availability of capital and investment (through more flexible venture capital tax credits). Some recommendations relate to government operations, such as those focused on e-health (creating electronic health records) and e-learning (strengthening institutions that work with teachers and learners – e.g. BCEd Online and BCcampus), while others address concerns of the private sector, including the need to attract talent to high-tech firms throughout BC (through whole-of-province marketing strategies). What they all have in common is the positive spirit in which they were offered.

The PTC will be doing its part to keep up the momentum. In response to private sector issues about barriers to procurement, the PTC plans to hold two seminars for small businesses in the fall of 2004. The Council is also considering hosting another large symposium in the Lower Mainland, building on a similar event two years ago. The Council expects that its 7th Report will update the learnings and identify remaining obstacles to be overcome.

In terms of private sector opportunities, commercializing research – that is, ensuring that earnings follow the "eureka" – is a PTC priority. The Council intends to examine the commercialization of publicly funded research, how to measure this shift of technology from academia to business, the adoption of technology by industry, and the support required for investors at different stages of financing.

The PTC looks forward to presenting its next report to the Government of British Columbia in the fall of 2004.

This page has been left blank intentionally

Appendix A. Regional Consultations Attendees

Regional Consultations

CRANBROOK CONSULTATION

Donna Lomas, Dean of Instruction & College Articulation
Heather Schneider, Dean of Instruction & Development
Toni O'Keeffe, Director - College Relations & Communications
College of the Rockies

Don Maki, Director of Language Resources
Kathryn Teneese, Chief Negotiator
Ktunaxa/Kinbasket Tribal Council

Cal McDougall, Mayor
Danny Dwyer, Technical Planning Coordinator/Approving Officer
District of Sparwood

Paul Wortley, Manager
Sparwood & District Chamber of Commerce

Greg Deck, Mayor
Village of Radium Hot Springs

Kevin Mclsaac, Manager - Partnership Development
Columbia Mountain Open Network

Grace Williams, Business Manager
Kaiser Valley Health Care Cooperative

Dr. Joseph Kotlarz, Chief of Staff
Dr. Tracey Parnell
East Kootenay Regional Hospital

Ron McRae, Mayor
Bruce Irwin, Information Systems Coordinator
City of Kimberley

Bill Therens, Co-Owner
Rocky Mountain Networks Ltd.

Jim Montain, City Administrator
City of Cranbrook

Ursula Brigl, Chief Librarian
Cranbrook Public Library

Doug Hogg, Principal - Amy Woodland Elementary School
School District #5 - Southeast Kootenay

NANAIMO CONSULTATION

Marilyn Hutchinson, Executive Director
Mid-Island Science, Technology & Innovation Council (MISTIC)

MISTIC Board of Directors
Dave Mannix, EDO, Snuneymuxw First Nation (Co-Chair)
Dr. Don Reimer, President, D.R. Systems Inc.
Dr. David Drakeford, Dean - Science & Technology, Malaspina University College
Dan Cvitanovich, President, Wet Coast Internet Services Ltd.
Terry Knight, Corporate Chairman, Inuktun Services Ltd.

Dennis Silvestrone, Dean of Adult & Continuing Education - Centre for Continuing Studies
Sheila Cooper, Program Coordinator - Centre for Continuing Studies
Judy Southwell, Manager - Education Technology Centre
Dr. David Drakeford, Dean - Science & Technology
Malaspina University College

Chuck Rowe, Executive Director - Central Island
Vancouver Island Health Authority

Valerie Houghton, President
Dr. Mel Petreman, Vice President
Health Bytes

Bev Collins, General Manager
Pacific Community Network Association

Tom Buxton, Owner
Buxton Technical Services

Jim Forsyth, General Manager
Campbell River TV Association

Lisa Shaver, Councillor
Penelakut Tribe

Alan Millbank, COO
Praxis Technical Group

Observers

Mike Hunter, M.L.A
Siona Rounis, Constituency Assistant to Mike Hunter, M.L.A.
Nanaimo Constituency Office

Gary Wilson, Director - TELUS Corporate Affairs & General Counsel
TELUS

Gary Paugh, Director - Vancouver Island District
Industry Canada

NELSON CONSULTATION

Don Maki, Director of Language Resources
Gwen Philips, Governance Transition Coordinator
Ktunaxa/Kinbasket Tribal Council

Susan Chew, Manager - Project Development
Columbia Mountain Open Network (CMON)

Bruce Hardy, President
Claudia Trudeau, Executive Director
Jill Koziak, Project Coordinator
Kootenay Association for Science & Technology (KAST)

George Mclvor, Vice President
Administration/Chief Financial Officer
Darrel Hicks, Network/Systems Specialist
Selkirk College - Castlegar Campus

Kelvin Saldern, Training Consultant
Greater Trail Community Skills Centre

Doug Jay, Councillor
Kevin Cormack, CFO
The Corporation of the City of Nelson - Nelson Technology Task Force

Jeff Roberts, CEO
Columbia Mountain Open Network (CMON)

Dr. Larry Gray, Superintendent of Schools
John Eggleton, District Principal Technology
School District #20 -Kootenay-Columbia

Everette Surgenor, Chair
Castlegar Broadband Committee

Derek Murphy, Chair
Slocan Valley Economic Development Commission

Alistair Skey, District Technology Manager
School District #10 - Arrow Lakes

Doug Van Sickle, Principal
Dan Dalgaard, Vice-Principal
Distance Education School of the Kootenays (DESK)

Brian Fry, VP Sales
RackForce Hosting Inc.

Matt Wenger, Spokesperson
Broadband Community Champions Consortium (BC3)

Kay Ryan, IBDE Project Coordinator
CFDC - Central Kootenay

Grant Sutherland, CEO
Mentor Manager

Michael Strukoff, Principal - JA Hutton Elementary
School District #51 - Grand Forks

Margarita Loyola, Coordinator New Technologies
Interior Health Authority

Observers
Keith Bishop, Access Policy Manager - Telecom Policy & Regulatory Affairs
TELUS

Gary Kalinski, Co-chair
Nelson Health Task Force

June Stockdale, Library Director
Castlegar & District Public Library

KELOWNA CONSULTATION

Andrew Allin, President
Margret Horvath, Executive Director
Mike Boudreau, Secretary
Okanagan Science and Technology Council

Pat Ryan, CIO
Mal Griffin, Director -Applications & Information Development
Norma Malanowich, Director - Electronic Health Record Development
Madelene Friesen, Director - Client Services & Security
Interior Health Authority

Peter Arthur, Educational Technology Coordinator
Okanagan University College

Brad Bennett, Co-chair
Gordon Fitzpatrick, Co- chair
Nelson Jatel, Executive Director
Okanagan Partnership

Hans DeBruyn
Okanagan Technology Consulting Inc.

Roger Mayer, Electoral Area "G" Director
Regional District of Okanagan-Similkameen

Dave Lee, Principal, Alternate Learning Programs Director
COOL School

Wayne Klamut, IT Manager
City of Penticton

Gary Hovey
National Research Council/Dominion Radio Astrophyiscal Observatory

Al Hildebrandt, President & CEO
QHR Technologies Inc.

Robert E. Linttell, President
Okanagan Capital Fund (VCC) Inc.

Ron Shongrunden, Assistant Secretary Treasurer
School District #67 - Okanagan Skaha

Jacques LeCavalier, President
J. LeCavalier & Associates Inc.

Rick West, CEO and President
Val West
WestTech Energy Inc.

Harry Adam, Interim Steering Chair
Okanagan Community Access Program (CAP) Regional Network

Kevin White, Sales Director - BC Interior Region
TELUS

KAMLOOPS CONSULTATION

Dr. Thomas E. Dickinson, Associate Vice-President (Research)
Nancy Levesque, Director - Library & Information Services
Dr. Donald J. Noakes, Dean - School of Advanced Technologies & Mathematics
Kevin O'Neil, Chair - Department of Computing Science - School of Advanced Technologies & Mathematics
Henry L. Reiser, Chairperson - Electronics & Engineering Department , School of Advanced Technologies and Mathematics
University College of the Cariboo

Raelene Shea, Director Rural & Community Health Services - Thompson
Roy Southby, Director Technology Services
Interior Health Authority

Fred Sampson, Community Chief
Siska Band

Gregg Ferrie, Manager - Information Technology
Dr. Terry Sullivan, Superintendent of Schools
School District #73 - Kamloops/Thompson Region

John Savage, Director of Technology
Nancy V. Wells, Superintendent of Schools
School District #74 - Gold Trail

Bill McQuarrie, Executive Direcor
Pat Miller, President
Fran White, Director
Interior Science and Innovation Council

Al Richmond, Director Electoral Area 'G'/Chairman, Cariboo-Chilcotin Regional Hospital District
Cariboo Regional District

Frank Mayhood, Information Technology Manager
City of Kamloops

Christopher di Armani, Consultant
Village of Lytton

Cindy Hanghofer, President
OnCall Internet Services

Pache Denis, President
Gold Trail Open Network Society

Kevin Kierans, Director of Libraries
Thompson-Nicola Regional District

Richard LeBourdais, Community Chief
Sandra LeBourdais
Whispering Pines Clinton Band

Dr. Gerry William, Associate Dean
Nicola Valley Institute of Technology

Arjun Singh, President
Digital Valley Association

Rob Stocks, President
MediaWeb Solutions

Olaf Clausen, Director - Information Systems
Fountainview Academy

Observers
Kevin White, Sales Director - BC Interior Region
TELUS

Dave Harestad, President & CEO
Barry Baker, COO & CTO
eOptimize Inc.

TERRACE CONSULTATION

Betty Barton
National Research Council

Les Deacon-Rogers, Project Coordinator - CLN-RAIN Project
Community Futures Development Corporation of the Pacific Northwest

Warren Wilson, Principal
North Coast Distance Education School

Don Holkestad, Operations Manager
Greg Nancekivell, Technical Manager
City Tel

Stephanie Forsyth, President
Beth Davies, VP - Education & Student Support
Diane Ready, VP - Finance
Terrie McAloney, Faculty - Online Learning Coordinator
Todd Taylor, Coordinator - Information & Communication Systems
Northwest Community College

Jamie Sterritt, Manager of Information Technology
Gitksan Government Commission

Deanna Nyce, CEO
Nisga'a House of Learning (Wilp Wilxo'oskwhl Nisga'a)

Gary Patsey, Manager - Information Technology
Nisga'a Lisims Government

Nancy McNab, Executive Director of Education/Centre Manager
McNab Morris Developments

Written Submission
Dan Pakula, President
Telegraph Trail Internet Society

Warren Cocking, District Principal
School District #87 - Stikine

Observers
Sasa Loggin, Consultant
Raven i.designs and training

Kevin White, Sales Director - BC Interior Region
TELUS

Mike Scott, Project Director
Gingolx Media Centre

PRINCE GEORGE CONSULTATION

Dawn Miller, Executive Director
Innovation Resource Centre

Charles Jago, President & Vice Chancellor
Max Blouw, VP - Research
Lynda Williams, Project Leader - Center for Teaching & Learning Instructor
Saif Zahir, Associate Professor - Computer Science
Craig Norton, Micro Systems Consultant - Computing & Telecommunication Services
University of Northern BC

Jeff Hunter, Core Technology Manager
June Clark, Business Integration Manager
Northern Health Authority

Ray LeMoigne, Principal
Dave Gregg, Vice Principal
Nechako Electronic Busing Program

Bob Allen, President & CEO
ABC Communications

Daniel Miller, Partner - Systems Implementation & Integration
Miller Software Consulting

Dr. Don Precosky, Dean - Arts and Science
College of New Caledonia

Dr. June Anonson, Dean - Health Sciences
College of New Caledonia

Kevin White, Sales Director - BC Interior Region
TELUS

Dr. William Clifford, CEO
Medical Office Information Systems

Tim Thomas, Marketing Manager
Terra Cognita Software Systems Inc.

Garth Frizzell, President & CEO, Terra Cognita Software Systems Inc.
Technology CEO Roundtable

Allan Wilson, Chief Librarian
Prince George Public Library

Kim Martinsen, Project Administrator - BRAND
CFDC Nadina

David Russell, Technology Committee Member
Prince George Chamber of Commerce

George Paul, City Manager
Bill Johnson, IT Manager
City of Prince George

FORT ST. JOHN CONSULTATION

Gary Oker, Community Chief
Warren Reade, Band Manager
Pamelyn Koehn, Business Development Manager
Doig River First Nations

Lori Lynn Ackerman, Executive Director
Dale Sokoloski, Canada Technology Network-Business Analyst
Sci-Tech North

Marjo Wheat, Assistant Principal - Fort St John Campus
Mark Hanen, Educational Technology Coordinator
Northern Lights College

Hugh Bartlett, Principal
Laurie Shuster, VP - Secondary Advisor
Northern BC Distance Education School

David Vandergugten, District Principal of Technology
School District #60 – Peace River North

Chad Anderson, Technology Officer
Kiwanis Enterprise Centre

John Royer, Education Technology Facilitator
Northern Opportunities

Arvo Koppel, System Administrator
Peace Region Internet Society

Dan Arbeau, Owner
Axis IT Solutions

Written Submission
Jim Morrison, President
Morrison Machine Works Ltd.

Observer
Kevin White, Sales Director - BC Interior Region
TELUS

Lower Mainland and Greater Victoria Consultations

SURREY CONSULTATION

Gail Goulet, President
Career Connections Training Centre
Shirley Gust, Consultant

Ajay Caleb, Business Development
Samco Software Inc.

Michael Peddemors, President
LinuxMagic Inc.

(Charles) Len Shaffer, West Coast Principal
Performance Partners LLC

Dr. Cynthia Lewis, Assistant Superintendent
Shelley Wilcox, Coordinator Online Learning
Sharon L. Cohen, Director of Instruction
School District #36 - Surrey

Allan Alton, Computer Security Professional

Dr. Phill Mann, Principal
Whytecliff Education Centre - Focus Foundation of BC

Benjamin Chua, Business Consultant

Roy Trivett, President & CEO
Imagis Technologies Inc.

Shevy Levy, President
Jim Yupangco, Instructional Media Manager
Lambda Solutions

Kathryn Loewen, E-learning/Technology Coordinator
Women's Enterprise Society of BC

Lindsay Allan, General Manager
Pathnet Services Ltd.

Miguel Todaro

Geoffrey Gachallan

Paul Cyr
Zephaniah Wong
SFU students

Lee Vishloff, Vice President - R& D
Argon Security Technologies

Ethan J. Huberman, CEO
Hi-Performance Enterprises Inc.
Don Dewar, The Whistler Card, Training & Whistler Spirit Program
The Whistler Chamber

Les Pilchak
Kyle Fairfield
E-Card ID Products

Susan Johnson
Robert Tremonti
APS Group

Karey Mah, Marketing and Training Advisor
Bakhtiar Hassan, IT Coordinator
Universal Learning Institute

Dr. Michael Leung, Vice President Development
TRLabs/SFU - Digital Lab Learning Technologies

Joanne Curry, Director
Dr. Ron Wakkary, School of Interactive Arts and Technology
Simon Fraser University - Surrey Campus

Wayne Simle, Market Area General Manager - BC
Cam Hantiuk, Director Public Affairs
David Riley,Market Area Sales & Marketing Manager
Canadian Waste Services Inc

Michelle Creedy
Canadian Council of the Blind

Observer
Linda Hepner, Manager - Economic Development
City of Surrey

VICTORIA CONSULTATION

Bill Cooke, CEO
Shirley Vickers, Director - Business Development
Dan Gunn, Director - Communications & IT
Vancouver Island Advanced Technology Centre
Dale Gann, Manager, Business Development & Marketing
Vancouver Island Technology Park

Paul Lacroix, President & CEO
Ocean Innovative Systems Inc.

Harry Weiler, President
AXYS Environmental Systems

Brad Forth , President & CEO
Jacques Van Campen, VP Operations
Power Measurement

Colin How, President & CEO
How2Share Technologies Inc.

Anita Murray-Hill, Director of Finance & Administration
WISE Energy Co-op

Eric Jordan, Chief Strategy Officer & Co-founder
PureEdge

Rodger Darby
InSite Executive Partners Inc.

Glenn Radford
Intelligent Traffic Equipment Marketing Ltd.

Andrea Guyon
Andad Research and Development Inc.

Naomi Hamilton, Director Project Delivery
OA Solutions

Tayo Runsewe, Managing Director
Pangaea Systems

Robert Bennett, President & CEO
Municipal Software

Dr. Samuel D.M. Abraham, Director - Technology Development
BC Cancer Agency

Anna Junge, Human Resource Manager
Daniels Electronics Ltd.

Wolfgang Schuch
Cellfor

Patrick Arnold, President
RPA Systems Farm

Warren Brown, President
Procura

Scott Phillips, CEO
Scott Phillips Engineering

Danford Bodrug, President & CEO
Applied Microsystems

Tim Walzak, President & CEO - Innovation and Development Corporation
University of Victoria

Written Submission
Dr. Mir F. Ali, Education Liason Director
The Canadian Information Processing Society

Appendix B. NetWork BC

NETWORK BC PROJECT OBJECTIVES

- Create Next Generation Public Sector Network –and open up affordable access to citizens and businesses in all regions of the province.
- Improve First Nations access – 60% of communities currently without broadband access are First Nations.
- Create common service delivery models-new network provides infrastructure for delivering better, faster, cheaper and more integrated services to communities and the public.
- Form new alliances with federal government and First Nations, and expand current relationships.
- Generate economic development in heartland communities throughout the province – affordable broadband will link communities to the digital economy, improve ability to promote businesses and trade information, goods, services.
- Work with private and public sector in innovative ways, such as Joint Solutions Procurement (JSP) process, to meet objectives of NetWorkBC project.
- Create open points of presence in provincial communities - definition of Point of Presence (POPs) and locations will emerge through JSP process.

NETWORK BC MODEL

The NetWork BC project is integrating all stakeholder needs into a cohesive model:

- BC's model combines PUSH from the Province (a backbone network TO the communities), with PULL from the communities themselves (local entrepreneurs and providers building the "last mile" connectivity infrastructure WITHIN the communities).
- BC's model is the only example we know of where bridging the digital divide is being attempted without significant capital investment by the government.

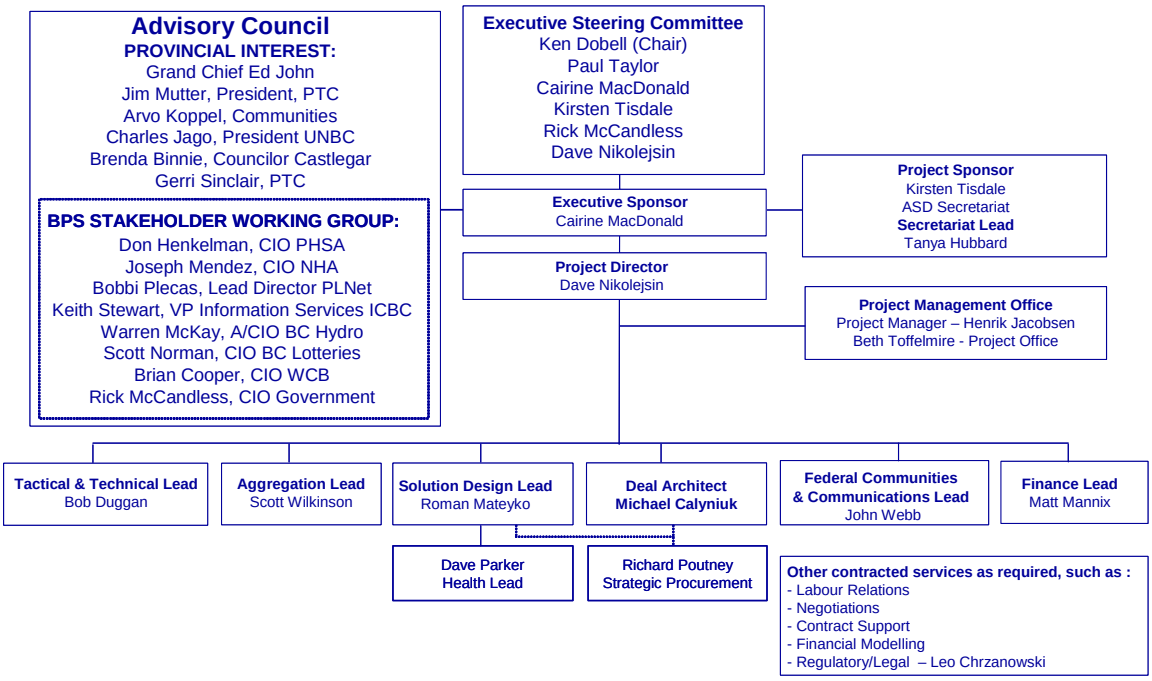
TACTICAL PLAN

- Renegotiating all existing contracts with expiry December 31, 2006:
  - Over $19M in savings (2003-2006) have been achieved.
- Achieving significant benefits for our stakeholders:
  - high-speed low cost connections to 70 unserved communities.
  - upgraded broadband connections at 154 schools from TELUS.
- Upgrading the Network backbone:
  - typically 10 times current speeds at same or lower cost.
  - negotiated same speeds and costs for community network in the Kootenays.
- Increasing Network Availability:
  - Building route diversity into the Network Backbone.
- Supporting Communities:
  - Upgrades are being used by Broadband for Rural and Northern Development (BRAND) projects as matching contribution leveraging Federal dollars into the province.

STRATEGIC PLAN

- Strategic plan (executed in parallel) – design, procure and transition to next generation provincial network and connect remaining communities:
  - Close the digital divide with no new money by re-investing savings
  - Aggregate public sector spend
  - Leverage partnerships with federal government and First Nations
  - Engage private sector to deliver infrastructure
  - Introduce a well-governed independent procurement capacity (smart buyer)
  - Substantively complete (as a project) by the end of 36 months
- Innovative procurement Joint Solutions Request For Proposal (JSRFP) is the heart of the strategic plan:
  - Term could be up to 10 years
  - The value could exceed $1 billion
  - Will include the Broader Public Sector aggregated spend as much as possible
- Province expects that multiple vendors, including regionally based suppliers, will be part of the final solution.
- New network begins operations on January 1, 2007

NETWORK BC PROJECT STRUCTURE



Appendix C. e-Learning Roundtable

e-Learning Issues

The following issues were derived from extensive consultations with, and written submissions from, e-learning stakeholders. They do not necessarily represent the opinion of the Premier's Technology Council.

K-12

1. **LEADERSHIP**
   Government lacks a clearly articulated and well understood e-learning vision and strategy to build a sustainable e-learning model:
   - Leadership is not evident which leads to inconsistent funding for development, fragmented effort and considerable duplication.
   - There are inconsistent policies and regulations between students who attend schools and those who are educated at home.

2. **FUNDING MODEL**
   The current funding model which is based on Full-Time Equivalent (FTE) and a one-time calculation per year (every September 30) is inflexible and hinders the adoption of e-learning in the province.

3. **CURRICULUM**
   The current curriculum does not encourage the use and development of e-learning:
   - There is little in the way of online course/curriculum development standards and performance measures.
   - The current curriculum can be interpreted in many different ways.
   - There is little room to exploit technologies.

4. **CONTENT DEVELOPMENT AND MANAGEMENT**
   Current processes for the development of content are inadequate:
   - There is a lack of funding for the development of shared content.
   - There is a need to have more/aggregate resources online - e.g. online library.
   - There is a need to clarify ownership or copyright of e-learning material.

5. **COURSE DELIVERY**
   - Training and credentials need to be addressed:
     - For principals to provide leadership on how to implement e-learning solutions.

  - For teachers to move from face-to-face to online teaching environment.
- There is a resource issue for delivery of online courses - currently many teachers are overloaded trying to teach both face-to-face and online.

6. INFRASTRUCTURE

There is inadequate infrastructure and support for e-learning throughout the province:

- Not all BC students have equal access to broadband/adequate computers.
- There is a need for a common interoperable infrastructure.
- There is a lack of centralized repository of high quality learning objects that can be repurposed quickly and easily.
- Information/computer literacy skills need to be enhanced for learners.

POST-SECONDARY EDUCATION

1. LEADERSHIP

Government lacks a clearly articulated and well understood e-learning vision and strategy to build a sustainable e-learning model:

- Leadership is not evident which leads to inconsistent funding for development, fragmented effort and considerable duplication.

2. CONTENT DEVELOPMENT AND MANAGEMENT

Current processes for the development of content are inadequate:

- There is limited funding and skilled people for content development.
- There is a lack of collaboration.
- There is a lack of quality control in instructional design.
- There are inconsistent policies concerning ownership/copyright of Intellectual Property.
- e-Learning R&D is very limited.

3. PROGRAM DELIVERY

There are faculty inadequacies:

- Faculty support and training on how to teach effectively in the online learning environment is limited.
- There is a shortage of resources and people for program delivery.

4. INFRASTRUCTURE

There is inadequate infrastructure and support for e-learning throughout the province:

- There is a need for a common sustainable platform and compatible applications.
- Limited access to computers/broadband, especially for learners in remote and rural communities, and disadvantaged communities in urban settings.

5. STUDENT SUPPORT

There are special student support issues that hinder development and use of e-learning:

- Computer literacy skills need to be enhanced for learners.
- e-Learning affects student loan eligibility.
- There is a need for seamless admission/registration and transferring of credits between post-secondary institutions.
- Currently, there are no economies of scale for student services, such as access to library databases, helpdesk support and academic advising.

6. MARKETING

There is insufficient effort to put BC on the map or showcase BC e-learning successes.

FIRST NATIONS

1. LEADERSHIP AND STRATEGY

- Government lacks a clearly articulated and well understood e-learning vision and strategy to build a sustainable e-learning model:
  - Leadership is not evident which leads to inconsistent funding for development, fragmented effort and considerable duplication.
- There is a trust issue between First Nations and provincial/federal government.
- Currently, government's process/program for First Nations communities is delivered as a top-down approach (very little/no First Nations community involvement).

2. RESOURCES

Limited resources (funding and human resources) to create an e-learning environment which includes creating an understanding of what e-learning is and its potential.

3. CONTENT DEVELOPMENT AND MANAGEMENT

Funding for content development does not include cultural components.

4. PROFESSIONAL DEVELOPMENT

There is a lack of educators trained to deliver online courses effectively.

5. INFRASTRUCTURE

There is inadequate infrastructure and support for e-learning throughout First Nations communities:

- There is a need for a common sustainable platform and compatible applications.
- Limited access to broadband and computers.

6. STUDENT SUPPORT

There are inadequate mechanisms for student support:

- There is limited community support to create a viable e-learning environment.
- Information/computer literacy skills need to be enhanced for learners.

INDUSTRY

1. CAPITAL

Capital and investment issues inhibit the growth of e-learning companies:

- There is a shortage of investment capital, including venture capital.
- There is very limited e-learning expertise in fund management companies.
- Lack of clarity concerning the new media tax credit which excludes some e-learning companies.

2. HUMAN RESOURCES

There is a shortage of employees with good content development skills.

3. R&D

There is inadequate funding for e-learning research and development.

4. CONTENT DEVELOPMENT AND MANAGEMENT

- Subject expert copyright and ownership issues - getting compensated/credited for work that ends up in public domain.
- Need a vehicle to credential private sector products for delivery of world-class online curriculum.
- There is a need to aggregate content and sell it as a package.

5. MARKETING AND INTELLIGENCE

The potential to develop a vibrant e-learning industry in British Columbia is considerable but it is currently quite small with most companies at the start-up stage. Support mechanisms are needed to:

- Access US and other international markets.
- Gather intelligence on industry trends, directions, structure and offerings.
- Foster collaboration amongst local companies.

6. COLLABORATION WITH THE PUBLIC SECTOR

There is no real cooperation between the public sector, academia and industry to develop a coherent strategy to form an economic cluster in e-learning:

- Industry and public sector need to work together to help develop the industry.
- Lack of public awareness and acceptance of e-learning.
- Greater public use of BC products.
- There is need for a centralized organizing body for training, development, maintenance and delivery of world-class, quality standards, online curriculum.

Prior Consultations

Jill Bodkin, Chair & CEO
Golden Heron Enterprises

Barry Carbol PhD, Senior Vice President & CEO
Dr. Sam Lim, President & CEO
MERIT Learning Corporation

Judy Dallas, Principal
Maryjanne Yusyp, Learning & IT Consultant
School District #39 - Vancouver

Mark Bullen, A/Director, Distance Education & Technology
University of British Columbia

Bruce Stewart
Stewart Group

Tanya Norhcott, President/CEO
eLearning BC/Odyssey Learning

David Porter, Executive Director
Paul Stacey, Director of Development
Randy Bruce, Team Leader
BCcampus

Ramona Materi, President
Ingenia Training

Bobbi Plecas, Director
Ministry of Education

Robin Poncia, Director
Etraffic Solutions

Dr. Steve Grundy, Dean - Science & Technology and Environment
Roger Mundell, Director of Technology Transfer & Research
Doug Hamilton, Director - Masters in Distributed Learning Program
Susan Chandler, Director of Academic Planning
Elizabeth Wellburn, Education Technology Specialist

Dana McFarland, University Librarian
Royal Roads University

Dr. John Langford, Dean - School of Public Administration
Morven Wilson, CIO
Kate Seaborne, Manager -Distance Education
Sue Doner, Senior Program Coordinator - Distance Education Services
University of Victoria

John Pringle, Principal
School District #63- South Island Distance Education School

Tim Winkelmans, Director
Ministry of Management Services

David Strong, Chairman & CEO
LearningWise

Lorna Williams, Director -Aboriginal Education
Ministry of Education

Vivian Forssman, Manager -Web & Collaborative Services
Lawrence Parisotto, Learning Resources
BCIT

Joanne Curry, Director
Ron Marteniuk, eLinc Director
Tom Calvert, Director
Simon Fraser University - Surrey Campus

Christa Williams, Director
Philip Djwa, First Nations SchoolNet Coordinator - BC
First Nations Education Steering Committee

Sue Hanley, Technology Coordinator
First Nations Summit

Cathy van Soest, Director- Business Development & Strategic Initiatives
Leva Lee, Associate Director -Project Development & Applied Research
Open School BC

Russ Pacey, Associate Superintendent
Wayne Williamson, District Principal - Learning & Technology
Bryan Onstad, Teacher - Adult Learning Centre
School District #40 - New Westminster

Don Avison, President
Blair Little, Vice President
The University President's Council

Arlene Paton, Director
Christine Massey, Manager
Thorne Won, Project Officer
Public Institution Branch - Ministry of Advanced Education

Roundtable Participants

Kevin Amboe, President
Computers Using Educators of BC

Don Avison, President
The University Presidents Council of BC

Pauline Bennison, Department Head - Online Developer & Instructor
College of the Rockies

John Birnie, Vice - President
Northern Lights College

Tracey Boileau
TELUS

Ron Bordessa, Vice President - Learning
Royal Roads University

Lynda Brown, Executive Director
New Media BC

Randy Bruce, Operations Director
BCcampus

Mark Bullen, Director - Distance Education & Technology
University of British Columbia

Dr. Ron Burnett, President
Emily Carr Institute

Chris Bywater, First Nations School Net
Industry Canada

Brent Calvert, Regional Manager
PLATO Learning

Tom Calvert, Director - Centre for Scientific Computing
Simon Fraser University, Surrey

Jim Cambridge, Director
School District #62 – Sooke

Jean Campbell, Associate Director - Student Development
Camosun College

Barry Carbol PhD, Senior Vice President & CEO
MERIT Learning Corporation

Kevin Carter, Director - Technology & Learning Support
Camosun College

Dr. Kathryn Chang Barker, President
FuturEd Consulting Education Futurists Inc.

Peter Choi, Online Education Consultant
Children's & Women's Health Centre of BC

Sharon Cohen, Director of Instruction
School District #36 – Surrey

Franki Craig, Senior Policy Advisor - Intergovernmental Affairs
Indian and Northern Affairs Canada - BC Region

Joanne Curry, Director
Simon Fraser University - Surrey Campus

Judy Dallas, Co-ordinating Principal
School District #39 - Vancouver/Distance Education School Consortium

Beth Davies, Vice President - Education
Northwest Community College

Denis Deschenes, Technology Coordinator
School District #93 - Francophone Education Authority

Philip Djwa, First Nations SchoolNet Coordinator - BC
First Nations Education Steering Committee

Alan Dodd, Principal
BCEd Online

Sue Doner, Senior Program Coordinator - Distance Education Services
University of Victoria

Patrick Duncan, Principal - Cowichan Secondary School
School District#79 - Cowichan Valley

Charlotte Elliott, Education Director
Chemainus First Nation

Elaine Ferguson, Training Coordinator
SET-BC

Vivian Forssman, Manager - Web & Collaborative Services
BCIT

Derek Francis, Vice President
Kwantlen University College

Daniel Gallagher, Teacher
School District #63 – Saanich

Allan Garneau, Principal
Traditional Learning Academy

Cindy Gauthier, Principal
Greater Vancouver Distance Education School

Louis Giguere, Provost - Dean of Arts & Science
BC Open University

Ellen Godfrey, Vice President - Government Sector
Navigata Communications

Chris Golding, Director - Learning Resources Unit
British Columbia Institute of Technology

David Gory, Principal - Gold Trail Open Learning Program
School District #74 - Gold Trail

David Gregg, Vice Principal
School District #91 - Nechako E-Bus Program

Steve Grundy, Associate Vice-President, Academic & Information Services
Royal Roads University

Budd L. Hall, Dean of Education
University of Victoria

Doug Hamilton, Director - Masters in Distributed Learning Program
Royal Roads University

Liz Hammond-Kaarrema, Director Research Services
Malaspina University College

Sue Hanley, Technology Coordinator
First Nations Summit

Cecelia Harris, Education Coordinator
Penelakut Tribe

Dr. Pat Henman, Assistant Director - Career Technical Centre
School District #34 - Abbotsford

Daniel Hill, Director of Development
Native Education Centre

Ian Humphreys, President
Nortia Technologies Inc.

Lynn Jacques, Regional Director
College of New Caledonia - Mackenzie Campus

Joe Jamison, Project Manager
School District #23 - Central Okanagen

Gary Karlsen, Vice President eLearning
Magic Lantern Group, Inc.

Dr. David Kaufman, Professor - Faculty of Education
Simon Fraser University

Dr. Wesley J. Koczka, Dean - Division of Continuing Studies
University of Victoria

Dr. Lyn Korella, Director - ITP
School District #61 - Greater Victoria

Larry Kuehn, Director of Research & Technology
BC Teachers' Federation

Brian Kuhn, Manager Information Services
School District #43 – Coquitlam

Randy LaBonte, Director of Sales
Odyssey Learning Systems Inc.

Philip Laird, Assistant Dean - Global Learning Connections
Trinity Western University

Michelle Lamberson, Director - Learning Technology
University of British Columbia

Gladys Latty, Associate Dean
North Island College

Bill Lawrence, Principal
School District #58 - Nicola-Similkameen

David Le Blanc, Teacher
School District #41 – Burnaby

Lynn Leboe, CEO
Leboe & Grice Multimedia

Dave Lee, Principal
School Dictrict #22 – Vernon

Norm Leech, Community Chief
T'it'q'et Community

Ray Lemoigne, Principal
School District #91 - Nechako Lakes E-Bus Program

Aileen Lew, Principal
School District #35 - Langley

Stan Loh, VP Marketing
Advanced Interactive Canada Inc.

Frances Long, Virtual Team Leader
knowplace.ca

Kathleen Lowe, Communications Director
GeoMetrix Data Systems Inc.

Gay Ludlow, Director & Producer
Triad Communications Ltd.

Shawn Mabey, Principal
Fluid Perception Media Inc.

Bob Macdonald, Senior Partner
Bridge Learning Technologies Inc.

Barrie Macleod, Teacher
School District #45 - West Vancouver

Garnett MacMullin, President
Tritone Corporation

Ron Marteniuk, Director, eLearning Innovation Centre
Simon Fraser University - Surrey Campus

Stacy Marusic, Vice Principal
School District #68 - Nanaimo-Ladysmith

Christine Massey, Manager - Public Institution Branch
Ministry of Advanced Education

Ramona Materi, President
Ingenia Training

Michael McCarthy, Client Executive - Education Sector
TELUS

James McConville, Online Learning Coordinator
School District #43 – Coquitlam

Dana McFarland, University Librarian
Royal Roads University

Don McIntosh, President
Trimeritus eLearning Solutions Inc.

Ken McLeod, Head Teacher - Mission Adult Learning Centre
School District #75 - Mission

Eric McMahon, Principal/Project Administrator
School District #79 – Chemainus

Al Mctavish, Account Executive, Education
Apple Computer Inc.

Marilynne Miles Gray, Vice President
Mentoring Solutions Inc.

Bruce Mills, Director of Curriculum & Technology
School District #34 – Abbotsford

Tim Mock, President
TM NewMedia Inc.

Paul Montgomery, Principal
South Central Interior Distance Education School

Susan V. Morrison, MFA Educational Technologist & Project Manager of On-Line Division
Malaspina University College

Roger Mundell, Director - Technology Transfer & Research
Royal Roads University

Michael Munro, Assistant Superintendent - Educational Programs
School District #68 - Nanaimo-Ladysmith

Solvig Norman, Education Officer/Team Leader
Open School BC/EduSpecs Technical Liaison Office

Tanya Northcott, President/CEO
eLearning BC/Odyssey Learning Systems Inc.

Riley O'Connor, Instructor
Capilano College

Russ Pacey, Associate Superintendent/CEO
School District #40 - New Westminster/Open School BC

Arlene Paton, Director - Public Institution Branch
Ministry of Advanced Education

Gail Peekeekoot, Education Manager eHealth - First Nations & Inuit Health Branch
Health Canada

Cam Pinkerton, Director of Instruction - First Nations
School District #70 –Alberni

Doug Player, Consultant
Player-Works Inc.

Robin Poncia, Director
Etraffic Solutions

David Porter, Executive Director
BCcampus

Roger Powley, President
Innovative Training Solutions Inc.

Pat Presidente, District Technology Resource Teacher
School District #72 - Campbell River

Glenn Preston, CEO
GL Preston Enterprises

John Pringle, Principal
South Island Distance Education School

Caroline Rechia, Business Strategist
Chalk Media

Susan Sambol, Vice President, Marketing
CCI Learning Solutions Inc.

Fern Scodane, Legislative Assistant
Nisga'a Lisims Government

Kathryn Seeley, Director Customer Marketing
TELUS

Art Seto, Online Instructor and Consultant
BCIT & eSprit eLearning Technologies

Denis Simair, Manager, Education Technology
School District #61 - Greater Victoria

Maureen Smiley, District Principal-International Program Development
School District #45 - West Vancouver

Jim Soles, Assistant Deputy Minister
Ministry of Advanced Education

Paul Stacey, Director of Development
BCcampus

David Strong, Chairman & CEO
Learningwise Inc.

Nicola Sutton, Executive Director - Product Development
BC Open University

Marty Szetela, Vice Principal - Eagle River Secondary
School District #83 - North Okanagan-Shuswap

Michel Thibeault, Coordonnateur des Technologies Educatives
School District #93 - Conseil Scolaire Francophone de la Colombie-Britannique

Chris Thomas, IT Manager
Lheidli-Tenneh Band

Rick Thompson, Principal - McBride Secondary
School District #57 - Prince George

Robert Thompson, Teacher - Highland Secondary School
School District #71 - Comox Valley

Terri Thompson, Teacher Coordinator - Student Mom Program
School District #47 - Powell River

Tanya Twynstra, Manager -Distance Education & Online Learning
Ministry of Education

Cathy van Soest, Director - Business Development
Open School BC

David Vogt, Chair -Learning Technologies
University of British Columbia

Cathal Walsh, ICS Technology Principal
Island Catholic Schools

Elizabeth Wellburn, Instructional Designer
Royal Roads University

Shelley Wilcox, Coordinator Online Learning
School District #36 – Surrey

Dr. Gerry William, Associate Dean
Nicola Valley Institute of Technology

Lorna Williams, Director - Aboriginal Education
Ministry of Education

Rosalind Williams, Post Secondary Administrator
Squamish Nation

Gary Wilson, Director - TELUS Corporate Affairs & General Counsel
TELUS

Tim Winkelmans, Director
Open School BC

David Witt, Director of Instruction
School District #83 - North Okanagan-Shuswap

Thorne Won, Project Officer
Public Institution Branch, Ministry of Advanced Education

Maryjanne Yusyp, Curriculum Coordinator
School District #39 - Vancouver/Distance Education School Consortium

Julie Zilber, Co-Director
7th Floor Media, Faculty of Education, Simon Fraser University

Gwen Zilm, Associate Vice President Information Services
Okanagan University College

MINISTRY OF EDUCATION

Tom Christensen, Minister of Education
Emery Dosdall, Deputy Minister of Education

PANELISTS

Dr. Bruce Chaloux, Director of the Electronic Campus
Southern Regional Education Board

Dr. Rosina Smith, Executive Director
Alberta Online Consortium

Ivy Charleson, FirstVoices Trainer
First Nations Cultural Foundation

Josh Blair, VP Human Resources - Employee Development
TELUS

FACILITATORS

Royal Roads University

Amy Zidulka, Faculty
Ron Bordessa, VP Learning
Carrie Spencer, Director of E-learning Management
Dana McFarland, University Librarian
Fred Oster, Faculty
Shailoo Bedi, Associate University Librarian
Tracy James, Learning Support Associate
Alice MacGillivray, Program Director of the Knowledge Management Program
Mary Robinson, Instructional Designer

Consultants
Rob Goodall
Guy Nasmyth
Phil Cady
Mary Martin
Gwen Anholt
Lee Rome
Ann Schultz
Chris Brown

ROYAL ROADS UNIVERSITY
Dr. Richard Skinner, President & Vice Chancellor
Susan Chandler, Director of Academic Planning
Estelle Paget, Director - Centre for Teaching and Learning

PTC MEMBERS
Reg Bird
Bill Koty

Appendix D. Telehealth in British Columbia - May 2004

PREPARED BY THE PHSA PROVINCIAL TELEHEALTH OFFICE

Telehealth is the use of information and communication technology to deliver health care services, expertise and information wherever participants are separated. Telehealth helps to overcome barriers of geography, transportation infrastructure, or socio-economic disparity. It enables clinical consultation, continuing professional education, and healthcare management.

Overview of existing telehealth applications:

- 50 communities throughout the province encompassing nearly 130 dedicated sites are equipped with information and communication technology.
- The majority of the clinical applications involve linking a rural and remote facility to a centre in Vancouver.

The Provincial Health Services Authority (PHSA) continues to work with the regional Health Authorities on sustainable plans for the respective telehealth applications. This includes among others:

- negotiating cost effective telecommunication line charges.
- developing and obtaining approval for physician remuneration for certain telehealth consultation activity.
- developing and implementing a provincial scheduling system; policy for equipment acquisition and maintenance; provision of a bridging service; marketing strategy for increasing use of existing telehealth technology etc.
- establishing a Provincial Telehealth Steering Committee.

I. Inter-regional telehealth

A. PROVINCIAL HEALTH SERVICES AUTHORITY (PHSA)

BC CHILDREN'S AND WOMEN'S (C&W) HEALTH CENTRE

1. A number of clinical program areas host and participate in clinical consultations, continuing medical and professional education and administrative sessions with rural and remote sites in the province. Over the past fiscal year C&W was involved in 360 clinical, 122 education and 163 administrative telehealth sessions. The majority of these sessions were hosted by clinical staff based at C&W in Vancouver and over 40 communities accessed the services. The most frequent receiving sites are the 13 telehealth equipped communities within the Northern Health Authority. Examples of active clinical services include: live fetal ultra sound interpretation by perinatologists; live echocardiogram consultation by pediatric cardiologists; multidisciplinary eating disorder therapy sessions; adolescent psychiatric consultation with North West BC communities; pediatric cardiac rounds with patient case review and treatment planning with Victoria; and child swallowing and seating assessment by rehabilitation staff.
2. Multiple continuing professional education sessions are hosted through C&W and offered to communities across the province. Recurring monthly sessions include: obstetrical multidisciplinary rounds; maternal fetal medicine rounds; general pediatric rounds; psychology rounds; and child rehabilitation rounds. Pediatric intensive care and cardiac services lead weekly round case discussion with their peers in Victoria. Pediatric neurology and oncology programs continue to host and participate in provincial and national rounds at a minimum on a quarterly basis. Other pediatric specialty programs such as urology participate in national education initiatives.
3. Grant funding allocated through Rnet has enabled C&W to partner with Simon Fraser University in exploring the potential for utilizing less expensive videoconferencing options available from Apple Computers using high speed internet connections. This technology is being field tested with smaller non-profit community-based child development centres providing a range of clinical services to children who are either at risk for developmental delay or have been diagnosed with conditions associated with developmental delay.
4. The obstetrical program at Women's Health Centre of British Columbia received a $100,000 grant from Bell Canada last year to promote and use telehealth to support continuing education of clinicians living throughout the province involved in obstetrical care. This funding has been instrumental in providing free access to the broadcast of monthly rounds produced at C&W in Vancouver.
5. The Northern Health Authority and PHSA have partnered on a number of fronts during this past year. The NHA has contracted with the PHSA Corporate Telehealth Office to

conduct a comprehensive clinical needs assessment for their programs and communities. The results of this assessment are expected to form the basis of the plan for introduction of clinical telehealth services in the NHA going forward. Since July 2003 the NHA has purchased telehealth scheduling service from the central PHSA telehealth office which is responsible for organizing, documenting and communicating all information related to every telehealth event occurring at each of the NHA telehealth sites.

6. The Healthy Heart Program based in Vancouver recently installed telehealth equipment and has entered into an agreement with the PHSA Corporate Telehealth Office to provide a comprehensive telehealth scheduling service similar to the service provided to the NHA.

BC CANCER AGENCY (BCCA)

7. BCCA has utilized videoconferencing technology to plan and coordinate cancer care between its centres across the province for a number of years. Oncologists involved in provincial tumor groups regularly meet through videoconferencing to discuss and develop individual patient treatment plans and revise treatment protocols.
8. BCCA offers weekly education sessions to oncologists, nurses and other clinicians practicing within BCCA's cancer centres and communities involved with cancer care across the province. Clinicians working within sites that are part of the communities' oncology program, delivering chemotherapy to patients locally, are a key target audience to access this specialized education service.
9. The hereditary cancer program has recently started a genetic counseling service linking Vancouver based practitioners with ten clients in Prince George.
10. The Victoria Cancer Centre spearheaded a successful trial of clinical consultation with newly diagnosed gastrointestinal cancer patients in Nanaimo. The results of this study demonstrated that patients were equally satisfied with receiving information through telehealth as patients using the traditional ambulatory consultation service in Victoria. There is a plan to reintroduce this service between Victoria and Nanaimo and expand it to Campbell River. A similar service is being implemented between the Cancer Centre in Kelowna and clients in Cranbrook.

RIVERVIEW AND FORENSIC SERVICES

11. Riverview hosts twice monthly provincial psychiatry rounds to mental health practitioners based at sites across the province. Many of the NHA and IHA community clinicians participate in these events.
12. Forensic Services utilizes videoconferencing for psychiatric assessments of clients in the court system. Assessments have been conducted between the tertiary site in the Lower

Mainland and Prince George. There is interest in expanding access to this service across the province.

BC CENTRE FOR DISEASE CONTROL (BCCDC)

13. The BCCDC commenced the broadcasting of Vancouver based medical rounds on a twice monthly basis beginning on May 14, 2004 with a session on Avian Flu. These rounds are available for medical credit to physicians across the province. Sites in Terrace and Prince George have participated to date.

CANUCK PLACE CHILDREN'S HOSPICE

14. Personnel at Canuck Place have participated both as host and as participant in palliative care rounds delivered via telehealth. Equipment located at the hospice has also been used to link Canuck Place clients in communities outside of the lower mainland with clinicians at the hospice, for clinical consultation purposes.

B. THE UBC FACULTY OF MEDICINE, DIVISION OF CONTINUING MEDICAL EDUCATION

15. In collaboration with Vancouver General Hospital, and the UBC Faculty of Medicine, Division of Continuing Medical Education, Emergency and Trauma clinical applications were examined through linkage to Cranbrook and Terrace community hospitals.
16. UBC has held a series of medical rounds delivered by videoconference to sites in BC and across Canada, featuring interactive presentations on a variety of pre-selected topics.

C. MENTAL HEALTH EVALUATION AND COMMUNITY CONSULTATION UNIT (MHECCU), UBC

The Centre for Telehealth @ Mheccu (CT@M) is a university-based organization committed to evaluating and shaping the effective use of communications technologies in health care. The CT@M conducts research with sites throughout BC, the Yukon, and Alberta, and facilitates policy rounds involving academics and policy makers internationally. CT@M projects are funded by a number of sources, including the government of BC, the Canadian Institutes of Health Research (CIHR), and Health Canada. Internationally, over 1,700 professionals participated in CT@M videoconference events during 2003/04.

17. Collaborative Care for Substance Use and Concurrent Disorders: a partnership between the governments of Canada, BC, and the Yukon Territory, with UBC. This multi-year project uses broadband media to link primary care, mental health and substance use

service providers in order to deliver more effective and efficient services to clients with substance use problems and concurrent disorders.

18. Linkage Project: the objective of this project was to significantly increase access to videoconference technology in rural and remote parts of BC, in support of mental health and addictions. Through this initiative, the CT@M implemented over 30 videoconference systems. The resulting increase in network scale was the catalyst for introducing several network management tools, including web-based scheduling software; Telehealth Handbook for Coordinators; Telehealth Intranet and Partner Portal; and a searchable online videoconference directory.
19. Continuous enhancement of performance monitoring in primary health care: Closing the Implementation Loop, a Primary Health Care Transition Fund project involving colleagues in British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, and Quebec.
20. Clinical Case Conferences and Geriatric Telepsychiatry (ongoing).
21. Professional development/e-learning by multi-point videoconference (ongoing). Examples include mental health and addictions education modules and reform expert series; CIHR Strategic Training Program: research in addictions and mental health policy and services; and Mental Health Indicators Working Group.

D. BC HealthGuide

22. The BC HealthGuide program is a provincial self-care service which provides health information and advice to BC residents. There is no charge for accessing any of the program services or information. There are four components to the program: a nurse call line, where individuals call toll-free in BC to speak to a registered nurse available 24 hours a day, seven days a week, or to a pharmacist available 5 PM to 9 AM, seven days a week; an online database of over 3,000 common health topics, tests, procedures etc; a handbook offering useful advice on over 190 common health concerns as well as information on preventing illness; and a series of one-page fact sheets on health and safety.

E. First Nations

There is a strong interest of First Nations communities in BC to investigate the real potential of information and communication technologies (ICT) in providing telehealth services despite geographic isolation.

23. The Division of Continuing Medical Education (CME) at the University of British Columbia is completing a project to assess community readiness of rural, First Nations communities to determine the strategic direction of telehealth deployment in rural BC, and to establish a clear vision of telehealth deployment approaches consistent

with community needs and priorities. This project explores the potential expansion of telehealth services to rural, First Nations communities in British Columbia. It will consider the optimal approaches for the implementation of telehealth in these communities in the areas of clinical service delivery, continuing professional education, and concerns related to cost-effective recruitment and retention of health professionals in rural BC communities.

24. The Ministry of Management Services has funded an initiative in Tache of the T'lat'zen Nations to provide ICT for the community to overcome the digital divide. The UBC Division of CME works with the community members to put health content online, and opportunities are being identified to use the infrastructure to deliver telehealth. Industry Canada, Prince George Nechako Aboriginal Education and Training, and TELUS have also provided support for this initiative.
25. UBC CME has obtained funding from the CIHR and partnered with the National Research Council Information Technology Group. They have embarked on a one year initiative with six rural First Nations communities in BC, Alberta, and Atlantic Canada to identify their health issues and how e-health can assist them in addressing these concerns. This project will obtain information from these six communities and provide a model of community engagement. This will result in a survey tool box that can be used to approach other communities to assist them in overcoming the digital divide.
26. The Inter-Tribal Health Authority, who manage a portfolio of health services with 28 First Nations on Vancouver Island and in the mid-coast area, are pursuing the development of an ICT/health services plan.
27. Screening for retinopathy is available to First Nations people with diabetes living in remote areas in the North. A mobile van transports the necessary equipment, along with a vision technician and a diabetic nurse to reserves in northern BC. People with diabetes are tested by taking photos of the inside of the eyes with a camera that can transmit digital images on a computer to a retinal specialist ophthalmologist at the Vancouver Hospital Eye Care Center. The results are then sent to the patient and referrals to local physicians are provided, if necessary.

II. Intra-regional telehealth

Within the regional health authorities, applications to meet identified clinical needs within the region are being developed on an ongoing basis. Examples include:

28. A pharmacist in Cranbrook uses videoconferencing to supervise and monitor the work of the pharmacy technician in Fernie, Invermere and Creston. As well, this service is used between 100 Mile House to Williams Lake (Interior Health Authority).

29. Digitized films from Invermere and Fernie are sent to the orthopedic surgeon's office or to a regional hospital to determine whether treatment at the local facility, or transfer to a higher level of care is required (Interior Health Authority).
30. Virtual thoracic surgery clinics using videoconferencing to connect a surgeon in Kelowna with patients in Cranbrook, Trail and Kamloops for pre- and post- operative consultations (Interior Health Authority).
31. Virtual Oncology clinics are taking place from Southern Interior Cancer Centre to Cranbrook and Kamloops (Interior Health Authority).
32. Wound management is being facilitated through telehealth (e.g. nurses at Vancouver General Hospital use videoconferencing to follow up with colostomy patients initially treated at the hospital) (Interior and Coastal health authorities).
33. Continuing Nursing Education sessions are delivered from Vancouver General Hospital to sites in the Interior and Northern health authorities twice a month, to approximately six or seven sites.

III. Diagnostic imaging (teleradiology)

34. The transfer of medical images electronically between health care facilities for the purpose of medical interpretation is a regular and growing application within and between health authorities. There are numerous examples on how telecommunications technology is being utilized to facilitate this process. Digitization and transfer of radiology images between partner facilities and BCCA sites has been incorporated into oncology care for a number of years. Fraser Health Authority is implementing a Picture Archiving Computer System (PACS) to enable sharing of images between clinicians practicing in communities across their health authority. Smaller examples include communities such as the Queen Charlotte Islands where there is no access to an on-site radiologist electronically transferring images for interpretation by physicians based in Prince Rupert. PACS was a successful project at the Thompson Cariboo Shuswap region (Interior Health Authority). At this time the PACS will be expanded to cover the rest of the health authority.

Appendix E.
Summary of Recommendations

This is a list of recommendations made by the PTC in this and all preceding reports. They are numbered in the order in which they appear in the original report.

6th Report

6.1 **Digital Divide**

The PTC recommends that government:

- Keep up the momentum to extend broadband to the remaining communities as quickly as possible.
- Work with communities to identify last mile solutions.

6.2 **Industry Development**

The PTC recommends that government:

- Recognize and support the important role that regional technology councils play in fostering innovation and small business development within their region.
- Support the formation of a regional technology council in the Northwest.
- Provide incentives to encourage growth and development of technology companies in the regions.
- Market the technology innovations and opportunities for the province as a whole through Leading Edge British Columbia.

e-LEARNING

6.3 The PTC supports the PLNet initiative and recommends that its installation and capacity review continue to receive top priority to ensure it has the ability to meet ever-expanding needs.

6.4 The PTC recommends that government, through the Ministry of Education, in cooperation with industry and the school districts, support the goals and financing needs of BCEd Online, and that the Ministry continue to monitor and promote the expansion of its activities to all school districts in the province.

6.5 The PTC recommends that the Ministry of Education:

- Continue research in e-learning for K-12 to include funding for school districts to use IP video and other telecommunications technology delivery systems.
- Conduct education programs for teachers to provide them with the skills necessary to utilize e-learning technology.
- Promote the use of technology in school districts.

- Continue to work with other provinces to research, evaluate and test, and cost-share in the implementation of e-learning strategies in the provinces K-12 system.

6.6 The PTC recommends that the Ministry of Education investigate providing a capability to encourage and assist students to enter high-tech careers. The Australian Skills Hub distance learning program, located on the web at www.itskillshub.com.au, is a good example of a resource that has been very successful.

6.7 The PTC recommends that government, through the Ministry of Advanced Education, continue to encourage and support the BCcampus initiative as the leading organization to promote e-learning concepts at the post-secondary education level.

6.8 The PTC recommends that government, through NetWork BC, in cooperation with other ministries, lead a process whereby a comprehensive and focused team (possibly federal/provincial) work with First Nations to address digital divide issues and government services such as e-learning and e-health.

6.9 The PTC recommends that the government work with BC universities, both the federal and provincial governments and large and small business to promote the establishment of an R&D facility to advance the e-learning industry in BC.

e-HEALTH

6.10 The PTC recommends that government support the adoption of a fee code structure that allows health care providers to bill for e-health procedures.

6.11 The PTC recommends that the government establish a governance structure dedicated to the development and implementation of the EHR. Its structure and accountabilities would involve the following:

- A pre-determined term (24-36 months, for example) be set, and clear, reasonable success criteria developed.
- A team leader who is a member of the ministry executive reporting to the deputy minister.
- Positioning so that it is acceptable to the entire community (the health ministries, health authorities and practitioners).
- A direct link between the success of the team and the success of the EHR implementation.
- A funding model utilizing resources from other bodies such as Canada Health Infoway. The model must allow for central decision making on the common or province-wide EHR infrastructure but also provide continued funding for specific health authority equipment and software.
- An advisory group with members from the ministry, health authorities and practitioners to guide development activities.

CAPITAL AND INVESTMENT

6.12 The PTC recommends that government expand the tax credits under the *SBVC Act*. Further, government should change appropriate regulations so that the tax credits exist as a total allocation over multiple years and unused credits can be transferred between programs.

HUMAN RESOURCES

6.13 The PTC recommends that government, through Leading Edge British Columbia, undertake special marketing initiatives to assist in recruiting talent for high-tech companies throughout the province.

ALTERNATIVE ENERGY: FUEL CELL

6.14 The PTC recommends that government build on the record of success and work with the energy technology sector to complete the "Hydrogen Highway™" prior to the 2010 Olympics and to further develop the sector.

5th Report

CAPITAL AND INVESTMENT

5.1 That the provincial government extend the British Columbia SR&ED tax credit program beyond its current expiration date (September 1, 2004) and make it an ongoing program with periodic reviews.

5.2 That the provincial government initiate an advocacy program with the federal government to:

- Review and modify the rules within the SR&ED program that restrict tax credits to companies having investment from public companies and/or non-residents. This would ensure that firms that have obtained capital from legitimate sources are not being excluded from other important and appropriate financing sources.
- Review and modify restrictions in the program, mandated at a federal level, with respect to differences in the treatment of public (20% tax benefit carry forward) and private (35% tax credit carry forward) companies.

5.3 That the provincial government develop and implement an equity participation incentive to attract technology companies, senior management, key employees and head offices to British Columbia. The incentive must lower and/or eliminate the provincial tax payable on the exercise or disposition of stock options. The incentive would be applicable to:

- All employees who are residents of BC at the end of the calendar year and file for a BC tax return,
- All forms of equity compensation such as stock options and restricted stock, and
- The gain in value between the fair market value on the date of grant and the price on disposition.

The incentive would provide a tax credit equal to 50% of the provincial tax payable if the option is held for greater than 1 year but less than 2 years and a tax credit equal to the provincial tax payable if the option is held for more than 2 years.

5.4 That the provincial government work with the federal government to explore the issue of double taxation by nations whose citizens are working in Canada and ensure that all parties honour both the intention and letter of the appropriate treaties, and that the federal government, when acting upon new tax treaties, pay particular attention to double taxation clauses.

5.5 That the provincial government work with the federal government to extend the loss carry-forward provision from the existing 7 year period to 20 years (the newly enacted US limit).

5.6 That a thorough review of all regulations and taxation involved with foreign pension and investment fund investment in venture capital and entrepreneurial growth business be undertaken by the province in cooperation with the federal government.

5.7 That the provincial government undertake a study to investigate the under-investment of pension funds and other investment portfolios in venture capital, determine the key drivers (particularly educational and training) that would enhance such investment, and work with the venture capital industry and appropriate industry associations to encourage and/or secure further investments by such portfolios in venture capital funds within the province.

5.8 That the provincial government remove the individual annual limit in the provincial Income Tax Act for angel investors in eligible small businesses under the *Small Business Venture Capital Act.*

5.9 That the provincial government develop programs to focus on attracting and/or building 2 to 3 new, venture capital funds per year, staffed with experienced venture capital players, in British Columbia. The new funds would be required to:

- Be associated with a top tier world class venture capital player that is establishing a new fund in BC,
- Be a new fund primarily directed at investment in BC which counts among the principals in the new fund individuals with extensive venture capital experience.

Any new funds must:

- Establish their funds locally: a BC office and general partners in BC,
- Target its investments in BC companies, and
- Raise private capital before accessing the BC programs.

5.10 That immediate steps be taken to identify an appropriate and targeted campaign for creating greater awareness of British Columbia as a high technology jurisdiction and to make clear the entrepreneurial opportunity that lies within it. The campaign should be designed to be undertaken with existing provincial high technology and biotech

players so that it benefits both the companies and the region.

5.11 That the provincial government work with the venture capital industry, successful high technology and biotech businesses, and appropriate trade associations to host small group meetings in the key investment centres of New York, London, Boston, Frankfurt and San Francisco.

5.12 That the provincial government work with industry and the financial and academic communities to invite the management teams of the top 20 global venture capital and private equity funds to visit the province on fact-finding tours. This should be executed within the year, in an effort to build momentum in the venture community.

5.13 That the provincial government work with the universities and institutes to ensure that British Columbia is receiving its fair share of federal funding for innovation, as well as any available industry funding. In addition, the PTC recommends the province work with industry and the academic sector to ensure that BC-based companies, or those having significant satellite plants in the province, are actively investing in innovation in the province.

HUMAN CAPITAL FOR AN INNOVATION ECONOMY

5.14 That the provincial government work with industry to develop a means to raise awareness of the opportunities available in an information-based economy and assist citizens to enter technology-related careers.

5.15 That the Ministry of Education continue to develop its K-12 e-learning strategy through the BCEd Online initiative to ensure that consistent, province-wide standards and content are developed and maintained.

5.16 That the provincial government fully implement the BCcampus initiative.

5.17 That the provincial government revise the definition of a "high technology professional" to provide:

- Enhanced clarity for employees and employers to minimize disputes and costly resolution processes.
- Greater clarity as to what occupational activities are included as opposed to defining specific occupational titles that limit interpretation.
- Inclusion of all occupational activities related to the full product and service life cycle, including sales and marketing.
- Clear inclusion of other high technology sectors such as new media, alternative energy (fuel cells), and biotechnology. The definition should also leave room to include new technologies as they emerge

4th Report

THE PTC PRIORITY RECOMMENDATIONS

4.1 Continue to work to implement all previous PTC recommendations with priority consideration of the following by government in the coming year:

a. Broadband
Provide broadband services to all British Columbia communities. Work with the federal government to accomplish this in the next three years.

b. Government Operations - Telehealth
Make telehealth a top priority and continue work to adopt and implement common health information technology infrastructure and standards, and establish an e-Health Task Force.

c. Industry Development

1) Venture Capital -
Work to pass the PTC's previously recommended amendments to the *Small Business Venture Capital Act* (*SBVC Act*).

2) Promoting British Columbia -
Develop a provincial marketing strategy and take every opportunity possible to promote the province. This includes:

a) Marketing and promotion missions led by the Premier

b) A marketing and promotion plan developed from government analyses of the five key emerging industry sectors in British Columbia – information technology, life sciences, new media, alternative energy and wireless. The plan would provide for a sustained marketing effort of the province's technology industry and business climate. Among other things, it would include:

i. Developing and executing a branding strategy and marketing plan for the British Columbia technology community.

ii. Creating an inward-bound information centre for prospective corporate recruits to the province.

ALTERNATIVE ENERGY

4.2 Combine the strengths of the provincial and federal governments, industry and academia to develop and implement an aggressive British Columbia Fuel Cell Strategy that parallels and builds on a similar National Fuel Cells Strategy. Activities in the provincial strategy should include:

a) Enhanced support for research and development carried out by the private sector and in public institutions (in collaboration with industry).

b) Support for market focused demonstration projects in both public and private sector applications. This should include real life situations that validate

product reliability and output, "ruggedize" the product, provide quality assurance data, and help manufacturers make the necessary alterations to earn commercial success.

c) The British Columbia government becoming an early adopter of fuel cell products. Government departments and crown corporations being real customers raises the profile and supports the development of markets.

d) Accelerate the development of harmonized codes and standards. Government and industry collaboration is necessary to remove regulatory obstacles to the introduction of fuel cell products and systems.

e) Incentives that support and reward growth and investment such as:

1) Encourage the early adoption of fuel cell and related products and systems by providing fiscally neutral tax based incentives, such as the income tax payback approaches used in Michigan.

2) Consider programs having an initial cost but longer term substantial savings to the treasury.

f) Development of infrastructure which includes building upon investments already made by BC Hydro and others.

g) Ensure the availability of a highly skilled, well-trained workforce. This involves conducting industry and government collaboration with secondary and post-secondary institutions to define and implement appropriate education and training at all levels in the post-secondary system.

REWARDING INNOVATORS IN THE PUBLIC SERVICE

4.3 Accelerate and reinforce desirable change in the public sector by adopting the Premier's Awards in all the proposed categories (leadership, service excellence, innovation and partnership), especially the innovation category.

3rd Report

IT PROCUREMENT

3.1 Examine the scope of its current procurement reform initiative to ensure it adequately addresses the unique nature of IT procurement and permits adoption of a benefits-driven procurement model based, above all, on the business objectives rather than the technology requirements of government.

3.2 Identify a senior government official to drive both a strategy and implementation process around IT procurement reform. This official will also be responsible for fostering

development and adoption of new IT procurement tools and models; facilitating government-wide and industry education; and championing support throughout government.

3.3 Create a joint government and industry task group to address the wide range of issues associated with IT procurement reform, with particular attention to the prioritized list of issues and proposed solutions emanating from the Procurement Symposium as well as the larger list of tactical and strategic issues identified by the PTC during its consultative process.

3.4 Continue the momentum. Hold a follow-up IT procurement symposium within 120 days. The joint industry/government event should include a progress report from government outlining its response to the set of recommendations contained within this report, as well as future plans, deliverables, and timelines.

e-HEALTH

3.5. Establish an e-Health Task Force composed of both government representatives and health care professionals to address the recommendations arising from the e-Health Roundtable. In addition, the mandate of the e-Health Task Force would include:

- coordinating and leveraging current e-health initiatives, including clinical and educational telehealth projects;
- the implementation of an Electronic Health Record (EHR), in conjunction with other levels of government and across ministries. This standard EHR would be adopted by all Health Authorities, institutions and businesses providing health care services in the province;
- address the licensure, liability and billing issues and the resulting changes required to existing policy or legislation to enable health care givers to participate in telehealth; and
- conduct a community consultation process to identify specific telehealth applications that will address critical needs in each community.

VENTURE CAPITAL

3.6. To meet the acute need for seed and early stage venture capital within the province, the PTC strongly recommends that the proposed amendments to the *SBVC Act* be passed by the legislature prior to the beginning of 2003. Failure to do so will discourage and inhibit the facilitation of more early stage capital within British Columbia, and will put us further behind other jurisdictions.

Second Quarter Report

UTILIZING SPAN/BC NETWORKS

2.1 Upgrade and extend SPAN/BC so it is capable of delivering advanced broadband network infrastructure to the communities of British Columbia.

2.5 Find ways to open up SPAN/BC to allow communities to take advantage of the government's broadband infrastructure in those communities where the private sector is unlikely to provide high speed Internet access to citizens and businesses.

PRIVATE SERVICE PROVIDERS' NETWORKS

2.4 Investigate all potential levers including – but not limited to – aggregating public demand, so that it can prompt service providers to extend and update their current telecommunications network infrastructure.

2.6 Reform procurement policy to allow for flexible, creative and competitive procurement models that will stimulate the private sector to upgrade and expand their broadband network infrastructure, as well as encourage the entry of local service providers, such as community-based networks, into the marketplace. To this end, two or three communities should be identified as pilot sites for further detailed planning, and implementation.

2.7 Conduct a Request for Information that solicits vendor and community stakeholder reaction to these recommendations, and taps into the innovative and creative potential for public-private partnerships that exists in the marketplace.

BROADBAND - DEMAND AGGREGATION

2.2 Aggregate total public sector demand (including core government, health authorities, schools, etc) where feasible to upgrade and expand SPAN/BC so that it will be capable of providing next-generation broadband infrastructure to the communities of British Columbia.

2.3 Investigate fully the economics as well as the potential benefits or obstacles inherent in aggregating public sector demand.

PUBLIC ACCESS AVAILABILITY

2.8 Make sure that there is public access to the Internet in every community in British Columbia.

2.11 Develop a complete map-based inventory of all public access sites by community to determine if the levels of public access and location of sites are appropriate for the size and demographics of the population.

2.14 Work with the First Nations of British Columbia and the federal government to bring information

technology, including public Internet access, to remote First Nations communities in British Columbia.

2.15 Determine if the province's 58 sCAT locations and if existing PLNet facilities could be used by the public to access the Internet.

PUBLIC ACCESS SUSTAINABILITY

2.9 Work closely with the federal government to coordinate the allocation of scarce public dollars for public access.

2.10 Find ways to sustain existing public access sites in the province and meet the growing public demand by increasing, where necessary (based on demographics and usage patterns), the number of sites, the number of public access terminals, the available bandwidth, and the hours of operation.

2.13 Increase staffing levels at public access sites through programs like Youth@BC, through partnering with Industry Canada's CAP Youth program, or through use of the Labour Force Development Agreement with the federal government to train unemployed individuals to work at access sites

IMPROVE AWARENESS ON PUBLIC ACCESS

2.12 Improve awareness and visibility of public access.

PROVINCE-WIDE HEALTH IT STANDARD

2.16 Continue meetings between the executive of the new Health Authorities and the Ministry of Health Services and Ministry of Health Planning to discuss province-wide health information and information technology standards that will apply to all six Health Authorities as they move to restructure and consolidate.

2.17 Ensure each of the Health Authorities appoints a person to be responsible for information management and technology with the task of implementing the appropriate standards in collaboration with the Ministry of Health Services and the other health authorities.

2.26 Extend its standards beyond just ministries to its agencies and other government service providers.

Ensure that the designated chief information and technology officers of each authority work with the Ministry of Health Services and Ministry of Health Planning and other appropriate ministries to establish integrated technology standards province-wide. At a minimum these information and technology officers should:

2.18 Establish a consolidated provincial strategy for Health Information Management and Information Technology (IM/IT).

2.19 Adopt and implement common health information technology infrastructure and standards.

2.20 Evaluate and seize opportunities for moving towards shared services where practical and cost-effective.

2.22 Identify policy changes needed to support the electronic delivery and management of health services.

2.23 Recognize information technology development as a strategic investment.

e-HEALTH AND TELEHEALTH STRATEGY

Ensure that the designated chief information and technology officers of each authority work with the Ministry of Health Services and Ministry of Health Planning and other appropriate ministries to establish integrated technology standards province-wide. At a minimum these information and technology officers should:

2.21 Develop a provincial strategy to facilitate Telehealth and electronic health record initiatives in consultation with medical and continuing education units of the colleges and universities.

2.24 Facilitate the advancement of key e-health and Electronic Health Record initiatives.

2.25 Establish a British Columbia e-Health Think Tank composed of e-health visionaries, not senior IT staff, who will examine the applications side of e-health, since it will be compelling applications that drive down costs and improve the delivery of health services to the remote and rural regions of the province.

IT PROCUREMENT

2.39 The provincial government should expedite its efforts to rewrite its Policy and Legislative Framework around Procurement Reform so as to result in more streamlined, flexible, and cost-effective processes for both government and the British Columbia supplier community, ensuring fair and open procurement throughout the province. The government should also develop procurement policies and educational programs for both ministries and the supplier community which will provide British Columbia-based technology companies with the tools and skills required to compete more effectively for government contracts.

VENTURE CAPITAL - CHANGES TO *SBVC ACT*

Accelerating 'Early Stage' Technology Investment

The provincial government should proceed promptly with the following streamlining amendments to the *SBVC Act* to address the need for early stage capital investment in technology companies:

2.27 Expand the tax credit budget legislated under the *SBVC Act* from $50 million to $100 million annually.

2.28 Introduce an investment model under the *SBVC Act* that does not require the registration of a separate VCC to facilitate investment and tax credits under the programs in order to allow direct investment, cut red tape and reduce program registration costs.

2.29 Increase the total amount of capital one business may receive under the program (beyond the current $3 million) to better reflect the capital needs of many early stage technology companies.

2.30 Increase the employee threshold limit for a small business from 75 to at least 150.

2.31 Allow approval for common investment regimen, such as multi-tranche investments over multiple years based on attainment of established milestones.

Leveling the Playing Field for Tax Credit Investment in British Columbia

The provincial government should enable small businesses and venture capital managers participating under the *SBVC Act* to raise and invest venture capital, with the assistance of tax credits, under the same conditions that are presently offered to the one Labour Sponsored Venture Capital Corporation (LSVCC) operating in British Columbia and other LSVCCs operating throughout Canada.

To achieve parity with labour sponsored funds, the task group recommends the following amendments be made to the *SBVC Act*:

2.32 Allow program investors the option to invest directly from their self-directed retirement savings plans.

2.33 Make the tax credit incentives available for program investment within 60 days after the calendar year.

2.34 Increase program flexibility in program capital investment beyond simple common or preferred shares.

2.35 Provide VCC investors up to 24 months to complete investments.

2.36 Open up the tax credits provided to the sole LSVCC to competition by allowing other venture capital firms to enter the market to create a more dynamic venture capital community.

RESEARCH AND DEVELOPMENT

2.37 The provincial government should take steps to create an e-learning chair at one of BC's universities.

ATTRACTING TALENT TO BRITISH COLUMBIA (RECRUITMENT)

2.38 The provincial government should work with the federal government to change immigration rules so that spouses of employees moving to British Columbia can work here automatically.

BRITISH COLUMBIA PROVINCIAL BRANDING

2.40 Develop a provincial branding and marketing strategy that feature technology and innovation as key drivers supporting British Columbia's image as a place with a sustainable and vibrant economy, including resource and knowledge-based industries, and an unparalleled quality of life.

2.41 Develop a strong macro-image positioning British Columbia as a desirable technology destination for investors, employees and site selectors.

2.42 Develop and execute its provincial branding strategy in consultation with the technology community.

MARKETING BRITISH COLUMBIA

2.43 Target its technology industry marketing effort at key audiences that include decision makers in technology investment, site selection and highly skilled workers.

2.44 Focus its technology industry marketing strategy initially on four sectors known as areas of strength within the province: biotechnology, wireless, alternative energy and new media.

2.45 Focus its marketing strategy to attract highly skilled workers or those individuals that may be predisposed to move to Canada such as expatriate Canadian and British Columbia technology workers and members of communities that are already represented in British Columbia.

First Quarter Report

PUBLIC AWARENESS ON THE BENEFITS OF E-GOVERNMENT

1.8 Educate British Columbians about the benefits of being fully connected, including access to relevant Internet-based applications and information, and increasing e-government services.

RESEARCH AND DEVELOPMENT

1.1 Double the number of computer science and electrical engineering graduates from British Columbia post-secondary institutions.

1.2 Establish 20 British Columbia Research Chairs in the fields of medical, social, environmental, and technological research.

ATTRACTING TALENT TO BRITISH COLUMBIA (RECRUITMENT)

Attract senior professionals to accelerate industry growth by:

1.3 Making changes to immigration policy.

1.4 Establishing an Info-Office to aid in the recruitment of out of province technology workers and relocation of technology companies to British Columbia.

1.5 Implementation of a competitive provincial stock option program for British Columbia workers.

1.6 Resolution of cross-boarder security issues with the US.

MARKETING BRITISH COLUMBIA

1.7 Establish a domestic and international campaign to promote British Columbia's quality of life, superior infrastructure, education system, technology community and business-friendly environment.

Appendix F. PTC Members, Staff & Acknowledgements

PTC Members

CHAIR:

Honourable Gordon Campbell
Premier
Province of British Columbia

CO-CHAIR:

Paul Lee
Executive VP & Worldwide Studios
Chief Operation Officer
Electronic Arts Inc.

MEMBERS:

Reg Bird
Chairman
TR Labs and SaskTel

Shannon L. Byrne
President & Chief Executive Officer
Paradata Systems Inc.

Michael Calyniuk
Incorporated Partner of
PricewaterhouseCoopers LLP

Dr. Denis Connor
Executive Chairman of the Board
QuestAir Technologies Inc.

Norm Francis
President
Boardwalk Ventures Inc.

Dr. Victor Ling
Vice President, Research
BC Cancer Agency

Douglas Manning
Chief Executive Officer & President
Bridges.com

Ian McBeath
President & Chief Executive Officer
Inflazyme Pharmaceuticals Inc.

Dr. Daniel Muzyka
Dean, Sauder School of Business
University of British Columbia

Darcy O'Grady
Corporate VP Leadership Development & Succession
Creo Inc.

George Hunter
President
BC Technology Industries Association
Leading Edge British Columbia

Greg Kerfoot
Owner/President
Whitecaps F.C.

William Koty
Director, Division of Applied Technology, Continuing Studies
University of British Columbia

Dr. Donald Rix, MD
Chair
MDS Metro and Cantest Ltd.

Dr. Gerri Sinclair

David Sutcliffe
Chair & Chief Executive Officer
Sierra Wireless Inc.

PRESIDENT:

Jim Mutter

PTC Staff

Len Juteau, Director of Operations
Derrick Chee, Analyst
Tia Tjandisaka, Analyst
Pratibha Sharma, Office Assistant/Analyst

Acknowledgements

The Premier's Technology Council again thanks the many people whose assistance enabled it to achieve its goals and produce this report.

GENERAL

Ministry of Management Services
Cairine MacDonald, Deputy Minister
Dave Nikolejsin, Assistant Deputy Minister, NetWork BC
John Webb, Community Liaison & Communications Lead, NetWork BC
Fran Rothman, Policy Analyst, NetWork BC
Pat Bluemel, Cartographer, BCStats
Sarah Lawrence, Coordinator, Finance and Administration

Ministry of Small Business and Economic Development
Andrew Wilkinson, Deputy Minister
Todd Tessier, Senior Portfolio Manager, Investment Capital Branch

Robert Grace, VP Economics and Research, Leading Edge British Columbia
Brent Holliday, Partner, Greenstone Ventures Partners
Margaret Nevin, MN Communications Inc.

E-LEARNING

The Premier's Technology Council would like to express its gratitude to those who have participated in discussions and consultations on e-learning. Those who attended the e-Learning Roundtable are listed in Appendix C.

Ministry of Advanced Education
Philip Steenkamp, Deputy Minister

Ministry of Education
Emery Dosdall, Deputy Minister
Bobbi Plecas, Lead Director, Standards Department

E-HEALTH TASK GROUP

Michael Calyniuk, PTC Member (Chair)
Dr. Victor Ling, PTC Member
Dr. Don Rix, PTC Member
Dr. William Clifford, Medical Office Information Systems (Prince George)
Dr. Kendall Ho, Associate Dean & Director, Continuing Medical Education, Faculty of Medicine, UBC
Dr. Richard Hooper, Cardiologist (Kelowna)
Garry Rasmussen
Dr. Hal Siden, Medical Director, Telehealth, Children's & Women's Health Centre of BC
Dr. Julian Somers, Research Associate, Mental Health Evaluation & Community Consultation Unit, UBC

e-Health Advisors
David Babiuk, Provincial Telehealth Director, Provincial Health Services Authority
John Schinbein, CIO, Ministry of Health Services

ALTERNATIVE ENERGY

Dr. Denis Connor, PTC Member
Ron Britton, President & CEO, Fuel Cells Canada
Steve Brydon, Senior Advisor, Alternative Energy Policy Branch, Ministry of Energy and Mines
Stephen Kukucha, Senior Advisor, External Affairs, Ballard Power Systems Inc.
Michael MacDonald, Senior Vice President, Technology, Methanex Corporation
Firoz Rasul, Chairman of the Board, Ballard Power Systems Inc.
Bruce Sampson, Vice President, Sustainability, BC Hydro
Wal Van Lierop, President and CEO, Chrysalix

REGIONAL SCIENCE, TECHNOLOGY AND INNOVATION COUNCILS AND OTHER REGIONAL REPRESENTATIVES

Lori Lynn Ackerman, Executive Director, Science and Technology Association of the North (Sci-Tech North)
Betty Barton, IRAP-ITA, Terrace
Margret Horvath, Executive Director, Okanagan Science and Technology Council (OSTEC)
Marilyn Hutchinson, Mid-Island Science, Technology and Innovation Council (MISTIC)
Dawn Miller, Executive Director, Innovation Resource Centre (IRC)
Bill McQuarrie, Executive Director, Interior Science and Innovation Council (ISIC)
Claudia Trudeau, Executive Director, Kootenay Association for Science and Technology (KAST)

LOWER MAINLAND AND GREATER VICTORIA CONSULTATIONS

Anita Huberman, Executive Assistant, Surrey Chamber of Commerce

Vancouver Island Advanced Technology Centre
Shirley Vickers, Director - Business Development
Dan Gunn, Director - Communications & IT
Marie Ivings, Administrative Assistant