

Task Force on Value-added and Technology Commercialization

Final Report to the Minister

May 31, 2007

Honourable Doug Horner
Minister, Advanced Education & Technology
#324 Legislature Building
10800-97 Avenue
Edmonton, AB
Canada T5K - 2B6

Dear Mr. Horner,

The Task Force created to advise you on new directions for the Alberta economy has completed its work. We mobilized quickly, reviewed work done previously, reached out to the broader Alberta community, vigorously debated what we learned – and came together in recommending specific action for the government to undertake.

We say “action” because Alberta needs to move forward in helping people turn their good business ideas into products and services that are sought after in markets around the world. Action must be taken in order to build a broad-based economy and to overcome current reliance on commodity resources. Albertans must be in control of their own destiny.

To secure this future, it is essential to provide a supportive environment in which to create new market-driven products that come from the minds of entrepreneurs, scientists, engineers and business people who are educated, working and making their home in Alberta. ***We need to create a viable culture of constant commercial innovation whereby customers focus our efforts to create highly valued products and services.***

Many of the elements required to make this dream a reality are present now in Alberta. My own company, SMART Technologies Inc., is an example of what can be accomplished by focusing energies and working hard over many years to achieve global impact in the market for education and collaborative technologies. Potential for similar success stories

exists among many new and currently striving Alberta companies, whose efforts can be greatly enhanced with a little more assistance.

Actions recommended in the following report represent crucial first steps toward a new Alberta – one energized by a compelling new vision of what can be achieved. Over the past 100 years or more, hard decisions had to be made in order to overcome huge obstacles. But they have brought Alberta to where it is today.

Fortunately we have much inherent natural strength to build upon. Perhaps most importantly, many talented and committed people live in this province. The next 100 years require still more decisive plans and far-reaching initiatives, such as Alberta's strategic commitment to nanotechnology, in order to continue making a positive impact in the world.

Albertans have proven that they have the potential, the power and the passion to achieve greatness. Hence strong leadership from all sectors, including government, industry and academia, must now work as one to clearly identify the opportunity and move forward. We need to mobilize now. After soliciting and analyzing input from all three sectors on how best to proceed, the Task Force has reached the following recommendations and conclusions, which it believes represent essential first steps toward a new and viable future for Alberta.

Regards,

David Martin

Chair

Value Added and Commercialization Task Force

On behalf of the Task Force

Task Force Members

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<i>Doug Mitchell</i>	National Co-Chairman, Borden Ladner Gervais LLP; Past Chair, Alberta Economic Development Authority (AEDA)
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<i>George Irwin</i>	Director of Technology, Fujitsu Consulting
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<i>Howard Tennant</i>	Past President, University of Lethbridge, Business Professor; Board Member, Alberta Science and Research Authority (ASRA)

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<i>Bern Kotelko</i>	Board Chair, AVAC, Highland Feeders, Vegreville
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<i>Ryan Radke</i>	President, BioAlberta
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Alberta's Current Success and Future Prosperity

Alberta currently enjoys great economic success largely as a result of a dynamic energy industry that benefits from vibrant global demand for its output. In 2006, energy-related activities accounted for more than 30% of Alberta's GDP, with increases being forecasted well into the future.

But historically, Albertans have learned the hard way that continued prosperity in any economic sector has no guarantees. The only assured long-lasting resources are human creativity and solid, earnest effort.

At this point in time, Alberta is uniquely positioned to shape its future success while creating thriving communities and sustainable economies desired by all. An opportunity exists now to create a supportive environment that enables entrepreneurial people and companies to convert their innovative ideas into marketable new product and services. This will result not only in Albertans enjoying new wealth and job opportunities for Albertans; it will reduce our reliance on any particular industry and enhance the likelihood of future prosperity and quality of life. It will also carve out an enduring economic role for aspiring young Albertans in an increasingly integrated global world.

Alberta is already engaged in many significant efforts to add value to traditional resource-based industries, and to encourage the development of more knowledge-based and advanced technology industries. The harsh global reality is that vigorous and ongoing innovation will be needed for these industries to competitively survive. Already, across the province, initiatives have been created to

- Support leading edge research and development
- Grow highly qualified and capable scientific and business talent
- Deliver world-class education at all levels

- Provide underlying facilities and support services
- Encourage new and ongoing economic development

But if we are to enjoy the commercial benefits of past and current investment, we must act now to build on this foundation. Alberta needs to accelerate its entrepreneurial engine in technology-based sectors. Successful and substantive economic diversification in Alberta will not happen overnight. Today's new initiatives will have far-reaching effects that can transform economic activity and livelihoods over the next decade and well into the future. A new vision for long-term prosperity will need to take the following objectives immediately into consideration:

- Creating a global hotbed of knowledge innovation and technology commercialization
- Starting and growing many successful companies in new and far-reaching markets
- Creating highly rewarding careers, particularly for young Albertans
- Renewing traditional industries through value-added technology adoption
- Generating solid returns from ongoing investment in social and economic capital

Achieving these objectives will require Alberta not only to invest significantly in supporting new initiatives; it will also have to focus on what it can do best, and create a unique competitive edge in targeted global markets. We can not hope to excel in every industry. Many other jurisdictions are confronting equally significant challenges and will be making similar efforts to succeed. To maintain current prominence and lead in new areas, Alberta must align overall efforts among government, industry and academia; leverage its unique strengths; create new, globally focused advantages; and above all act quickly and decisively.

The Value-Added and Technology Commercialization Task Force has explored the requirements for Alberta to excel in this regard. Basic challenges and needs have been thoroughly discussed by the community at large for many years. Strong consensus was also evident in 40 written submissions to the Task Force. These contained the thoughtful views of diverse individuals and organizations across the province who are clearly dedicated to Alberta's future success.

The path forward demands the inclusive participation of all sectors of interest and people in all walks of life. Interaction barriers and unaligned effort are self-defeating and must be eliminated. In examining successful approaches taken by other leading edge jurisdictions, it is clear that government can and must play a pivotal role in working toward consensus, brokering cooperation among different parties, and strategically applying its resources to leverage and sustain economic momentum.

In this regard, the Task Force encourages the Government of Alberta to display strong leadership in pursuing several key initiatives. The following report details three specific areas for accelerating commercialization and building a strong, diversified economy. By priority, these action items are to:

- 1. Build an Effective Capital Market**
- 2. Assist Growth of Innovative Firms**
- 3. Encourage and Reward Entrepreneurship**

Action Item #1: Build an Effective Capital Market

Outside of our currently booming energy extraction and processing industry, many promising Alberta companies in advanced technology sectors find it very difficult to get the capital needed to fund their start-up and early stage growth activity. In 2006, total venture capital investment in Alberta (for non oil and gas companies) was less than \$40 million – less than 2% of the venture capital invested in Canada. Alberta rarely attracts more than 3.5% of the venture capital investment made in Canada, far below its proportional economic output or population base.

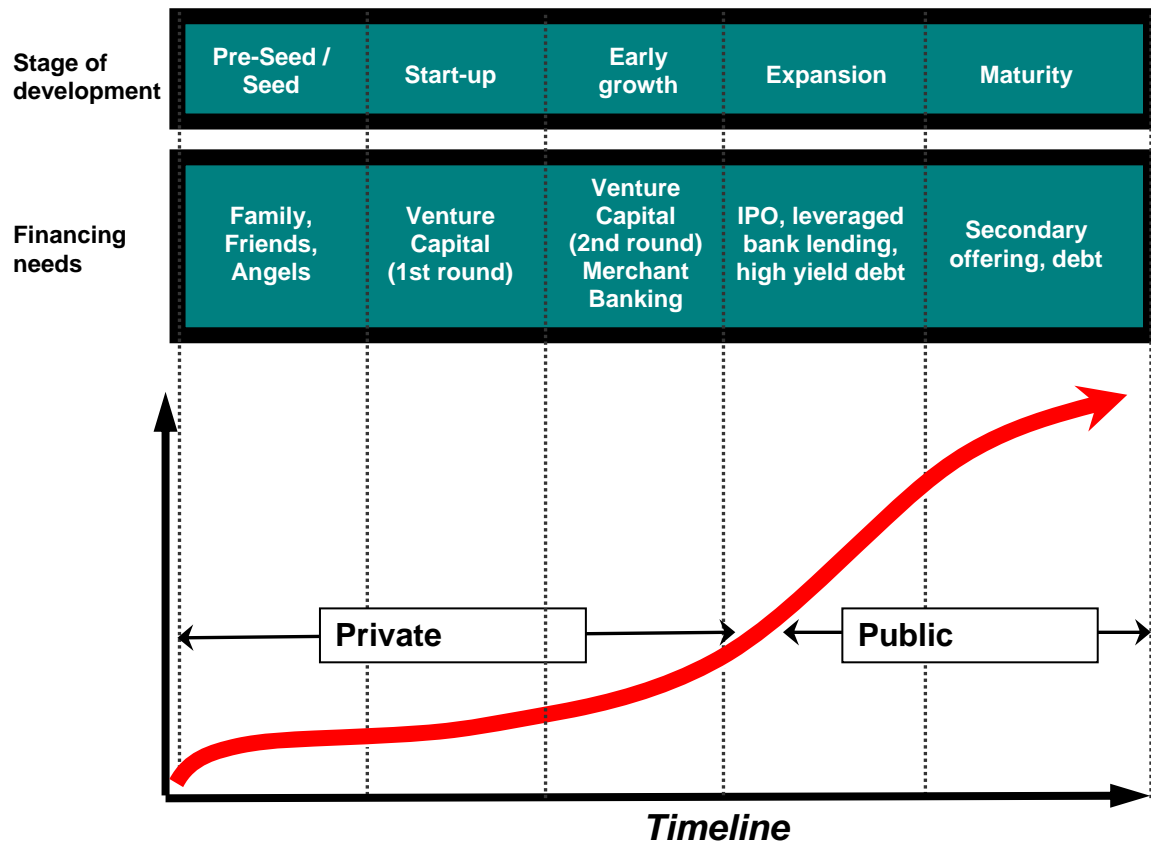
Lack of access to investment capital is clearly the most formidable obstacle for emerging Alberta firms in the advanced technology industry. The province has an excellent research and development environment; generating world-class knowledge, promising business ideas and budding entrepreneurs. Unfortunately, the potential commercial outcomes often go unrealized due to the lack of financial resources required to support new business ventures.

The investment gap is particularly noticeable at start-up and early stage phases, where risk and uncertainty tend to figure prominently. However, even later stage companies on steep growth curves can run into roadblocks when engaged in raising adequate capital locally. The obvious concern from an economic development perspective is that once struggling Alberta companies achieve a significant degree of success, they must be externally acquired or leave the province in order to continue growing.

If emerging Alberta companies are to flourish, they must have adequate opportunity to access the investment capital needed at all stages of growth (see figure below). A thriving capital market in Alberta will not only increase funding available; it can also produce a local industry of capable, experienced investment professionals who can

further advise companies on their strategic growth and help open doors to profitable new markets and willing customers.

Company Growth Stages & Capital Sources

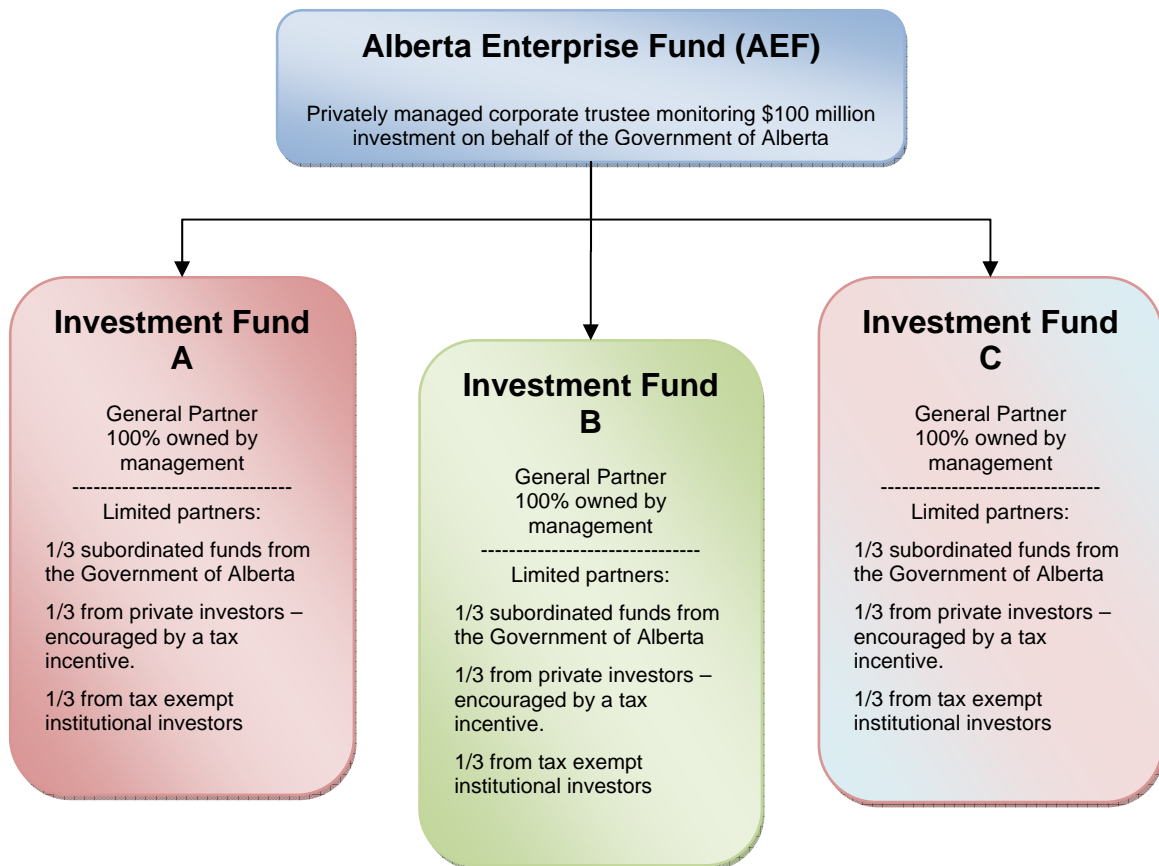


The successful accomplishments of other notable jurisdictions in this regard, such as New Zealand, Israel and Singapore, demonstrate that targeted government support in partnership with private investors can significantly aid in bridging additional funding or commercialization gaps. Given this reality, the Task Force strongly urges that the following action be taken in order to build a more viable capital market in Alberta.

Recommendation 1: The Government of Alberta should create a \$100 million Alberta Enterprise Fund (“fund-of-funds” model) in order to co-invest with other private and institutional investors in a number of independent funds amounting to \$300 million of newly created venture capital accessible to Alberta firms.

Taking a fund-of-funds approach, the Alberta Enterprise Fund (AEF) should be the senior entity, professionally managed and independent from government. The role of the AEF would be to generate up to three locally managed venture capital funds through limited partnerships with other groups of investors, each managed by a general partner.

Each of the venture capital funds would focus on a particular range of business growth opportunities within Alberta. Each fund would be set up with an independent Board of Directors, its own investment criteria and a panel of advisors to provide appropriate sectoral expertise. Investment decisions and operations would be the responsibility of the general partner to ensure optimum returns on invested capital. At this level, government funds would reflect a passive limited partner role with no influence on actual business decisions. The following diagram outlines one example of how the AEF might be implemented.



In further designing and implementing the AEF initiative, government should apply the following criteria to make the opportunity appealing to other investor partners.

- To encourage Albertans to invest, a 25% investor tax credit should be provided for individuals participating in any of the new funds (*not available to tax-exempt institutional investment partners*).
- Government, as one of the limited partners in any new fund, would have interests subordinated to those of the other limited partners, i.e., private and institutional investors.
- Government contribution would not exceed a 35% share in any single fund.

- Each fund would target a 10-year lifespan.
- Each fund would be locally managed for the benefit of Alberta.

Successful implementation of the AEF would attract private and institutional venture capital funds, as well as investment managers, and support the development of emerging industry sectors in Alberta. In the view of the Task Force, \$100 million represents the level of involvement by the Government of Alberta needed to create meaningful new venture capital pools. The development of significant Alberta-based funds is critical for the growth of firms, development of knowledge-intensive industry and economic diversification.

The board of AEF should also take on the role of enhancing overall development of capital market activities in Alberta by facilitating increased interaction among stakeholders such as individual investors, other venture capital firms, investment bankers and dealers, major financial institutions, investment managers and related professionals. The aim is to stimulate a more efficient, dynamic and successful venture capital market in Alberta in support of creating more knowledge-intensive companies.

Recommendation 2: The Government of Alberta should take specific steps to increase access to financing for start-up (seed) and for early-stage development of high-potential Alberta companies.

Given the particularly difficult challenges of starting a new company, reflecting typical high-risk and unproven track records, government needs to play a stronger support role in helping people launch new technology-based ventures. New companies represent the crucial point at which the hard work of development can turn into very rewarding business. In advanced technology sectors, new businesses are the largest source of new long-term growth.

In recent years, the Government of Alberta has supported various organizations, programs and facilities that seek to help promising young Alberta companies grow. For example, the Agriculture Financial Assistance Corporation (AFSC) and AVAC Ltd. (including the new IVAC Capacity Builder and Commercialization Fund) are helping smaller Alberta companies with their development and financing needs. But, more direct government support is needed at the pre-seed and seed stages of company development, given that traditional investors are very reluctant to get involved with unproven companies that are just starting out. Government involvement in the order of \$30 million for seed stage investment funds should be part of any effort to build an effective capital market in Alberta. New Zealand, for example, launched a specific pre-seed investment fund after successfully getting its fund-of-funds initiative underway.

The government could also help by encouraging the development of angel investor networks in all regions of Alberta and by supporting the education and skill development of investors in general. Encouraging more engagement of and interaction among various entrepreneurs, high net worth individuals and investment industry professionals would stimulate deal-making and help firms become investment ready.

Recommendation 3: Create a provincial Scientific Research and Experimental Development (SR&ED) tax credit, in parallel to the Government of Canada program, to support Alberta companies undertaking research and development.

With the exception of Prince Edward Island, all other provinces in Canada provide a provincial tax credit that complements the federal SR&ED credit. A similar Alberta credit would help level the playing field and thereby remove one of the problematic uncertainties that companies can face when deciding whether to conduct their research and development in Alberta or, for that matter, whether to locate overall operations here. Most importantly, refundable SR&ED tax credits for qualifying smaller firms can be

an important source of cash for companies undertaking their own research and development simply to remain alive and competitive. These credits increase R&D in existing companies to develop new products and to boost productivity.

In support of a broader range of entrepreneurial activities, Alberta should also encourage the federal government to expand its program definition of research and development to include product prototyping and testing, market research, and related commercialization activities.

The annual cost of an Alberta SR&ED credit has been estimated at up to \$150 million; however, resulting benefits from new economic activity and spill-over benefits from companies sharing knowledge would more than compensate. Mirroring the federal qualification process for SR&ED credits would also help reduce provincial administration or monitoring expenses.

Implementing the three recommendations above will transform the investment capital situation in Alberta, making more funding available to Alberta firms and strongly reiterating an important message to entrepreneurs, investors, fund managers and others that Alberta really is open for business and is a location of choice.

Action Item #2: Assist Growth of Innovative Firms

Alberta invests considerably in education and research activities, as well as facilities and infrastructure, required to create an environment for innovative economic growth. But it needs to strengthen its capacity to create and grow technology-based firms with the potential to turn research results into commercial benefits. Alberta needs more firms that can compete successfully in emerging global markets. Developing and applying new

technology can create saleable new products and ensure that all firms are more productive and competitive.

In the pre-commercial phase, companies often need technical equipment, access to lab or test facilities, engineering and design expertise, validation or accreditation services, prototyping support, and, ideally, an opportunity to demonstrate new products in real customer settings. The targeted output is a readily marketable product.

Building a good new product and attracting initial customer attention are formidable challenges for any business venture. Smaller firms and entrepreneurs rarely have all the resources, expertise, time or capital to enable such a fully considered approach to product development and testing.

Business hurdles can be eased to some extent if support is readily available for firms and entrepreneurs throughout the developmental path. An overall approach is needed to stimulate, support and clearly channel commercialization efforts from a promising business idea through to successful market sales.

Recommendation 4: Create new product commercialization centres by investing in facilities and services to help Alberta start-up and growth-oriented firms build new products and services.

A range of centres should be established, reflecting both the inherent company potential within Alberta and the high-value domestic and global market opportunities that exist. The Food Processing Development Centre in Leduc is an excellent example of the type of services and facilities needed.

These centres can be accessible at different locations throughout the province and reflect regional strengths in innovation and the needs of local industry. They could involve various physical facilities as well as virtual working relationships among

interested parties. For example, some high potential centres to consider would include the following, although others need to be identified through further industry consultation:

- Green Technology Solutions
- Advanced Materials for Industry
- Micro/Nano Systems Packaging
- E-Health Products & Services
- Geomatics for Energy & Resource Industry

Typical support services could include prototype development, lab facilities and equipment, engineering and design expertise, test environments, validation and accreditation services, product demonstration sites and small-scale pilot production. Technical advisors would also be employed where needed to work directly with individual companies and their projects. Industry technical experts can be an invaluable resource to individual firms, not only for their grasp of relevant technology, but also for their familiarity with current product development issues, sourcing of inputs, key business contacts, customer potential and first-hand experience with what makes good products work. The centres could also assist in finding customer partners willing to showcase new products and services developed by Alberta firms.

Recommendation 5: Support and expand business development centres throughout the province and facilitate access to these services.

Alberta is fortunate to have individuals, agencies, programs and networks that are already helping new start-ups and growth-oriented companies. For example, Calgary Technologies Inc., University Technologies International, TEC Edmonton and other regional agencies and innovation networks throughout the province help firms and

entrepreneurs by offering a range of information services, business advice, networking forums, promotional activities, and in some cases office space and related facilities. These agencies provide services that can play an even greater role if Alberta is to stimulate and sustain increased technology-based entrepreneurship. Developing enhanced support for existing and new business development centres should be undertaken on an urban and regional basis throughout the province.

The primary focus of business development centres would be helping companies start up and grow. Examples of business support services available through these centres can include the following:

- Business planning and start-up assistance
- Market research, intelligence and executive mentorship
- Client networking
- Access to investment sources
- Intellectual property management
- Recruitment of expertise
- Incubation and office services

A program of “innovation vouchers” should also be developed by government to fund delivery of specific support services to emerging companies in need of assistance. They could also be used for the services provided by product commercialization centres. The innovation vouchers would be allocated through a fair application process to individual companies, which could use them as credits for a defined range of services from qualified support providers. This novel approach is proving effective in some other jurisdictions (e.g., Ireland, the United Kingdom and the Netherlands), and should be trialed in Alberta to enhance service delivery and relevance to companies in need of assistance.

Recommendation 6: Improve accessibility to intellectual property (IP) developed at post-secondary and other publicly funded organizations in order to allow more small- and medium-sized enterprises to turn promising research results into profit-making new products and services.

The Government of Alberta needs to work closely with post-secondary institutions and other publicly funded organizations to streamline licensing procedures and the ongoing management of IP, and to provide better incentives for creation of IP and its commercial exploitation. Publicly funded IP should be viewed as a critical resource that needs to be used as efficiently as possible for the benefit of all Albertans, particularly when its deployment can accelerate the growth of local companies.

Action Item #3: Encourage and Reward Entrepreneurship

The development of an even stronger entrepreneurial culture within Alberta is imperative over time if we are to increase the number of talented people willing to take on the exciting challenges and risks of building more knowledge-based companies. Entrepreneurs, those individuals that recognize new business opportunities and make the most of them, are what Alberta needs more than ever, particularly those with hard-won experience who can encourage and mentor other aspiring entrepreneurs. The outcome of a true entrepreneurial culture will be an environment that continually seeds new companies and rapidly nurtures those that are most successful.

Recommendation 7: The Government of Alberta should facilitate a province-wide initiative that promotes entrepreneurship as a highly desirable career path and fosters the delivery of relevant skills training and real-life work experience.

A broad provincial initiative should be undertaken to align the efforts of industry, educational institutions, service agencies, government and other organizations in providing the motivation, learning, support and opportunity for people who want to

build their own enterprise. Although some initiatives are being undertaken already, much more still needs to be done to align efforts and energize results.

Business schools play an important role in teaching professional skills and training future leaders. Programs are needed that graduate capable entrepreneurs by making hands-on company creation experience part of the curriculum. School–industry partnerships should be encouraged in order to increase the opportunity for business-oriented internships, practicum experiences, new venture competitions, networking forums and “mini-incubation” of actual start-ups.

These programs and initiatives should be available not only to students, but also to external participants from the local business community. Robust efforts must be taken to engage more experienced entrepreneurs who can share their knowledge and work directly with new companies. The overall intent should be to create an ideal training ground and launch pad for new entrepreneurs who will help shape Alberta’s economic future and sustainable growth.

Outcomes and Conclusion

At the beginning of our mandate, when we first sought input from the technology community on a commercialization strategy for the province, many members felt that they had seen this activity before with no substantive changes to policy or direction.

We explained that Alberta was at a different time and place – it was now commonly understood that the need for diversification was urgent and the means to achieve it were readily available. People in the community started to believe that this new discussion would, in fact, see the development of recommendations *that could and would be acted upon*.

This shift in thinking was evident in the large number of submissions sent to the Task Force, 40 at last count. The quality of the material put forward for review was excellent, especially given the time allowed from the creation of the Task Force to submitting this report. The submissions presented many good ideas that can help lay a foundation for going forward.

In fact, as Canadian author Don Tapscott suggests, Web 2.0 technologies can be used to engage with stakeholders in entirely new ways as we set new directions and encourage input on how best to diversify our economy. The “wisdom of the crowd,” as James Surowiecki calls it, can be shown to offer good insight on the paths going forward.

Here is what the Task Force sees as the eventual outcome of successfully implementing our recommendations:

- High growth entrepreneurial companies
 - that exist with strong management and a global market focus
 - that are well-capitalized with a strong product pipeline

- that have a sustainable capacity to take ideas through the innovation process to commercialization
- A strong capital markets support system from early stage development through to later stages or to a growing enterprise
- An education system that is able to produce world-class technical people and strong marketing and business managers
- Government that is willing to support, reward and celebrate the entrepreneurial spirit, but which understands that entrepreneurs must manage their own way to success
- Significantly more skilled people, companies, jobs and opportunities that are created and retained throughout Alberta
- A receptor capacity built in Alberta to take the ideas behind the research and development done here to world markets

If we are to see these outcomes in the next 15–20 years, we need to act now. The good news is that there is consensus about the problems *and* enthusiasm around the solutions. Onwards!

May 31, 2007

Appendix 1: Submissions to the Task Force

Submissions from the following organizations and individuals were received and reviewed by the Task Force with great appreciation.

University of Lethbridge, Faculty of Management
Ray Moschuk, CEO, Meta4Hand Inc.
SpringBank TechVentures
TRLabs
BioMedicine & BioTechnology Cluster (EEDC)
iCORE
Alberta Research Council
Alberta Science and Research Authority
Alberta Film Industry
Alberta Health Industry Association
Intellectual Property Institute of Canada
BioProducts Alberta Association
Peace Region Economic Development Alliance (PREDA)
THECIS
Canada West Foundation
Mayor Mandel, City of Edmonton
ICT Council
Michael Beamish, Analysis Unlimited
Netera Alliance
Canadian Federation of Independent Business
Irene Makar, University of Sussex
Robert Burrell, Bio-Medical Engineering, University of Alberta
CETAC-WEST
Alberta ICT Institute
Edmonton Economic Development Corporation
Northern Alberta Business Incubator
Alberta High Speed Rail Inc.
Alberta Council of Technologies
Alberta Ingenuity Fund
Merck Frosst Canada Ltd.
Lethbridge Community College
University of Calgary
Calgary Economic Development
Westlink
John A. Bachynsky, Professor Emeritus, University of Alberta
The Banff Centre
University Technologies International
Action Canada
Alberta Association of Colleges and Technical Institutes
GrowthWorks Capital Ltd.