

OPPORTUNITIES BC 2020 INITIATIVE

BC'S ADVANCED TECHNOLOGY SECTOR:  
REACHING FOR THE NEXT LEVEL

EXECUTIVE SUMMARY



**in partnership with:**



**March 31, 2009**

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## NOTICE TO READER

The objective of the Business Council of BC's Opportunities BC 2020 initiative is to create a positive vision and agenda for the economic future of British Columbia. To this end, the initiative will focus on strengthening British Columbia's export base and other economic activities (such as research and development investment) that generate income for the province.

For the purposes of this paper, the technology industry will include all sectors encompassed in the broad definition outlined by BC Stats and the government of BC, which include information and communication technology (ICT) – hardware and software, film and new media, life sciences and aerospace. While these sectors appear disparate on the surface, they are all knowledge-based industries.

As part of the Opportunities BC 2020 series, this paper follows a common format as outlined by the Business Council and addresses the following questions, which provide the general framework for each of the 2020 industry topic papers:

1. What role does the technology industry play in BC's economy? How does the industry generate export earnings for BC? It is realistic to expect that the industry can have a larger economic footprint in the future?
2. What major trends (internal and external) will shape the economic environment for the technology industry over the next decade?

This paper lists high-level recommendations regarding issues that need to be addressed by all stakeholders (not just government) to strengthen the technology sector and facilitate its growth for the benefit of the province. In reviewing this paper, the reader should keep in mind that BC is a small, open, sub-national economy. This affects the actions that can be taken to build a more supportive environment that will ensure the success of BC's technology industry.

At the time this paper is being drafted, the global economy is experiencing a financial crisis and heading towards recession. This down turn is unprecedented in its global scale and experts are struggling to assess the depth and length of the recession and its potentially lasting impacts. This global economic crisis will undoubtedly impact the short and medium term outlook for our industry, but we don't believe that it fundamentally changes the long term outlook for the technology sector. Economic growth will return and, innovation and technological progress will continue. To what extent achieving our long term goals is impacted by the current economic downturn is not predictable at this point, but the validity of the fundamentals, of our goals and of the key recommendations remains unchanged

This paper was authored by the BC Technology Industry Association with the help of many stakeholders who have reviewed, discussed and contributed to its content. It is not intended to reflect only the BCTIA's position, but rather to provide a broader perspective encompassing the views of all technology sector stakeholders.

Special thanks go to co-author Steve Thomson of SL Thomson and Associates Consulting; the BCTIA Board of Directors; colleagues from Life Sciences BC, New Media BC and WINBC; and other stakeholders for their constructive reviews and inputs. The BCTIA would also like to thank the Business Council of British Columbia for making the Opportunities BC 2020 project possible, and for providing valuable feedback that was instrumental in the creation of this paper.

Vancouver, BC  
March 31, 2009

Pascal Spothelfer  
President & CEO,  
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This paper discusses the status of the technology industry, broad trends that will shape its future and key issues that must be addressed to ensure that this sector fulfills its potential. It provides a general overview, as well as a number of recommendations that represent progressive and comprehensive approaches to problems that currently restrict the growth of BC's technology industry. Also, because the advanced technology sector is an integral part of BC's economy, it will be examined within the larger context of the province's economic situation. We hope that this paper will serve as a framework for more detailed analysis of technology sub-sectors, as well as specific issues that affect the industry overall.

The technology sector in BC is still small. In 2007, it generated 5.9% of British Columbia's GDP, employed 4.3% of the total workforce in the province and generated a small fraction of overall exports. However, despite its small size, there are a number of reasons to care about BC's technology industry. First, it provides many high-paying jobs, with technology workers earning 50% more on average than workers in BC overall. Second, for the past five years, the technology industry has consistently outgrown the rest of the economy, which indicates its future potential. Third, all sectors of the economy rely on technology to remain competitive and increase productivity. And most importantly, knowledge-based industries are the future economic foundation for highly developed industrial countries such as Canada.

BC has traditionally built its wealth on its natural resources. However, as the downturn in the forestry industry indicates, we need to reduce our reliance on natural resources. Our future will depend on our ability to create wealth from our human resources. To this end, the knowledge-based industries:

- Provide sustainable, high-paying jobs
- Thrive on research and development
- Benefit from high levels of education
- Maximize the value of intellectual property
- Essential for productivity improvements across industry sectors
- Allow ecologically sustainable economic development
- Foster a culture of creativity and innovation that ultimately creates wealth for all

In the future, the success of these industries will be the ultimate differentiator between the have and have-not jurisdictions, and the advanced technology sector is, in many respects, the linchpin for all knowledge-based economies.

This is not to say that we should abandon British Columbia's natural-resources-based industries. We should maintain the strength of this sector which, thanks to an abundance of natural resources and the well-established industries that harvest them, will continue to be an essential part of our economy and a key contributor to our exports. However, the labour content in these industries has been dramatically transformed due to productivity pressures in the face of global competition. Similar trends can be observed in the manufacturing sector where an increasing number of jobs have moved to emerging economies because of labour costs. The future job market will consist of jobs that must be local due to their nature (construction, consumer services, etc.) and those that can be sustained in high-cost environments due to the added value they create, such as jobs in the knowledge-based industries in general and the technology industry in particular.

There is already competition for knowledge-based companies in the industrialized world. This competition will continue to increase, and British Columbia is extraordinarily well positioned to come out a winner. We are blessed

with a diversified economy, a very high quality of life, a heterogeneous and cosmopolitan society, a strong education system, a highly skilled workforce, solid public sector financials, an increasingly business-friendly legal environment and a very strong reputation worldwide, which will only increase after the 2010 Vancouver Olympic and Paralympic Winter Games.

However, to become a sustainable and significant contributor to BC's economy, the technology industry needs to grow at a faster pace than it historically has. We have to commit to a strategy that proactively take steps to grow larger technology companies in the province, export dramatically more, build strong clusters, build a truly world class education system and equip our government to lead these efforts for the long term..

The decade from 2010 to 2020 offers our generation a unique opportunity to build a world-class diversified economy with strong knowledge-based industries, including the advanced technology sector. Missing this opportunity would put BC at a disadvantage for generations to come.

Government initiatives alone cannot grow our technology industry. Society as a whole must buy into the concepts of world-class education at all levels, big ideas and ambitions, long-term thinking, rewarding entrepreneurialism and success, hard work and re-investment.

BC has for too long sat back and benefitted from its natural wealth, whereas other areas of the world not blessed with such resources have made their economic transitions already. Having no real alternative, countries such as Ireland, Israel and Switzerland have established knowledge-based economies, and we are playing catch-up in this domain already. We need to be much more aggressive in pursuing the kind of future we want for British Columbia, and we must be deeply committed to doing the work necessary to achieve what we are capable of.

Creating a business friendlier environment will not be sufficient to win in this global race. In the seventies BC made large investments into its infrastructure (roads, hydro) which dramatically increased our competitiveness as will current investments in gateway infrastructure. BC needs to act boldly and strategically to invest for the long term into our knowledge based industries, including the technology sector.

We strongly recommend subscribing to the following ambitious but achievable goals and measure progress against them as we implement measures to achieve them:

- Transform the industry's structure to include anchor companies for each relevant sub-sector, with 10% of the technology companies having 50 or more employees
- Triple the size of the technology sector size in terms of GDP to \$30B
- Increase revenues generated by the sector to \$50B
- Increase the number of technology sector employees by 75% to 142,000
- Grow exports to 35% of the sector's revenues or \$17.5B

Achievement of these goals will not only create an economic future for the province overall, but also help to build a stronger society in BC. One that is highly educated; economically stable; innovative and creative; adaptable; and able to adopt progressive paradigms such as environmental sustainability, social justice, tolerance and security, as well as entrepreneurialism, celebrations of success and wealth creation.

## EXECUTIVE SUMMARY

- Having largely developed within the past 40 years, the technology sector in BC is relatively young when compared to BC's traditional industries such as mining, forestry, transportation, and even tourism.
- While BC's technology sector is being reviewed for its export potential, the important role that the technology sector plays in all of BC's domestic sectors cannot be downplayed. IT infrastructure, for example, is increasingly at the core of every sector of the economy including government, financial services and health care while Clean technologies and Life Sciences technologies help to enrich the lives of all British Columbians.
- To a large extent, the BC technology industry has grown out of support for BC's primary economies, with additional innovation spinning-out from the province's research universities to provide the impetus for the industry to reach into new market segments.
- While BC's technology industry has helped BC's primary industries to be more productive and successful, in turn the primary industries have shaped natural strengths that hold BC-engineered products in good stead when selling to the world.
- Clusters of strength are emerging where companies complement each other with overlapping products and services and similar market targets. Specifically, these clusters are appearing in:
  - Biotechnology
  - Digital Media
  - Fuel Cells and Clean Energy
  - Wireless Telecommunications
  - ICT
- The province's leading universities have a reputation for developing a wide range of engineering and scientific talent, from electrical and mechanical engineering to computer science, advanced materials, photonics and life sciences.

The diversity of the talent pool in such a small geographic area enables cross-disciplinary innovation and enables researchers and companies to create a range of technologies that service almost every sector of the economy.

- Unfortunately the breadth of the technology sector, when combined with the relatively small size of BC technology companies, does not allow for a lot of depth in any one area. This creates a significant issue of scalability as the BC technology industry competes against other pools of talent around the world.
- The technology industry continues to play an increasing role in BC's economy, delivering an ever larger percentage of our GDP (although the relative contribution of the technology sector is down since 2004 due to the booms in the construction in commodities sectors). In the past few years, BC's high-tech industry has also outpaced the overall economy in GDP growth, accounting for approximately 5.9% of GDP in 2007.

- Employment in the technology sector has increased by nearly two-thirds since 1991, and now exceeds the previous heights reached during the 'dot-com bubble' in 2000 and 2001.

With 81,140 employees and a total payroll that exceeded \$4billion in 2007, the BC technology sector now employs more people than the mining, forestry, and oil-and-gas exploration industries combined.

- While the technology sector not only creates high-paying jobs, it also creates opportunities for significant wealth creation and there are an increasing number of examples in BC where founders and investors have profited quite considerably from their successes, both through gains from acquisitions as well as from profits derived from successful operations.
- While start-up costs have historically been significant, particularly in sectors such as bio-technology where R&D, trials and approvals can often take 15 years, in most technology sectors, output is highly scalable. Often-times, the marginal cost of creating one more unit of output (such as one more piece of hardware, one more piece of software, or one more dose of medicine) is negligible. Therefore, once successfully launched, new technology products can enable the significance growth of a technology company without necessarily requiring large amounts of capital to scale the operations.
- The technology industry in BC is mostly comprised of smaller companies. Of the 8,600 technology companies identified by BC Stats, 7,000 have less than 10 employees with 5,800 having less than five employees. Only 348 technology companies in Bc (of all descriptions) had more than 50 employees.
- While the BC Technology Sector produced \$18.1 billion in revenues in 2007, only \$2.7 billion of that revenue (18%) was derived from export revenues.
- A significant challenge that BC's technology industry faces is a shortage of skilled technology workers and senior technology management talent. In the 2007 TechTalentBC Labour Demand Study undertaken by the BCTIA, it was found the industry was expecting to create 10,000 new jobs in 2007 and 2008 (likely a net of 5,000 new jobs).

The demand for new talent is considerably higher than the output of BC's post-secondary institutions. Therefore, the only way to meet the demand is recruit talent from other jurisdictions.

While British Columbia has an excellent pool of 'technologists' these are only one component of the talent pool needed to drive a successful company. Unfortunately, most BC technology companies tend to have a proportionately larger technology staff, while being under-weighted with business-people.

## FACTORS SHAPING THE OUTLOOK FOR THE SECTOR TO 2020

To assess the future of the technology sector in BC, trends and predictions, as difficult as making them may be, have to be taken into account.

### The talent shortage will continue

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Jurisdictions with the best ability to attract and retain talent will be able to grow their technology industries faster than others. BC will have to proactively use its assets like quality of life, education and cultural diversity, to be competitive.

### Global competition will accelerate

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Companies will have to be increasingly able and sophisticated both to compete abroad and to fend off foreign competitors in their own markets. BC has to take advantage of its proximity to the US and its West Coast high technology clusters as its prime export market, which will continue to serve as first export step for most emerging companies

### Global economic interdependencies and networks will widen

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The trend of an ever more interconnected world with complicated transnational networks will continue. Understanding these interdependencies will become more difficult and effects will get even more multiplied (e.g. 2007 financial crisis). Professional management will require new and better tools for monitoring and decision making, creating new opportunities particularly for BC's software companies in this space.

### Global enterprises will further expand and consolidation will continue

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Scale becomes increasingly important. Small companies with desirable IP will be the targets of intensified search for leading edge technologies by acquisitive global players. This will put even more pressure on BC's technology sector to grow large enough companies that can anchor the sector and become themselves consolidators.

### The 21st century belongs to Asia

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Given Asia's growth rates and increasing economic maturity the Asian markets will grow in importance for exports and significantly more Asian companies will become global competitors. For the foreseeable future and until IP protection measures have become effective in countries like China, the US will remain the key target export market for BC technology companies.

### BC's future lies in exports

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For BC's growth overall and its technology sector in particular, exports will become indispensable for growth and wealth creation. As domestic markets saturate and the scale pressures on companies mount, exporting will be essential. This will also allow the BC technology industry to better shield itself from the cyclical nature of the domestic industry with its significant natural resources component.

### Clean Energy Technologies will rise to become a key growth industry

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Environmental consciousness and the impact of global warming will drive the accelerated adoption of clean energy technologies. With energy cost rises and companies increasingly having to bear the full cost of pollution, new technologies will become economically competitive and have the potential to become the next growth catalyst for the technology industry, similar to the internet and mobile communications late in the 20<sup>th</sup> century. BC, as an early North American adopter of measures facilitating that transition, has the opportunity to grow a strong cluster of world class clean energy technology companies.

### The aging of the population and retirement will accelerate

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This trend will have big socio-economic impacts on pension systems, health care, talent availability and other areas. Some aspects, like the need for innovative health care solutions, will offer growth opportunities for BC's technology sector, others, like the retirement of skilled workers, will put additional pressures on companies to maintain growth with limited availability of talent.

### The importance of cities will continue to grow

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The technology industry is already concentrated in metropolitan areas and the technology workers, which make up the creative class, increasingly want to live and work in cities with access to all amenities and short commutes. This will put a lot of strain on cities like Vancouver, who as one of the most livable cities in the world has a competitive advantage, provided it can handle the infrastructure pressures appropriately.

## THE CHANGING WORLD OF THE FUTURE AND OUR RESPONSES

- The scale and pace of worldwide technology markets will grow substantially. Further globalization will magnify everything, cycles will accelerate and management teams will have to build organizations that combine scale with flexibility.

The margin of errors for small companies that have one bet to place will be further reduced. The digital natives, our technology workers of the future, will be better equipped to deal with this environment of constant change that the outgoing generation is able to.

- Clean energy technologies could well become the next big growth driver for the industry.

- Small jurisdictions like BD will have to become expert exporters and have to offer their technology companies an optimal business environment for them to succeed and to attract the talent they need. In other words, our companies need a functioning and growing technology ecosystem in BC to succeed.

## BUILDING A SUSTAINABLE COMPETITIVE TECHNOLOGY INDUSTRY ECOSYSTEM IN BC

Many elements are required to build a successful technology ecosystem in BC, but we believe that the critical areas of focus are the following five.

### 1. Grow a healthy structure of small, medium sized and large companies

The reasons for the lack of a sufficiently large number of medium sized companies (50-500 employees) are not entirely clear, but we believe that poor scalability (due to the large number of service oriented companies), lack of motivation to grow (due to sufficient financial success for the founders/managers) and lack of management expertise (lack of training and experience for entrepreneurial managers to manage larger companies) are key contributing factors.

BC has a vibrant entrepreneurial culture and many promising companies are being started continuously. Too often these small companies become acquisition targets before they can grow to medium size. The difficulty of accessing later stage financing and the small size of the sector that prevents consolidation from within, pose significant challenges. This results in this imbalanced industry structure with many small companies, but disproportionately few medium sized and large ones.

This imbalance is detrimental to growth and becomes self fulfilling. With only few medium sized companies the chances of growing one to a large sector anchor are greatly reduced. Export growth is difficult to achieve with most small companies lacking the organizational and financial strength and capacity to expand abroad. Finally, we can not grow a critical mass of managers that combine the full set of corporate skill sets, since small companies do not require corporate functions like finance, strategic planning and marketing, sales organization management etc. and large companies only require a limited number of managers in each functional area.

Measures that would help building a more balanced industry structure include improved access to late stage financing; training of small company executives; mentoring programs; tax incentives that encourage later exits; attracting management talent into growth companies; incentives for acquiring companies to maintain corporate functions in BC and enabling exporting (see next section)

### 2. Growing technology industry export revenues

Exports are critical for growth, for reducing the technology sectors dependence on the rest of the BC economy and are key to overall wealth creation by bringing fresh capital into the province. To achieve the industry's growth goals for 2020, the technology sector has to outgrow the rest of the economy significantly and only exports will allow it to do so.

As noted above a balanced industry structure will help to build exports, but unless we can enable small companies to become exporters, their ability to grow into medium size will be seriously hampered.

BCTIA and BCIC are taking measures to address this issue by developing programs that are mostly directed towards education and information. We believe that the solution will be found in initiatives like export training; export tool boxes; information repositories; cooperation programs with federal and provincial government agencies; targeted trade missions; knowledge exchange, and facilitation of export initiatives.

### 3. Focus on areas of strength

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The technology sector is made of many subsectors. The concentration of such sub sectors in a limited geographical area can lead to a cluster. Clusters benefit from synergies that the concentration creates. Examples are the availability of a specialized pool of workers and specialized suppliers, cooperation with the research and innovation infrastructure, investor attention, local competition, exchange of best practices etc.

For small jurisdiction like BC that can not support the full breadth of the technology sector at world class levels, the emergence of world class clusters is very important. These can not be built from scratch but evolve from existing areas of strength.

There is good evidence that BC is home to five areas of strength: wireless communication, life sciences, clean energy technologies, new media and parts of ICT. To grow these areas into clusters, they each require excellence in research and innovation, the presence of large anchor companies, a pool of small and medium sized companies that share the same core technologies and investors that pay attention to this regional subsector.

Measures that will facilitate the growth of these sectors of excellence into clusters include tax measures favoring these subsectors; directing research and development funding specifically in these areas; the coordination of university efforts to create research and innovation centers of excellence; strong cooperation between academia and industry, particularly involving the anchor companies; the facilitation of early adoption of innovative local solutions and local government procurement; attracting relevant conferences and trade shows; focused trade missions and outreach, and focused industry research to provide the basis of proactive measures.

### 4. Governments play an important role

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The private industry is the key engine for the technology sector, but government policies can have a significant positive impact, particularly if they leverage private initiatives and are enacted as part of a comprehensive strategy.

The BC government has taken many positive steps to support the growth of the technology sector, including fiscal measures lowering corporate and personal taxation levels, direct program funding, venture capital programs, removal of red tape and interprovincial trade barriers, and export development support.

However, BC competes with jurisdictions worldwide and their governments, having realized the importance of knowledge based industries, are taking equally supportive and in some cases more direct measures. This makes it even more important that government initiatives and policies are achieving the best possible results through coordination at all levels of government and with industry stakeholders. Ideally the structure and organization of policy and initiatives in this area becomes part of the accepted culture, providing a higher degree of clarity and predictability.

## 5. Building a world class education system

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The availability of highly educated and skilled technology workers is critical for the success of our technology sector. Growing and replenishing the pool from within is key to its sustainability. To achieve success, we need a world class education system and a culture that values education as a top priority.

The k-12 school system lays the foundation. Kids need access to the best teaching and learning environment possible and require the mentoring and encouragement by teachers and parents alike to pursue post secondary education, particularly in science and engineering. For this to work, schools need to be sufficiently staffed with well trained, motivated teachers that have access to the best teaching tools available.

Whereas K-12 lays the foundation, the post secondary institutions are at the center of the knowledge based economy. BC's universities and colleges not only train future technology workers, but are also a key source of innovation and are critical for BC's international reputation in research and innovation.

British Columbia is well positioned with strong research universities, but by focusing and coordinating the efforts we will be able to develop within individual universities or in cooperative institutes, centers of excellence that are truly world class. Such centers of excellence attract world leading researchers and teachers, who in turn attract the best students and the funds necessary to conduct ground breaking research.

Building such a system requires a considerable societal, corporate and ultimately political will. It will only happen if we can build a culture in which technology careers are highly regarded and considered cool, where corporations re-invest in the system and the government has the support to make the necessary investments and policy decisions.

Between 1997 and 2007, the technology sector in BC doubled in terms of GDP and revenues. Overall, the technology sector's share of BC's GDP rose from 4.9% to 5.9%. In addition, the number of technology workers in the province grew by 43% and productivity (as measured by revenue per employee) increased by 40%. Exports as a percentage of revenues rose from 17% to 19.5%.

The performance of BC's technology sector between 1997 and 2007 was superior to that of Ontario, Quebec and Alberta. However, BC still ranks behind Ontario, Quebec and Alberta in terms of per-capita contribution to GDP, revenues and employees. Also, 28 U.S. states have a higher GDP per capita generated by their technology sectors than does BC. Oregon, for example, generates 15% of its GDP from its technology sector.

As part of the Opportunities BC 2020 initiatives, we have established the following goals for the BC technology sector in 2020:

- Transform the industry's structure to include anchor companies for each relevant sub-sector, with 10% of the technology companies having 50 or more employees
- Triple the size of the technology sector size in terms of GDP to \$30B
- Increase revenues generated by the sector to \$50B
- Increase the number of technology sector employees by 75% to 142,000
- Grow exports to 35% of the sector's revenues or \$17.5B

Taken in isolation, these goals may appear ambitious. However, considering that with this growth our technology industry would still only contribute 8.5% of our overall GDP, these goals are not farfetched. Rather, they represent a threshold we must cross to make the successful transition to a more knowledge-based economy.

In the previous section we outlined the five elements of a strategy that will enable us to achieve these goals. Each of these elements will require detailed implementation approaches. Some of the strategies apply to the technology industry as a whole, whereas others may need to be customized for application to particular sub-sectors. For example, the requirement for strong public sector structures and processes applies to the entire sector, whereas the measures directed at building a healthy industry structure will depend on the maturity of the sub-sectors. If we are to be successful, all stakeholders will need to work hard on initiatives and policies that will facilitate the achievement of the specified growth targets.

The cornerstone for achieving the growth targets will be the health and balance of our industry structure. We need a strong segment of medium-sized companies (with 50 or more employees) for the technology industry to kick into a higher growth gear. Once companies have achieved medium size, they are in a position to engage in a continuous cycle of innovation, commercialization and revenue generation, with cash flows that allow them to sustain the process and provide attractive returns to shareholders.

Companies need critical mass and scale in R&D, product management, marketing and sales to sustain their growth. This is very difficult to achieve with revenues below \$10M annually – unless firms are able to attract large amounts of investment on the promise of explosive growth in the future. Medium-sized companies not only form the pool from which large anchor companies can emerge, but their emergence in larger numbers will also create the snowball effect of growth – re-investable net income, growth financing, a growing number of professional managers and ultimately, a vibrant ecosystem that will attract new talent and capital, and fuel growth even further.

The type of growth desired will require expanded market access. Some companies may find a large enough domestic market to grow to \$10M in revenues and beyond. Most, however, will have to reach out and become exporters, in many cases by selling into the U.S. Enabling small companies to become exporters (or very strong domestic sellers) is the single most important catalyst for the growth of medium-sized companies.

Another key element to successfully achieving our targets is a world-class education system, which will be required to transform BC's economic focus from natural resources to human resources. We need an ever-increasing flow of highly educated and talented graduates to grow our companies both in size and sophistication. Through our research universities and institutions, this system will also enhance our innovation capacity and outcomes, which are essential for maintaining a stream of new entrepreneurial start-ups.

In pursuing achievement of our stated objectives, we must recognize that our investment capacity is limited. We must therefore focus our attention on areas with the highest probability of success and global competitiveness, those in which we have existing strengths that we can build on. This means investing selectively in some areas and not others.

To create an optimal business climate in which sectors of strength will grow stronger, whereas

sectors in which BC has limited strength and/or potential will not absorb resources unnecessarily, we must:

- Consistently promote growing sectors and companies.
- Invest in research and innovation that not only excels in international comparisons but also supports the same successful sectors.

We have made significant progress over the past 10 years. The BC government has taken many steps in the right direction, including lowering personal and corporate taxes, offering larger tax incentives for venture and angel investments, growing funds dedicated to the education system and the research and innovation infrastructure, facilitating immigration and bringing down interprovincial trade barriers. However, achieving the goals specified in this paper will require a continued and enhanced effort from all stakeholders.

We must learn from other jurisdictions, as well as developing BC-based approaches to driving the growth of the sector. Given the structural changes occurring worldwide, including the ongoing shift of manufacturing employment to the developing world, achievement of the goals set out in this paper is critical if BC is to have a prosperous future.

## CONCLUSION

British Columbia's economic future and wealth depends on our collective will and ability to transform our economy into a diversified, export-oriented growth engine. Traditional industries, particularly the natural resources sectors, have laid BC's economic foundation over the past 150 years. However, they will not be the source of growth that will allow us to maintain and expand our standard of living in the coming decades. Knowledge-based industries in general and the technology industry in particular, must become the key drivers of exports and growth.

BC has all the characteristics required to become a technology powerhouse. Global trends, such as the transition to clean energy technologies, offer incredible opportunities for growth, and we are well positioned to capitalize on those. However, we have traditionally lacked the collective urgency to decrease our economic dependence on the wealth of our natural resources. Other jurisdictions worldwide that never had this luxury are leading the way in the transformation of their economies to high-value-add knowledge-based activities, and we cannot afford to sit on the sidelines any longer.

We hope that this paper contributes to the discussion and helps to generate the creative energy that will drive BC's economic transformation and development. We did not attempt to develop a laundry list of specific action items or demands. Instead, we are putting forward considerations that should provide the strategic framework and background on which detailed initiatives and policies for achieving the specified goals can be developed. We hope that this report will contribute to an enhanced understanding of our industry and its critical importance to the province in the years to come, and provide the foundation for developing an aggressive strategy and action plan going forward.

All stakeholders in British Columbia have to bring their capabilities, influence and energy together and commit to BC's economy becoming knowledge-based in line with leading economies globally. This commitment needs to come from the industry itself, the provincial ministries, the Premier's Technology Council, the BC Innovation Council, the technology industry associations, as well as other business and community leaders across all sectors. We all bear the responsibility to make sure that British Columbia is not only one of the best places in the world to live, but also to work, invest and thrive.