



Innovation Capital Working Group

Report and Recommendations

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Dear Minister Fir,

The Innovation Capital Working Group is pleased to share its final report with you.

Alberta is home to some of the world's most incredible entrepreneurs, who have built this province from its earliest days. As we submit this report, the COVID-19 crisis rages in full force, threatening the health of Albertans and our economy. Compounding the economic implications of COVID-19 are an oil price war resulting in a devastating hit to the energy sector and provincial government revenues. This confluence of events is impacting the livelihoods and futures of tens of thousands of Albertans.

Against this backdrop, we believe that Alberta has an immense opportunity to become a more significant centre of technology and innovation, should we choose to do so. There is urgency to this choice – not only with respect to the need to broaden and diversify our economic opportunities but also because we face a significant risk of continuing to lose more talent, capital and jobs to locations that are far more aggressive in luring top talent and dollars to their jurisdiction. In short, the time is right, and it is now.

Venture capitalists and entrepreneurs told us that they want to build something significant here in Alberta. We have many of the necessary ingredients already, but we need to create an environment in which capital, talent and entrepreneurs feel that they are part of a larger and exciting vision for Alberta's future. They need to have the means to create and grow firms, unlock opportunities and leverage an innovation ecosystem. Our recommendations flow from the very spirit of what we feel is essential to building a technology and innovation future for Alberta: creating an innovation vision and brand for Alberta; unleashing capital for entrepreneurs; and developing talent to drive innovation.

This urgent choice is about our future. It is about Albertans, and ensuring that our youth feel they can work, grow and prosper in a sector that has a place in Alberta's future. It is also about supporting and enabling the growth and health of our traditional industries, like oil and gas and agriculture. Technology and innovation are not stand-alone sectors, but enablers of greater prosperity, performance and productivity.

The choice is ours to make.

On behalf of our Working Group colleagues Cory Janssen, Kristina Milke, Susan Anderson, Derrick Hunter and David Vankka, we are honoured to have been asked to provide these recommendations. We would like to thank the Economic Development, Trade and Tourism staff who ably assisted us in our task and completing this report, specifically Tyler Dewan, Alisa Neuman, Nicole Inzunza, Michele Evans and Sonya Johnston.

Sincerely,

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Executive Summary

Alberta has an opportunity to become a Canadian hotbed for start-ups and early stage technology companies. We have the potential to unleash the capabilities and potential of more entrepreneurs, who can create and grow companies. Doing so can jumpstart our economy following the COVID-19 health crisis and make it more resilient and diversified than ever before; it can bolster Alberta's traditional sectors, making them more productive and profitable. And, it can make Alberta the place where entrepreneurs from all over the world come to prosper – and more importantly – where graduates from across our province want to stay to pursue their goals. This is the vision our Working Group has for Alberta. We strongly believe it is within reach.

There is a global race to capture market share of this fast-growing sector and to attract the financial capital and talent it takes to succeed. Nations and regions around the world are investing billions of dollars to grow their technology and innovation sector. The prize is substantial. The global start-up economy, which is dominated by technology, contributed US\$2.8 trillion to the global economy between 2016 and 2018.¹ This creation of value is on par with a G7 economy.

Alberta should be at the forefront, tapping into this wealth-generating and fast-growing sector. Calgary and Edmonton are viewed as important up-and-coming ecosystems to watch. The province has many attributes of a vibrant technology ecosystem: quality of life, low cost of living, world-class post-secondary institutions, energized and committed entrepreneurs, major success stories and an attractive business climate. Today, though, Alberta is missing key ingredients that would enable it to be at the forefront and is at risk of falling further behind.

To seize the opportunity, Alberta will need to compete in an ever-changing economy. With the elimination of several tax credit programs in the 2019 provincial budget, we now have the least competitive environment for technology start-ups in Canada. Corporate income tax reductions do not offer the same relief to these early stage companies as they do to other businesses. Technology start-ups need different things than mature or existing companies – and Alberta is missing some key ingredients.

Fortunately, Alberta can reverse these trends relatively quickly. Supportive public policy will play a key role. Governments must make strategic investments, particularly to incentivize private capital to enter the space. They must also create the conditions to allow companies an opportunity to compete on a level playing field. To get back in the game and

¹ Measured from January 2016 to the first half of 2018. Startup Genome. 2019. *Global Startup Ecosystem Report 2019*. (<https://startupgenome.com/reports>)

leverage the dramatic global shifts underway, Alberta must proceed with targeted and meaningful actions in a few key areas.

RECOMMENDATIONS

1. Vision, Communication and Branding

1. Establish the Premier's Advisory Committee on Technology and Innovation.
2. Develop and communicate a visionary brand and narrative for innovation and technology in Alberta. Establish Alberta as the destination of choice for entrepreneurs, particularly technology entrepreneurs.
3. Adopt and communicate targets for innovation and technology, embracing the A100² target of 2,000 core technology companies by 2030.
4. Create a single voice and ecosystem for the Alberta technology sector and an innovation corridor to streamline multiple technology groups.
5. Implement the Government as Customer Initiative, a Government of Alberta procurement program for Alberta technology entrepreneurs.
6. Unleash the value from Alberta's data set by creating a means by which entrepreneurs can access Alberta's vast data resources.

2. Capital

1. Increase the amount of capital available to Alberta Enterprise Corporation (AEC) by an additional \$450 million, with at least 20% dedicated to early-stage co-investing in Alberta.
2. Create the Alberta Venture Capital Investment (AVCI) Fund, a new \$200 million public-private sector co-investment fund.
3. Create a tax credit to offset Alberta capital gains taxes.
4. Reinstate the Alberta portion of the Scientific Research and Exploratory Development (SRED) tax credit, but focus it on smaller firms with revenues less than \$15-25 million.

3. Talent

1. Enable post-secondary institutions to expand program development in areas of technology and broaden the reach of entrepreneurial thinking in programs more generally.
2. Create the Alberta Technology Provincial Nominee Program (PNP), similar to the successful British Columbia model.
3. Determine the feasibility of creating a new business accelerator as a foundational element of Alberta's Innovation Corridor.
4. Increase internship opportunities for graduate students and postdoctoral fellows.

² The A100 is a non-profit organization in Alberta. Its members are experienced entrepreneurs who mentor and support technology entrepreneurs in the province.

Introduction

Albertans live in a province built over generations by some of Canada's greatest entrepreneurs. Now is the time for Alberta to focus its efforts on becoming a more globally competitive centre where bold entrepreneurs can create something innovative and meaningful, for entrepreneurship is a primary driver of economic development.

In 1966, an Alberta entrepreneur had an idea. He wanted to build a new company – one that was part of a growing interest of people the world over. While there were likely better places to start this company, Alberta was home to an entrepreneurial and innovative spirit, home to the conditions needed for success. He worked hard; he built his plan, and executed it, every day, every month and every year. The company launched its first product in 1971 through the hard work of this entrepreneur and his small team of colleagues. With continued passion, dedication and belief in building his company in Alberta, by 1985 the company had become the fourth largest of its kind in Canada. By 1991, the company was the second largest operator of its kind in Canada with 1.5 million customers. Today, it has 10,000 employees and is a leader in its space, creating high paid technology related jobs. That entrepreneur was J.R. Shaw and the company is now known as Shaw Communications, and it is an Alberta innovation and technology success story. If J. R. Shaw hadn't had the vision to create Capital Cable Television Company in 1966, we wouldn't have Shaw Communications today.

To grow our capability and opportunity in innovation and technology, we must start by unshackling our entrepreneurs. This will enable Alberta to create jobs, economic activity and a culture of innovation. Approximately 12 million Canadians, including 1.5 million Albertans,³ work in the private sector. Each one of those jobs is provided by a company that at one point was created by an entrepreneur. The tools which we use in our daily lives such as smartphones, tablets, the internet, and increasingly autonomous vehicles, have been created by an innovator who went on to become an entrepreneur. Alberta has an opportunity to re-define itself as a destination of innovation, diversity and economic prosperity by embracing a bold vision for the future, supported by policies that enable our innovation entrepreneurs to thrive. Albertans have expressed a belief that a broader economic basket should be part of Alberta's future⁴.

Albertans need this. Our economy, and our future, require it. The opportunity exists right now for Alberta to shift its brand, to embrace technology and innovation as a fundamental pillar of not only its economic future, but also its identity, and to define itself as the kind of place where entrepreneurs can start, build and scale globally competitive companies. Technology entrepreneurship can add significant, long term economic growth on top of the bedrock of our traditional sectors such as energy and agriculture. This can help to balance

³ Statistics Canada. Table: 14-10-0288-02

⁴ Janet Brown Opinion Research, 2018

the economic swings that come with reliance on global commodity prices. We have most of the necessary ingredients to make it happen.

The Game has Changed

Fast-growing economies are now driven by technology and innovation. The vast majority of global corporate value is comprised of intangible assets – intellectual property – not fixed assets such as equipment and machinery.⁵ The fastest-growing companies in the world – 7 of the top 10⁶ – are technology companies.⁷ Even our most traditional companies in manufacturing, energy, and transportation are now so greatly enabled by technology that most of them will acknowledge that their current and future success hinges on the rapid adoption and use of technology to make them more efficient, productive and profitable. We cannot ignore this significant shift in asset base, company focus and competition.

Research has shown that the vast majority of all new jobs are created by start-up companies.⁸ As a consequence, cities, provinces, states and regions are competing with each other for start-up technology companies, investment dollars and talent. How can *somewhere* be the next Silicon Valley? How can a location recreate the Israeli start-up nation approach? How does a region become home to the next unicorn? All of these questions, and more, are at the heart of modern economic development – the quest to become a leading global centre in technology and innovation. Although Silicon Valley is the most renowned heart of innovation and technology, other centres have emerged, including Boston, Seattle, Austin, New York, London, Paris and Singapore. Canadian centres like Vancouver, Waterloo and Toronto are growing strongly. Toronto has added more than 80,000 technology jobs in the last five years.⁹ All these cities are working furiously, and investing significantly, to attract the innovators, the capital, and talent to make their locations grow and thrive.

The nature of technology companies, and the investment in them, has also changed. Technology companies typically earn a better rate of return by reinvesting as much available capital in additional growth. As a result, they are sought after due to their

⁵ Intangible assets make up 84% of all enterprise value on the S&P 500. Ross, Jenna. 2020. “Intangible assets: A hidden but crucial driver of company value.” *Visual Capitalist*, February 11. (<https://www.visualcapitalist.com/intangible-assets-driver-company-value/>)

⁶ Fortune. 2019. *100 Fastest-Growing Companies*. (<https://fortune.com/100-fastest-growing-companies/>)

⁷ A company is generally described as being a “technology” company if it focuses mainly on the development and manufacturing of technology products or providing technology as a service. This includes such things as electronics, software, communications and internet-related services but has also come to incorporate a broader reference base including industries such as medical technology, bio-technology, clean technology and agricultural technology.

⁸ Kane, Tim. 2010. *The Importance of Startups in Job Creation and Job Destruction*. Ewing Marion Kauffman Foundation. (<https://www.kauffman.org/wp-content/uploads/2019/12/firm-formation-importance-of-startups.pdf>)

⁹ CBRE. 2019. “Toronto rises to no. 3 in CBRE’s North American tech talent ranking.” July 16. *CRBE Media Centre*. (<https://www.cbre.ca/en/about/media-center/torontos-tech-trajectory-sees-the-city-rise-to-no-3-in-cbres-north-american-talent-ranking>)

significant job creation potential, spin-off opportunities and ability to attract other firms and jobs into an ecosystem. Firms and investors make location decisions based on their ability to access financial support and talent. They are based on access to a holistic innovation ecosystem, an abundance of talented human capital and access to financial capital and knowledge.

Entrepreneurs and investors look for this critical mass of companies, of ideas, of risk takers, of capital and an environment, which supports the needs and realities of a technology start-up company and growth prospects. A spirit of innovation and supports that enable entrepreneurs to get a venture off the ground are the most vital factors in choosing a location to grow. This is different from the location choices made for businesses in traditional or mature sectors, which are often largely dependent upon corporate income tax rates, materials and inputs and proximity to a natural resource.

Alberta holds a tension within, as some believe that Alberta is a resource-based economy and that should be our key focus. We strongly disagree. We believe there is room in our future for both our proud history in energy, resources and agriculture and for companies geared towards the innovation economy. Alberta has a long history of successful technology entrepreneurship, both inside and outside of the energy industry. Some of these stories are shared throughout this report. Today, we have most of the necessary ingredients to create many more success stories, but this will require an improvement of Alberta's brand as a centre of technology and innovation, and an improvement of Alberta's policy environment for start-up and early stage innovation companies.

It Is About the Future of Alberta and Albertans

Against this backdrop, Alberta needs to reinvigorate and diversify its economy – to create jobs and economic prospects for Albertans – now, and in the future. This is particularly true as a result of the COVID-19 health crisis, the resultant impacts to oil and gas markets, and the additional strain of the Russian and Saudi Arabian oil price war. As the world comes through the COVID-19 health crisis, economic recovery actions will be critical, and innovation and technology can play a critical role in that.

Alberta has always been home to a vibrant economy and a can-do spirit. Traditional sectors such as oil and gas and agriculture have driven prosperity for decades and will continue to be vitally important in the future. The challenge for the current generation of Alberta leaders is to determine what will be built on top of that enviable economic base. As post COVID-19 recovery efforts are mounted, market forces shift, environmental concerns grow, and national opinion works to shift public policy against oil and gas, it is clear that Alberta's economy needs a new chapter; a chapter that not only continues to evolve and build off our traditional sectors, but aggressively and purposefully builds on the dramatic shifts that are underway globally – to expand to include more technology and innovation orientation in our economy.

People are at the core of this opportunity to be a leading innovation centre in Canada; it is about Albertans and creating a future for them, and continuing to build the social fabric of this province. Embracing innovation can enable new opportunities, jobs, investment and capital for our next generation so that they can remain in Alberta and can flourish. Currently, Alberta is seeing an outflow of young people – our future innovators and entrepreneurs. The province is losing its young population at a rate faster than almost every other province.¹⁰ Calgary, for example has been one of the fastest growing cities in the past decade, however, municipal census shows a 5.5% decline in those aged 20-24.¹¹ We cannot risk further loss of our young population to other locations because they do not feel the brand of Alberta is reflective of their future, or that other locations have far more employment opportunities in technology and innovation than Alberta. For the sake of Alberta’s social fabric, and for our youth, Alberta must pursue a path that will create more opportunities for future generations and to reinvigorate a place that is known for its ingenuity, work ethic and entrepreneurialism.

Alberta is seeing an outflow of its young people – our future innovators and entrepreneurs.

The Time is Now

There is **urgency** to this effort. We must actively and purposefully increase efforts to become a highly competitive location for technology and innovation.

Other locations around the world are investing billions of dollars growing their technology and innovation sector. Numerous entrepreneurs are considering other locations in which to locate or grow their companies and have been making their case publicly. Based on our review, Alberta is currently at a disadvantage as the only Canadian province that is not specifically attempting to attract and encourage technology entrepreneurs using tools or incentives viewed as beneficial by technology and innovation entrepreneurs. We cannot delay our efforts in making Alberta more competitive for technology and innovation.

Focusing on innovation and technology will benefit all sectors of the economy. Technology is no longer an industry – it’s the future of every industry, of every sector, both public and private. It is the driving force of making traditional sectors more efficient, safe and profitable.

¹⁰ Statistics Canada Table 17-10-0005-01 (formerly CANSIM 051-0001)

¹¹ Fletcher, Robert. 2020. “Why Calgary is losing its young adults.” *CBC News*, Feb 3.

(<https://www.cbc.ca/news/canada/calgary/calgary-losing-young-adults-census-data-analysis-1.5444969>)

It will benefit the delivery of public services and make governments more agile and responsive. Organizations across the board will be powered by the gains of technology.¹²

And the time is ripe. Alberta can be the beneficiary of the challenges that are confronting major technology and innovation centres around the world as they are bumping up against limits to further growth. Alberta offers more than affordable commercial space. We have reasonable housing cost, excellent air connections, an educated work force, and high per capita incomes. Calgary is the fifth most livable city in the world.¹³ Whereas the

Alberta is the only province not attempting to attract entrepreneurs with targeted incentives.

explosive growth of technology firms in centres like Silicon Valley, Seattle, Toronto and Vancouver have led to a dearth of affordable commercial space, staggering cost of living and a push into new geographic directions, Alberta is close at hand and offers an excellent option entrepreneurs all around the world are looking for: the combination of available space, people and low cost of operating. Combined with the unparalleled quality of life, our technology and innovation assets, educational and research institutions and role models, they can find it all in Alberta!

The talent, ideas and ingenuity exists, right here in Alberta. All we need is to embrace the opportunities and to create the conditions for innovation and technology entrepreneurs to thrive. It is within our reach through targeted and meaningful choices. It can be done.

¹² Hecht, Jared. 2018. "How technology is driving change in almost every major industry." *Forbes*, Nov. 30. (<https://www.forbes.com/sites/jaredhecht/2018/11/30/how-technology-is-driving-change-in-almost-every-major-industry/#7fee83942f6f>)

¹³ The Economist Intelligence Unit. 2019. *The Global Liveability Index 2019*. (<https://www.eiu.com/topic/liveability>)

The Innovation Capital Working Group

Mandate

On December 17, 2019, the Government of Alberta Ministry of Economic Development, Trade and Tourism announced the establishment of the Innovation Capital Working Group.

The Committee's mandate was to review and consider policy options available to the Ministry and Government of Alberta to enhance the attraction of investment capital to Alberta's start-up and early stage technology sectors.

The Committee met and consulted with key stakeholders in Alberta's innovation and technology ecosystems in the course of its review and considerations.

We were asked to review best practices across North America, as well as specific policies adopted in other jurisdictions that attract start-up and early stage investment capital, and to consider whether they would be effective for Alberta.

We were given a broad mandate, not limited to any one industry sector or policy option, but were asked to consider the feasibility of introducing flow through technology or “innovation shares” at the provincial level.

Scope

Through early discussions amongst our panel members, stakeholders and key experts, it became evident that, while our mandate was to explore options to increase the availability of early stage and start-up capital in Alberta, a more fulsome and broader ecosystem examination was needed to enable the real growth of this sector. The challenges and opportunities facing Alberta's start-up and early stage technology sector are both significant and complex; however, the scope of our work is focussed on the most urgent challenges for Alberta and the most important opportunities for Albertans.

Although our panel's mandate has been achieved through the completion of this report, it must be noted that there are certain limitations on the amount of analysis that could be undertaken given the short duration for completion of the mandate. To make Alberta globally competitive in the start-up and early stage technology landscape, further and more detailed work will need to be done to identify more specific recommendations on the competitiveness of the entire ecosystem.

The details of our process and further information about the technology sector in Alberta can be found in Appendix 1 and 2.

ALBERTA SUCCESS STORY: SHAW COMMUNICATIONS

The Shaw Communications story begins in 1966 when the company was incorporated under the name of Capital Cable Television Co. Ltd. It was granted its initial broadcasting license a few years later and went on the air in Edmonton for the first time in 1971.

That year, the company's first cable customer was connected in Sherwood Park with the support of three and a half dozen employees. Shaw connected 10,000 customers the following year, making it a small, but growing company in the cable television industry. It also began to grow, expanding to new markets across the country — from Victoria B.C., to St. John's, N.L. — and into the B.C. Okanagan in 1972.

Shaw's growth continued, and in 1985 it became the fourth largest cable operator in Canada. The company also moved into radio broadcasting three years later, amassing the second largest group of stations in Canada.

By 1991, Shaw was the second largest multiple-system operator in Canada. On the year of its 25th anniversary, it introduced internet services to the residents of Calgary and hit a milestone of being the cable provider for 1.5 million customers. In the years following, Shaw continued to acquire phone, cable, media, and internet services.

Fast forward to present day, Shaw has more than 10,000 employees, \$5.3 billion in total revenue,¹⁴ and provides millions of Canadians with broadband internet, video and digital phone services.

¹⁴ Shaw Communications. 2019. *Annual Report 2019*.
(http://shaw.ca/uploadedFiles/Corporate/Investors/Financial_Reports/2019-annual-report.pdf)

Primer on Technology Capital and Investing

Technology investing is often misunderstood, due to the many different actors and the complicated terminology. It is our belief that a basic understanding of technology investing is important context for the recommendations that will follow.

A company is generally described as being a “technology” company if it focusses mainly on the development and manufacturing of technology products or providing technology as a service. This includes such things as electronics, software, communications and internet-related services but has also come to incorporate a broader reference base including such industries as med-technology, bio-technology, clean technology and agriculture technology. The technology sector differs in that it infiltrates other vertical sectors. Many traditional industries are changed by technology, allowing innovations and advancements in the way that work is performed.

Many of the world’s largest companies (such as Amazon, Facebook, Alphabet and Alibaba) are technology companies and most are less than 25 years old. Their path to prominence has occurred during the period of sweeping adoption of computing technologies that began in the 1950’s but has been accelerating over the last few decades.¹⁵

In addition to these established companies, a large percentage of young, **high growth** companies also are technology companies. Fortune magazine estimates that this category includes 7 of the 10 fastest growing companies in the United States and a majority of the top 100 in 2019.¹⁶ Similarly, Canadian Business identified 7 of their top 10 fastest growing companies as being engaged in software, information technology or media (including Calgary’s Link Energy and Jobber from Edmonton).¹⁷ In total, 31 of the top 50 fastest growing companies in Canada are technology companies.

The Kauffman Foundation in the U.S. has studied entrepreneurship extensively and concluded that **all net new jobs are derived from new companies**¹⁸. Given that high growth companies are predominantly engaged in technology development, it stands to reason that encouragement of this sector is fundamental to the creation of new employment opportunities. This fact has been recognized by jurisdictions throughout the developed world; every nation and sub-nation is in a race to the top, trying to figure out how to build

¹⁵ This period has been referred to as the “Third Industrial Revolution.”

¹⁶ Fortune. 2019. *100 Fastest-Growing Companies*.

¹⁷ Canadian Business. 2019. *Growth 500: Canada’s Fastest Growing Companies 2019*. (<https://www.canadianbusiness.com/growth-500-canadas-fastest-growing-companies/>)

¹⁸ Kane, Tim. 2010. *The Importance of Startups in Job Creation and Job Destruction*. Ewing Marion Kauffman Foundation.

an innovation economy. It is essential to the preservation of social fabric within a community, as younger generations wish to participate in the opportunities that technology companies provide.

Innovation-driven companies are not like industrial companies of the past in that they are generally asset-light and do not require the same level of investment in assets. Rather, their primary expenditures are in people. At an early stage, high-growth companies typically are focused on revenue rather than earnings as a success metric; this is because technology companies tend to have much more scalability¹⁹ than traditional companies do and much less reliance on capital assets. Revenue growth is evidence of market traction and as long as growth opportunities abound it makes sense that the focus for the deployment of available capital will be in pursuing additional growth rather than paying dividends. A significant economic contribution by some of the world's largest technology companies, such as Shopify, Amazon, Facebook, Netflix, Uber, Apple and Opentext are from the increase in jobs, personal income tax, real estate transactions, and personal spending by employees.

Make no mistake, just because technology companies typically re-invest in growth early on, this does not mean that they are not profitable over the long run. At a mature stage technology companies are among the most profitable globally. As an example, in 2019, only four companies had over \$100 billion in cash on their balance sheet: Microsoft, Apple, Berkshire Hathaway and Alphabet.²⁰ All are technology companies, other than Berkshire Hathaway.

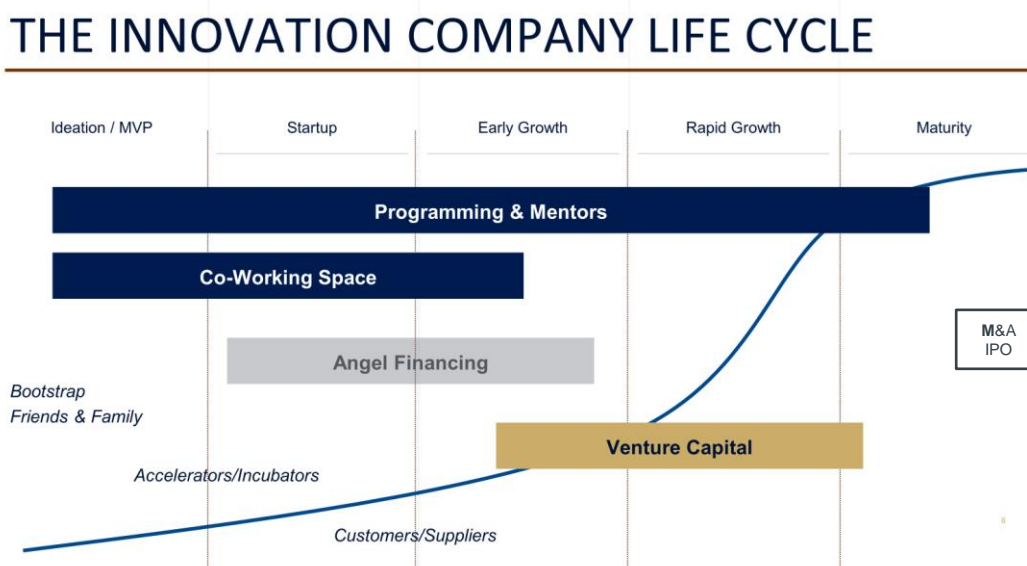
An effective innovation ecosystem involves many players including governments, investors, universities, entrepreneurs, development agencies, incubators and research institutions. In the most successful jurisdictions, these parties work together effectively to enable innovative ideas to be efficiently generated, developed, tested and scaled for impact. The failure rate for entrepreneurs is high, and this is particularly true in the fast-moving technology sector; thus, an effective innovation ecosystem will encourage the inspiration of many entrepreneurs leading to the formation of many new enterprises. This is critical since **entrepreneurship is the single most important driver of economic development.**

¹⁹ "Scalability" refers to the ability to grow revenue at a faster rate than expenses.

²⁰ Stevens, Pippa. 2019. "Here are the 10 companies with the most cash on hand." *CNBC*, November 7. (<https://www.cnbc.com/2019/11/07/microsoft-apple-and-alphabet-are-sitting-on-more-than-100-billion-in-cash.html>)

Capital availability is a challenge at the early stages and at scale-up²¹, particularly in Canada and even more so in Alberta.²² Traditional bank loans and debt financing make little sense in the realm of start-ups, as there are very few assets to securitize and many traditional lenders are not as advanced in lending to technology companies given the differing nature of their operations and revenue streams. Canadian conventional lending has not advanced as far as that in other international jurisdictions for the innovation focused company. From the banks' perspective, the majority of start-ups have a high risk profile so it's difficult to justify providing a risky loan when there are much safer loans to make. From the perspective of the start-up, utilizing loans or debt financing is often disadvantageous since it is better to **reinvest earnings to accelerate growth** instead of losing earnings by paying back loans along with incremental interest.

Due to the inherent risk, these companies typically rely on friends and family for initial capital and as they mature and as their capital needs grow, they will gravitate to angel investors and ultimately venture capital firms (VCs) to fill additional funding rounds. The funding life cycle is illustrated below:



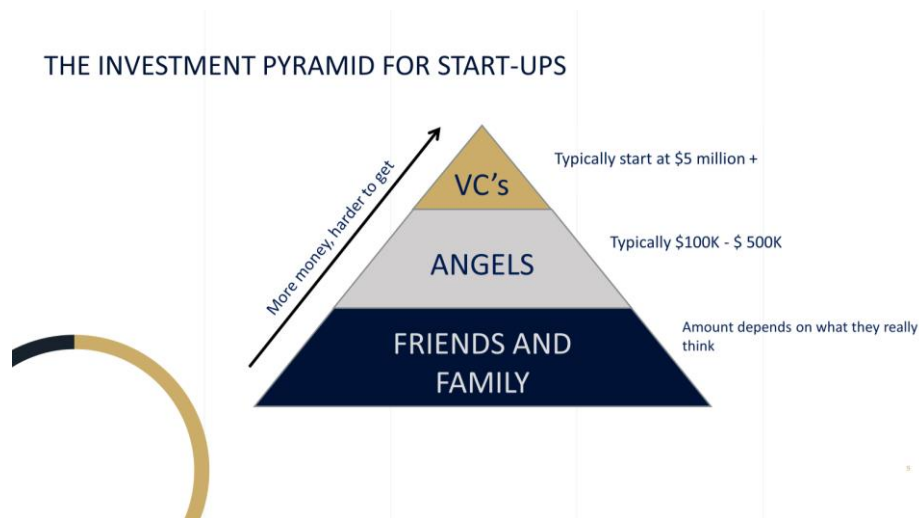
The difference between angel investors and VC firms is often unclear among people unfamiliar with the industry, but they are active at different stages of a company's life cycle. Angel investors and VCs provide capital to entrepreneurs in exchange for convertible debt or equity. Angel investors are typically high net worth individuals that invest their own money, whereas venture capitalists take care of pooled money from many investors and place them in strategically managed funds. Angels typically invest amounts between

²¹ BDC Capital. 2017. *Canada's Venture Capital Landscape: Challenges and Opportunities*.

(https://www.bdc.ca/EN/Documents/analysis_research/venture-capital-landscape-paper-en.pdf)

²² Dorozio, Jennifer. 2019. "Why Albertans sees so little venture capital but may have 'a winning hand' for future investment." *CBC News*, Aug 30. (<https://www.cbc.ca/news/canada/calgary/alberta-venture-capital-report-cvca-1.5265277>)

\$50,000 and \$500,000 compared with VCs that are generally investing several million dollars. In aggregate, angel investors account for about as much money annually as all VC funds combined but put these funds to work in up to 60 times as many businesses.²³ Both angels and VCs are critical to innovation ecosystems and generally the more capital available, the larger and stronger the ecosystem will be.



Given the high failure rate, it is key to encourage the formation of as many new ventures as possible in order to benefit from the statistical likelihood that a few will rise to the top and eventually become large employers and potentially unicorns.²⁴

As companies grow, they require more capital to fuel additional growth. Funding rounds progress from **Pre-seed** to **Seed** (typically Angel rounds) to **Series A-F**, (typically VC rounds) and in between each round start-ups are expected to grow in market share, revenue, and product/service realization. The Pre-seed round typically ranges from \$200,000 to \$500,000 in funding, the Seed round typically ranges from \$1 million to \$2 million, the Series A round typically ranges from \$5 million to \$20 million, and so on.

Each fund raised by a VC firm will have a full life of approximately ten years — this consists of the **initial investment phase**, the **growth and follow-on investment phase**, and the **exit phase**. The initial investment phase is when firms invest in completely new companies, which usually accounts for less than half of the total fund size. The balance of the funds raised will be held for follow-on investments in the portfolio companies from this initial batch that survive and continue to grow.

Finally, in the last few years of the fund's life, the VC firms will try to liquidate their investments by helping their portfolio companies make an exit. In this context, "exit" is a

²³ Mason, Colin. 2018. *2018 Report on Angel Investing in Canada*. National Angel Capital Organization. (<https://www.nacocanada.com/cpages/angel-activity-report>)

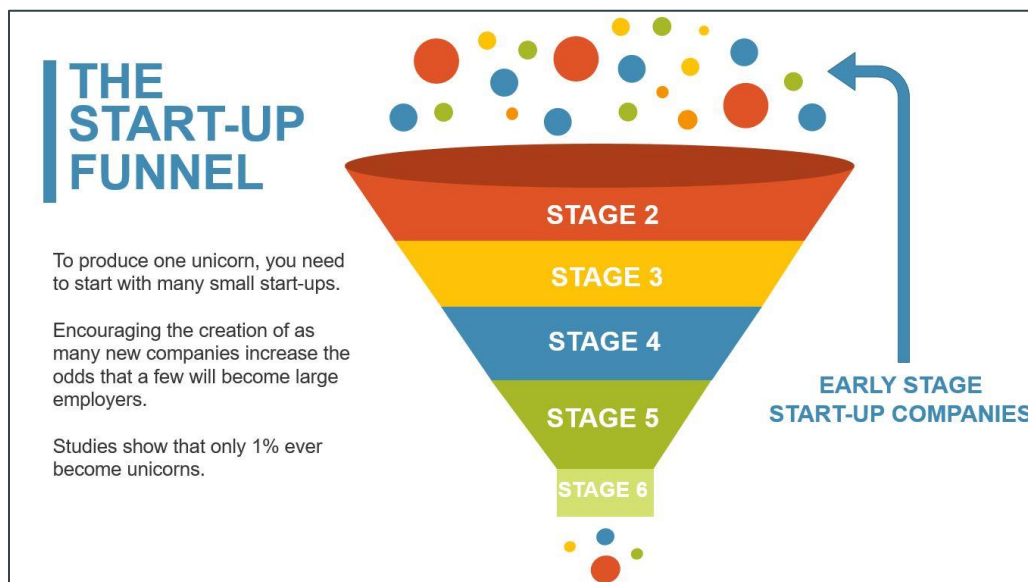
²⁴ A "unicorn" is a technology company having a market valuation exceeding \$1 billion. Canadian unicorns are sometimes referred to as Narwhals. Alberta had its first unicorn in 2019 with the sale of Solium Capital to Morgan Stanley.

positive term. A successful exit can take the form of a sale to a strategic buyer, an initial public offering or a merger. Many technology companies, perhaps most, will not have achieved profitability before achieving this final step. The investor is seeking capital gains arising from an exit, rather than a continuing stream of dividends or other income arising from ongoing business. Each VC firm will develop a pipeline of prospective investments that they evaluate and has a rigorous evaluation and due diligence process, which results in a positive investment decision less than 1% of the time.²⁵ To be clear, a VC might only invest in roughly 10 companies for every 1,000 companies it reviews.

Successful start-up founders often remain in the ecosystem as angel investors or serial entrepreneurs.

Post-exit, start-up founders often will remain in the ecosystem, either as an investor or as a serial entrepreneur. All of the start-up founders highlighted in this report have become angel investors that invest in the ecosystem and the community. They have gone on to help mature and grow the innovation ecosystem in Alberta as funders, mentors and champions, and some creating new ventures that add to the company and job growth in the Alberta innovation space.

Ensuring strong public policy exists to support the stages along the technology development cycle is imperative. We can only have a pool of technology companies that are scaled and paying corporate income tax if we have an environment and ecosystem that creates a pool of start-ups and early stage companies that have the potential to make it to scale.



Source: CB Insights: <https://www.cbinsights.com/research/venture-capital-funnel-2/>

²⁵ Angel investors have a higher hit rate than VCs. Some Angel groups may fund as many as 30% of the companies they review.

ALBERTA SUCCESS STORY: SOLIUM CAPITAL (NOW SHAREWORKS BY MORGAN STANLEY)

Solium Capital Inc. was founded in Calgary in 1999. It provides stock plan administration technology and services and is known as the leading global provider of software for equity administration, financial reporting and compliance. With one million people using its platform, Solium has become a global enterprise with offices in the U.S., the United Kingdom, Europe, Asia and Australia.²⁶ Among its 3,000 stock plan clients²⁷ are heavy hitters such as Adidas, Shopify, Uber, BHP Billiton, and Burberry.²⁸

In 2019, Solium was bought by Morgan Stanley for \$1.1 billion and continues to operate in Calgary post-acquisition under the name Shareworks by Morgan Stanley. Under new ownership, it continues its rate of growth trajectory. All of the senior management team at Shareworks by Morgan Stanley believe in the technology sector in Alberta but strongly feel more is needed to develop the ecosystem.

Marcos Lopez, a University of Calgary graduate, has worked his whole career at Solium and became CEO in 2015. He was hired by the founders back at the company's very beginning, writing the initial lines of code and building the initial framework of the product with his college roommates, all University of Calgary computer science graduates. Lopez attributes the company's success to getting its start in Calgary: "Solium couldn't have started in Toronto. We wouldn't have gotten any traction.²⁹ Alberta Energy Company (AEC) took the risk of becoming one of Solium's first clients and that is the magic of Calgary; it's in the DNA. AEC took that risk, so did CP Rail ... We evolved in the safe petri dish of Calgary. In many ways, it's a great 'Canada bet on itself' story."³⁰

²⁶ Yedlin, Deborah. 2017. "Yedlin: Meet Calgary's best kept tech secret." *Calgary Herald*, August 15. (<https://calgaryherald.com/business/local-business/yedlin-meet-calgarys-best-kept-tech-secret/>)

²⁷ Toneguzzi, Mario. 2019. "Morgan Stanley acquiring Calgary-based Solium Capital in \$1.1B deal." *Troy Media*, February 11. (<https://troymedia.com/albertas-business2/morgan-stanley-buyingsolium-capital/>)

²⁸ Yedlin, Deborah. 2017. "Yedlin: Meet Calgary's best kept tech secret." *Calgary Herald*, August 15.

²⁹ Ibid.

³⁰ Ibid.

Competition for Talent, Investment and Economic Growth in the 21st Century

Economies are Changing

The global economy is going through a major transformation. In addition to the shifts from tangible to intangible assets outlined below, the emphasis on technology is growing as well. The global technology sector accounts for 4.5% of global GDP and is expected to grow to almost double that percentage within the next 15 to 20 years.³¹

Start-ups are now the number one engine of job creation and economic growth.³² Many countries across the globe are looking to stimulate the technology sector, not only because it is one of the fastest growing industries, growing twice as fast as the global economy,³³ but also an important enabler of both innovation and increasing performance and profitability of traditional economic sectors. Technology is changing the ways in which growing economies and businesses organize production, trade goods and services, invest capital and develop new products and processes.

As part of this global shift toward technology-focused and data-driven economies, “intangible assets” such as intellectual property, software, data, and service contracts, which are not physical in nature, are growing in importance in comparison to “tangible assets.”³⁴ By their very nature, intangible assets, unlike natural resources and fixed capital equipment, are not bound to any particular geography and are not a “hard asset” or infrastructure. They are mobile and can exist anywhere. They are ideas; they are intellectual property and they go where they can best be nurtured and scaled.

This is challenging for more traditional economies, whose policies are mainly designed for a world of tangible assets. Due to the increasingly competitive digital economy, intangibles have evolved to become a major consideration for investors.³⁵

According to an analysis by the Aon and Ponemon Institute, the value of intangible assets made up 84% of all of all enterprise value on the S&P 500³⁶ in 2018. This is an increase from 17% in 1975, as illustrated on the next page.

³¹ Startup Genome. 2017. *Global Startup Ecosystem Report 2017*. (<https://startupgenome.com/all-reports>)

³² Startup Genome. 2019. *Global Startup Ecosystem Report 2019*.

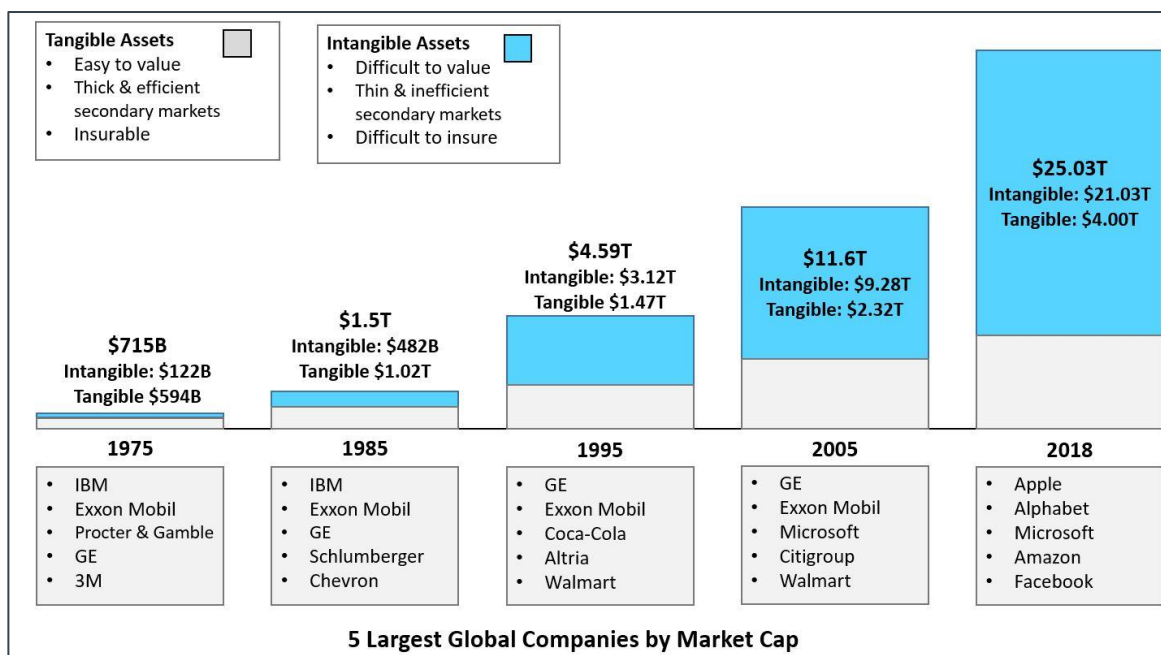
³³ PricewaterhouseCoopers. 2017. *The Long View: How will the Global Economic Order Change by 2050?* (<https://www.pwc.com/gx/en/world-2050/assets/pwc-world-in-2050-summary-report-feb-2017.pdf>)

³⁴ Ross, Jenna. 2020. “Intangible assets: A hidden but crucial driver of company value.” *Visual Capitalist*, February 11.

³⁵ Ibid.

³⁶ The S&P 500, or just the S&P, is a stock market index that measures the stock performance of 500 large companies listed on stock exchanges in the United States.

Tangible Assets vs. Intangible Assets for S&P 500 Companies, 1975 - 2018

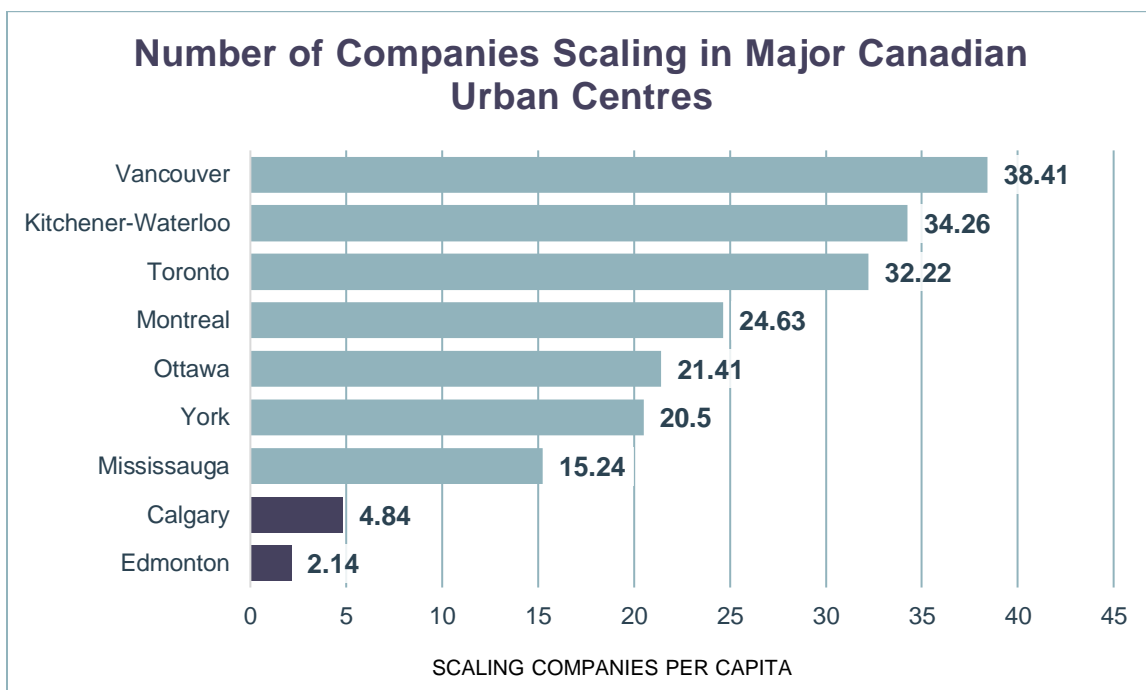


These intangible assets are proven to be highly valued because they have the capability of producing continuous revenue streams with low or no capital requirements after initial investments. Therefore, they have practically zero marginal costs to scale once developed. For example, an added user of Google or Twitter entails essentially zero marginal cost.³⁷

Cities, regions, states, provinces and countries are competing for the highly sought-after innovation and technology companies, investors and entrepreneurs. Markets have shifted. Investors have changed and expectations are different. To be competitive in the current economy, locations must recognize the shifts that have occurred and be prepared to compete. This is not just about incentives, but it is about recognizing the evolving nature of economies, companies and investments.

Locations that are not prepared to adapt to the shifting innovation-based economy and capitalize on mobile intangible assets risk being left behind with entrepreneurs and citizens paying the price.

³⁷ Asselin, Robert, and Sean Speer. 2019. *A New North Star: Canadian Competitiveness in an Intangibles Economy*. Ottawa: Public Policy Forum. (<https://ppforum.ca/wp-content/uploads/2019/04/PPF-NewNorthStar-EN4.pdf>)



Source: *CB Insights in Mississauga Entrepreneurship and Innovation Study: Final Report, July 2019, p.45*

It is apparent that Alberta is at risk of being left behind. To generate an attractiveness as a location for tech and innovation companies, a critical mass of successful and commercial firms is needed. According to a recent study done by the City of Mississauga, Calgary and Edmonton have the lowest rates of scaling companies among urban centres in Canada.³⁸

This absence of scaling companies in Alberta is a barrier to creating commercially successful and taxable companies. Early-stage companies are critical as a starting point, but they need to be scaled. As Iain Klugman, President and CEO of Communitech³⁹ in Waterloo argues, without a robust venture capital market and access to wide range of sources of risk capital, “we are simply growing promising start-ups to the point where they are forced to sell. That means we will never create a strong crop of mid-sized businesses in Canada and our companies will never grow into large global powerhouses.”⁴⁰ Further extending his point, we will also never create a crop of taxable businesses.

³⁸ Canadian Urban Institute. 2019. *Mississauga Entrepreneurship and Innovation Study: Final Report July 2019*. Economic Development Office of the City of Mississauga. (<https://yoursay.mississauga.ca/9147/widgets/35408/documents/17942>)

³⁹ Communitech is a public-private innovation hub that supports more than 1,400 companies in the Waterloo region.

⁴⁰ Senate of Canada. 2011. *Proceedings of the Standing Senate Committee on Banking, Trade and Commerce - Issue 5 - Evidence - November 24, 2011*. (<https://sencanada.ca/en/Content/SEN/Committee/411/banc/05evc-49207-e>)

Building an Innovation Economy

Technology talent and investment capital are mobile and not constrained by geography. Unlike traditional sectors, start-ups and early stage technology companies can be commercialized globally, where entrepreneurs have the opportunity to build and sell from anywhere. Given the growth in the technology and innovation sector, competition for both capital and talent is fierce. **So, what specifically does it take to win in this new global economy?**

In the book, *The Smartest Places on Earth*, Antoine Van Agtmael and Fred Bakker identify the necessary ingredients that must be in place to transition to a “brainbelt”, an economy based on technology and intellectual property. The complete recipe is below:



Source: *The Smartest Places on Earth*⁴¹

We will examine these success factors, and others, through the lens of three broad areas: infrastructure, capital and talent.

Infrastructure

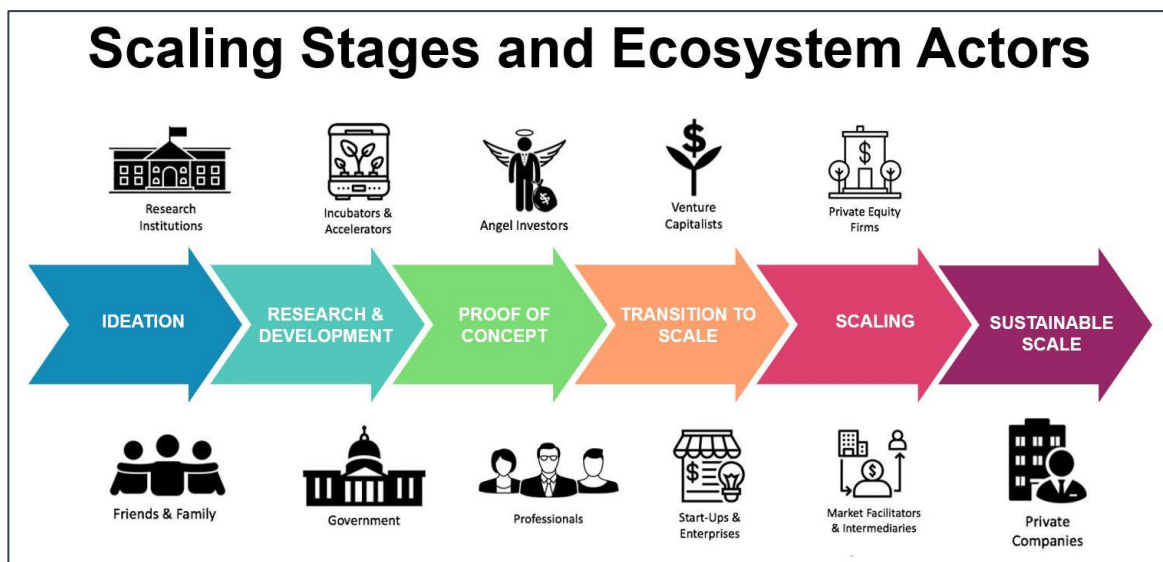
Infrastructure, in technology ecosystems, refers to the connections amongst experts, communities and institutions. Such infrastructure includes not only the physical infrastructure connections, such as airports, highways and rail, accelerators and incubators, but also the connections amongst mentors, mature and start-up technology companies, universities, access to capital institutions and potential customers. Technology

⁴¹ Bakker, Fred and Antoine W. van Agtmael. 2016. *The Smartest Places on Earth: Why Rustbelts Are the Emerging Hotspots of Global Innovation*. New York: Public Affairs.

infrastructure is important as it allows for the sharing of ideas and innovation thereby further supporting technology development and expansion.

Many of Agtmael and Bakker’s ingredients for a brainbelt connect to these broad concepts of infrastructure and ecosystems, including the key actors and the characteristics of the culture they operate in: atmosphere of trust, freedom of thinking, and acceptance of mistakes as a necessary path to success.

A holistic innovation ecosystem is a key factor in location decisions for early stage companies, including easy access to the people, financing, and tools they need to develop and deliver their products. A critical mass of people, places and capital is needed to become viable as an innovation centre. Companies want to locate in areas that have an existing and thriving base of people engaged in innovation. The key players in a strong innovation ecosystem include post-secondary and research institutions, incubators and accelerators, angel investors, venture capitalists, private equity firms, government, friends and family, talent (human capital), start-ups and entrepreneurs and private companies.⁴²



Source: International Development Innovation Alliance

For example, the Toronto-Waterloo Innovation Corridor, which consists of a number of universities and research centres, connective infrastructure and community, large pools of skilled talent, strong access to capital, and early adopters, is considered one of the main factors responsible for the growth of Ontario’s technology sector.⁴³

⁴² International Development Innovation Alliance. *Typical Actors in an Innovation Ecosystem*. (<https://www.idiainnovation.org/ecosystem-actors>)

⁴³ McKinsey & Company. 2016. *Primer on technology superclusters and a fact base on Canada's Toronto Waterloo Innovation Corridor*. (<https://www.mckinsey.com/featured-insights/americas/the-toronto-waterloo-innovation-corridor>)

Texas' Path to Diversification

In the past decade, Texas has led the way in population growth and job creation with personal incomes rising faster than in New York and California. Texas is well known to be an economy based in oil and natural gas, but today, technology is leading the way in economic development for the Lone Star state. Texas offers a business-friendly climate with policies like restrained government, lower taxes, smarter regulations, right-to-work laws and litigation reform. It also has a framework that includes no corporate income tax and no personal income tax, a highly skilled workforce, easy access to global markets, robust infrastructure and predictable regulations.⁴⁴ It is in this setting that the innovation, technology and diverse industries prosper. As reported by CNBC in 2018, Texas became number one in technology exports and all exports in the USA, as technology giants such as Apple, Amazon, Facebook, Google, Oracle, and Microsoft expanded in the state.⁴⁵ Large technology companies such as Dell, Inc., Texas Instruments, Inc., and Rackspace Hosting, Inc. are headquartered in Texas, while AT&T, Inc. and Hewlett-Packard Company are the 12th and 13th largest employers in the state, respectively. The broader technology sector employs 270,000 people in Texas.⁴⁶ While cities like Houston and Dallas have relied on oil and gas for their economic prosperity, Austin has been focused on becoming a technology hub. Austin, dubbed “Silicon Hills” as the technology industry expands, is bringing in investors, young professionals, and entrepreneurs, making it the fastest growing major metro area in the country.⁴⁷ Today, Texas is an example of how embracing technology and creating the right set of policies and incentives can create a diverse and dynamic economy. Through purpose and persistence, Alberta can follow Texas' lead.

Vancouver is also one of Canada's technology innovation hubs. With 75,000 information and communications technology professionals working in the city, Vancouver hosts some of the world's largest technology companies, including Microsoft, Amazon, Apple, Facebook, Cisco Systems, Samsung, and others.⁴⁸ In 2018, Vancouver's start-ups received over \$4 billion of total investment.⁴⁹ Vancouver has become a thriving technology

⁴⁴ Abbott, Greg. 2017. “A Texas-size boom in technology: Gov. Abbott.” *CNBC*, July 11. (<https://www.gregabbott.com/texas-size-boom-technology/>)

⁴⁵ Elite Reports. 2016. “Lone star state blazes a new trail in innovation.” (https://issuu.com/elitereports8/docs/texas_for_newsweek_online_april_22/1?ff)

⁴⁶ Downie, Ryan. 2019. “9 industries driving GDP growth in the Texas economy.” *Investopedia*, May 18. (<https://www.investopedia.com/articles/investing/011316/texas-economy-9-industries-driving-gdp-growth.asp>)

⁴⁷ Cross, Bettie. 2019. “Austin leads nation in population growth for 8 consecutive years.” *CBS Austin*, April 18. (<https://cbsaustin.com/news/local/austin-leads-nation-in-population-growth-for-8-consecutive-years>)

⁴⁸ Vancouver Economic Commission. “Technology.” (<https://www.vancouvereconomic.com/focus/technology/>)

⁴⁹ Ibid.

innovation hub by: attracting global talent and graduating new innovators from its top-calibre post-secondary institutions; developing a collaborative ecosystem of industry leaders, professionals, CEOs, angel investors and others; and providing strong government support with incentives dedicated to growing the sector.

In January 2020, Shopify announced a significant investment in Vancouver with plans to open its first permanent office and hire 1,000 employees to build a top-tier research and development (R&D) team. Shopify chose Vancouver because they see it as a hub for great talent with potential for continued growth.⁵⁰

MasterCard also recently announced a \$510 million investment in a new Intelligence and Cyber Centre in Vancouver. This will create and maintain 380 jobs, as well as 100 student co-op positions. The centre is one of six globally and will accelerate innovation in digital and cyber security and artificial intelligence. This initiative also included a \$49 million contribution from the Government of Canada through its Strategic Innovation Fund.⁵¹

The tech industry in British Columbia (B.C.) is growing by 6% per year and generates more than \$23 billion in revenue and \$15 billion in GDP,⁵² which is more than 5% of B.C.'s provincial GDP. B.C.'s total technology sector employs more people (100,000) than forestry, mining and oil and gas combined, and contributes more to the provincial GDP than these traditional resource sectors.⁵³ B.C.'s technology sector GDP continues to grow faster than technology sectors in other provinces.⁵⁴

Agtmael and Bakker identify supportive public policy as an essential ingredient in the global competition for talent and start-up and early-stage capital. The characteristics of entrepreneurial markets create a natural role for governments to encourage their evolution, as entrepreneurship is a business in which there are increasing returns.⁵⁵ While it is acknowledged that public capital should not take the place of private capital, there can be a need for government to make strategic investments, particularly to incentivize private capital to enter the space. Despite being the world's largest advocate of minimal government interference in free markets, the U.S. has been directing large public

⁵⁰ Shopify. 2020. "Shopify announces plans to hire 1,000 employees in Vancouver." *Shopify Company News*, January 28. (<https://news.shopify.com/shopify-announces-plans-to-hire-1000-employees-in-vancouver#>)

⁵¹ MasterCard. 2020. "MasterCard opens global intelligence and cyber centre in Vancouver." *MasterCard Press Releases*, January 23. (<https://newsroom.mastercard.com/press-releases/mastercard-opens-global-intelligence-and-cyber-centre-in-vancouver/>)

⁵² Ibid.

⁵³ Tam, Bill. 2016. "Opinion: Super, Technological British Columbia: B.C.'s tech sector leads economic growth." *Vancouver Sun*, November 12. (<https://vancouversun.com/opinion/opinion-super-technological-british-columbia-b-c-s-tech-sector-leads-economic-growth>)

⁵⁴ KPMG. 2018. *British Columbia Technology Report Card: From Growth the Scale*. (<https://assets.kpmg/content/dam/kpmg/ca/pdf/2018/12/bc-technology-report-card-fy18.pdf>)

⁵⁵ Lerner, Josh. 2009. *Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed--and What to Do about It*. Princeton, New Jersey: Princeton University Press.

investments in technology and innovation for decades, which have led to economic success.⁵⁶

Start-ups look for a critical mass of innovation activity, a supportive and welcoming environment and a thriving technology ecosystem, where governments put policy and programs in place to help new companies get off the ground. Start-ups look for jurisdictions that have the supportive environment to help them launch, grow and scale. Governments play a critical role in creating the conditions for success and a new business-friendly environment where technology companies will want to locate, develop roots, and grow.

Capital

Access to capital is another critical element in creating an innovation economy. Emerging technology companies face challenges securing capital because they have fewer tangible assets for security, have a high degree of uncertainty and risk associated with successful discovery, development, and commercialization, and have a long-term profit horizon.⁵⁷ During the pre-

commercialisation and early commercialisation stage, companies generally have little or no revenue from the sale of products or services. For this reason, it is essential that the ecosystem leverage incremental business expenditures on research and development and access to private sector angel and investor capital.

For technology firms, access to capital with specialized knowledge of technology and innovation is essential for early stage development and growth. It is one of the fundamental components for creating a thriving technology sector.

Alberta is seeing negative trends concerning innovation and early stage capital. The venture capital market in Alberta lags behind leading Canadian jurisdictions, such as Ontario and Quebec.⁵⁸ In 2019, Canadian VC funds invested about \$6.2 billion into 539 financing deals across the country.⁵⁹ Alberta's portion of this consisted of 39 deals totaling \$227 million, comprising just over 3.6% of the national total. For an economy that contributes 15.5% of the national GDP,⁶⁰ this is well below the potential and opportunity that should exist in Alberta.

Alberta now has the
least competitive
environment for tech
start-ups in Canada.

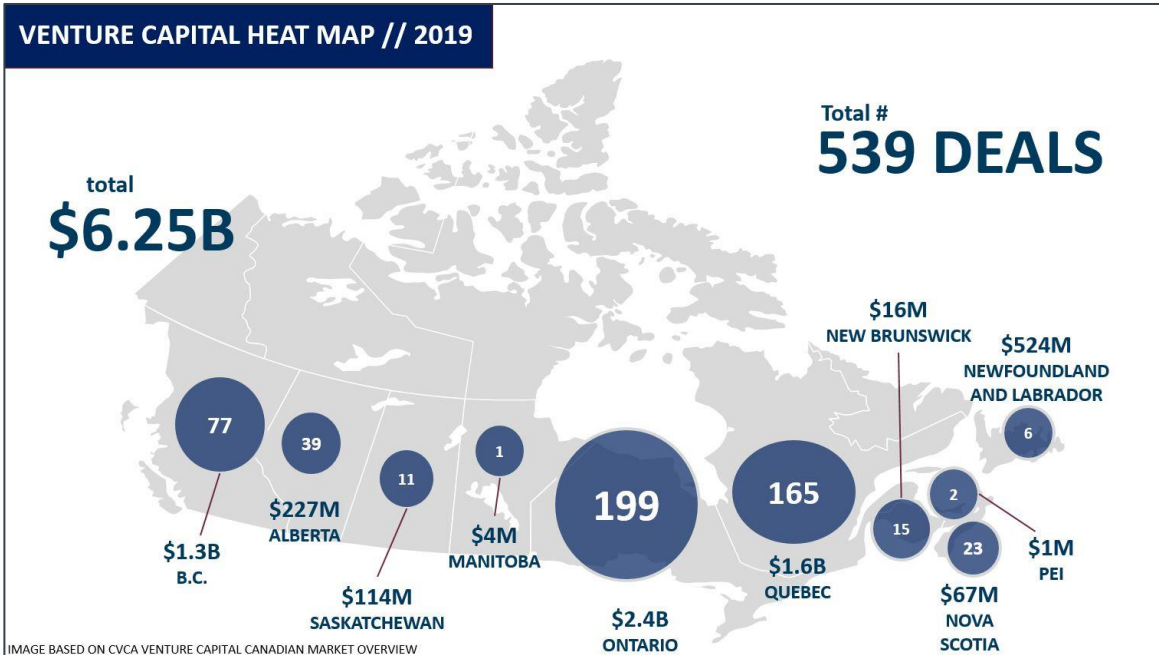
⁵⁶ Mazzucato, Mariana. 2015. *The Entrepreneurial State: Debunking Public vs. Private Sector Myths, Revised Edition*. New York: Public Affairs.

⁵⁷ Stakeholder submission.

⁵⁸ Western Economic Diversification. 2016. *The State of Venture Capital in Western Canada 2016*. (https://www.wd-deo.gc.ca/images/cont/19494_en.pdf)

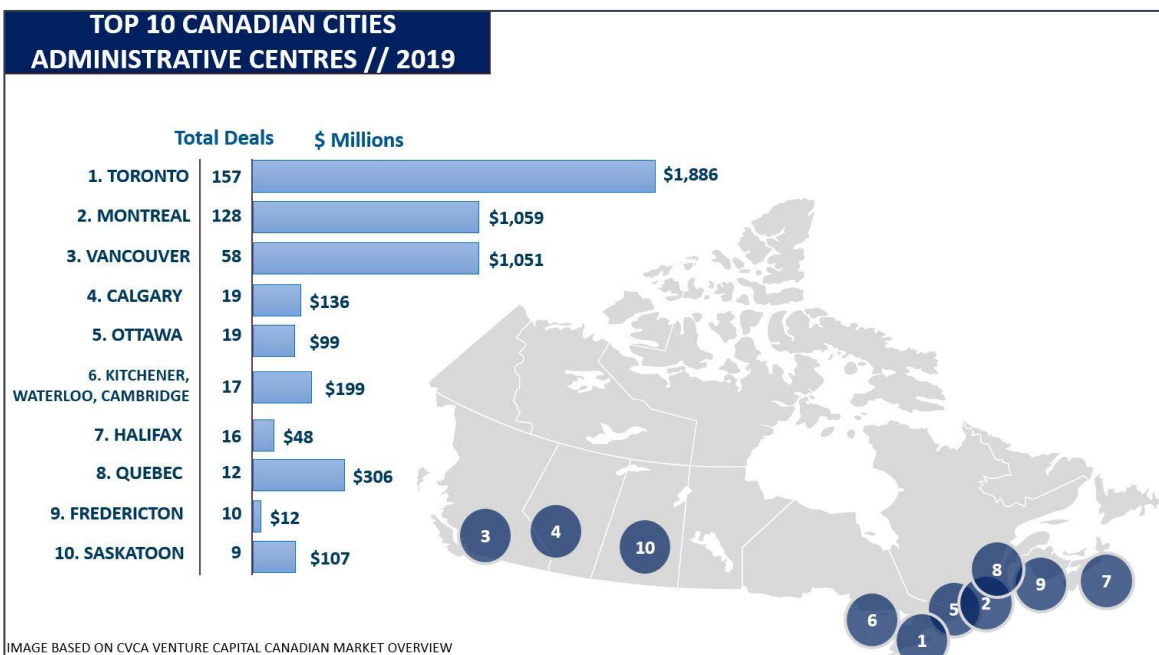
⁵⁹ Canadian Venture Capital Private Equity Association. 2019. *Venture Capital Canadian Market Overview // 2019*. (<https://www.cvca.ca/reports/vc-pe-canadian-market-overview-year-end-2019/>)

⁶⁰ Statistics Canada. Table: 36-10-0222-01



Source: https://central.cvca.ca/wp-content/uploads/2020/03/CVCA_EN_Canada_VC_2019_Final-Mar13.pdf

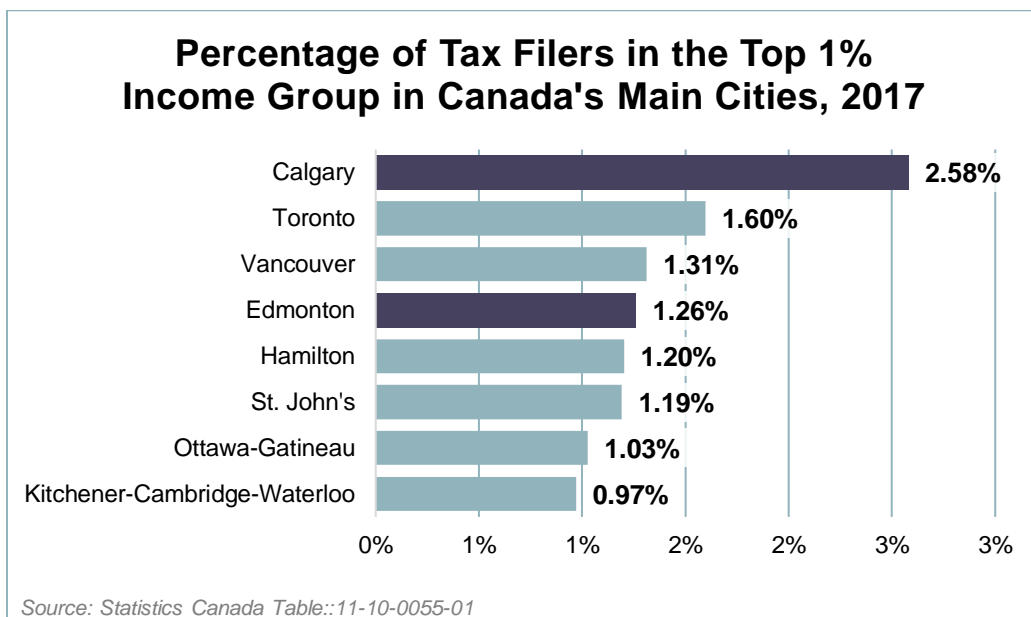
In a comparison of Canadian cities attracting venture capital investments in 2019, Calgary ranked fourth in terms of total number of VC deals in 2019, but sixth in terms of total amount of VC dollars invested. Edmonton did not even place in the top 10.



Source: https://central.cvca.ca/wp-content/uploads/2020/03/CVCA_EN_Canada_VC_2019_Final-Mar13.pdf

In terms of financial capital, Alberta has an enormous opportunity right in its own backyard. One of our competitive advantages should be the abundance of high net worth individuals. Alberta is home to the highest concentration of wealth in Canada. In 2017, 1.7% of Alberta's

population were among the top 1% of wealthiest Canadians, compared with just over 1% in both Ontario B.C.⁶¹ Calgary surpasses all other major Canadian cities, having by far the highest concentration of wealthy individuals in Canada. With the right opportunities and vehicles to invest, and a positive vision for innovation and technology in Alberta, more of the province’s wealthy individuals could be enticed to put a percentage of their money into the sector. This capital could stimulate valuable growth for the sector.



Talent

In the global marketplace, there is ever growing competition for talent. Countries, regions and cities jockey against one another to attract entrepreneurs and start-ups. Not all of these companies will succeed, but the ones that do provide a huge payoff to their host jurisdictions, in the form of jobs, growth, and tax revenues. Because of their inherent flexibility, start-ups are not bound by physical assets. They are free to locate where they have a competitive advantage, the best quality of life, and a welcoming business environment, all of which are reflected in Agtmael and Bakker’s recipe for a brainbelt.

Talent and human capital are drivers in where technology firms choose to locate. Sources of skilled workers, such as post-secondary institutions, clusters of similar early-stage firms or large anchor firms in adjacent industries (e.g. fintech and the banking sector), and large urban centres are strong indicators of a region’s performance in location decisions for early-stage companies.⁶² The types of human capital that technology companies seek is

⁶¹ Statistics Canada. Table: 11-10-0055-01

⁶² Marinković, Sanja, Ilija Nikolić, and Jovana Rakićević. 2018. “Selecting location for a new business unit in ICT industry.” *Zbornik Radova Ekonomskog Fakultet au Rijeci* 36(2): 801-825. See also: Cader, Hanas A., John M. Crespi, and John C. Leatherman. 2013. “What Factors Affect Information Technology Firm Location Choices in Middle America?” *International Regional Science Review* 36(2): 207-234.

dependent on the stage of development, the sector in which it participates, and strategic considerations, but data scientists, software engineers, executive management, advanced sales and marketing, are cited by the Information and Communications Technology Council as key skillsets sought by firms.⁶³

ALBERTA SUCCESS STORY – INVESTOPEDIA

Investopedia was founded in 1999 by Cory Wagner and Cory Janssen and was launched as a comprehensive investing and finance dictionary at a time where your next best option was a textbook. The founders aimed to make finance and investing easier to understand, and every definition featured both a matter of fact explanation as well as a friendlier layman’s version. Its primary offices are located in Edmonton, Alberta and New York.

As the company grew, Investopedia expanded its library of content to include articles, in depth guides and FAQs to provide more comprehensive coverage of the finance and investing landscape. It launched a Stock Simulator, as a way for people to practice trading stocks and options in a mock portfolio using virtual money. It also launched online exam study guides for the Series 7 and Chartered Financial Analyst exams along with a quiz tool to help aspiring financial professionals study for their exams.

Investopedia sold to Forbes in 2007, followed by a move to ValueClick (now Conversant) in 2010, and then to IAC in 2013. Finally, in 2018 Investopedia joined the Dotdash publishing company.⁶⁴

⁶³ Information and Communications Technology Council. 2017. *The Next Talent Wave: Navigating the Digital Shift – Outlook 2021*. (https://www.ictc-ctic.ca/wp-content/uploads/2017/04/ICTC_Outlook-2021.pdf)

⁶⁴ Investopedia. “History of Investopedia.” (<https://www.investopedia.com/about-us#History>)

What are Competing Jurisdictions Doing, and What are the Results?

Jurisdictions from across the world are aggressively attracting entrepreneurs, talent and capital to create jobs and grow the technology and innovation ecosystem through a variety of tools. To better understand the competitive landscape, our panel examined North American sub-national jurisdictions and a few global technology hubs that are known for having active efforts and successful investment strategies to grow their technology ecosystems. These jurisdictions include⁶⁵:

- In Canada: British Columbia, Saskatchewan, Ontario, Nova Scotia and Quebec
- In the United States: Florida, Pennsylvania, Colorado, North Carolina, Arizona, Nevada, Massachusetts, Texas and Maryland.
- Global technology hubs: Israel and Singapore

The following is a snapshot of how jurisdictions compare in three key areas: infrastructure, capital and talent.

Infrastructure

Globally there are many successful technology jurisdictions that provide the ecosystem for success in the technology sector that Alberta can learn from. An example of this is the Toronto-Waterloo corridor that connects the technology communities physically both by traditional rail as well as through a critical mass of universities and accelerators. Accelerators are another example of a combined physical infrastructure and programmatic delivery system (and often funding) that brings together aspects of the technology ecosystem to support early stage, growth-driven companies through education, mentorship and financing⁶⁶.

Government's role, in supporting infrastructure programs that bring the communities together, is driven by the objective of developing a thriving ecosystem that supports innovation, by way of those connections⁶⁷. Typically, accelerators are funded and operated by successful companies and venture capitalists, who have a vested interest in ensuring the success of the start-ups 'graduating' through their accelerator. The TechStars Accelerator in Colorado offers intense, rapid mentorship, and is aimed at accelerating the lifecycle of innovative young companies - it compresses years' worth of learning-by-doing

⁶⁵ The complete jurisdictional scan can be found in Appendix 3.

⁶⁶ Hathaway, Ian. 2016. "What startup accelerators really do." *Harvard Business Review*, March 1. (<https://hbr.org/2016/03/what-startup-accelerators-really-do>)

⁶⁷ Basco, Daniel, Carlos Ignacio Gutierrez, and Marlon Graf. 2018. *The Role of Public Policy in Supporting Business Accelerators*. Santa Monica, California: Rand Corporation.

into a few months.⁶⁸ Such connecting infrastructure becomes important because it brings together and builds a strong community of entrepreneurs, investors, and industry, thereby accelerating spillovers between the communities within the ecosystem.⁶⁹ Texas has a high concentration of accelerators, which focus on different sectors, including health, service-based companies and high-tech financial products. Others connect start-ups with angel investor networks.⁷⁰

Communitech in Kitchener-Waterloo, ON

Located in Kitchener, Communitech was founded in 1997 by a group of entrepreneurs committed to making the Waterloo Region a global innovation leader. Today, Communitech is a public-private innovation hub that supports a community of more than 1,400 companies — from start-ups to scale-ups to large global players. The Communitech Data Hub, the second location in uptown Waterloo, serves as a gathering point for the region's data-driven tech community. It consists of 120,000+ square feet dedicated to world-leading collaboration and innovation. Bringing together key players from start-ups and global brands, to government agencies, academic institutions, technology incubators and accelerators, it focuses on fueling job creation and company growth. They host events, special guests, and serve as collaborative office space for a mix of technology and non-technology companies, and offer drop-in space for guests. They work closely with customers, investors and partners to team members and the broader community. Communitech helps technology companies start, grow and succeed in three distinct ways: 1) as a hub for entrepreneurs and innovators, 2) delivering programs and helping companies at all stages with access to capital, customers and talent and 3) being partners in a world-leading ecosystem.⁷¹

⁶⁸ Hathaway, Ian. 2016. "What startup accelerators really do." *Harvard Business Review*, March 1.

⁶⁹ McKinsey & Company. 2016. *Primer on technology superclusters and a fact base on Canada's Toronto Waterloo Innovation Corridor*.

⁷⁰ Stimulating Capital Investment for Start-Ups, Andre LeBlanc

⁷¹ Communitech. "About Communitech." (<https://www.communitech.ca/who-we-are/>)

Texas Accelerators

Approximately 103 accelerators are operating in Texas. Accelerators in Texas are typically operated by economic development agencies, chambers of commerce, local governments, companies, and universities, with the state government providing financial support. Texas supports these accelerators through a mixture of grant and loan programs, such as the State Product Development and Small Business Incubator Fund. The government's focus is, through its support, to help entrepreneurs develop their ideas into new or improved products, with the goal of helping establish new and grow existing small businesses in the state. In addition to state support, the city of Austin funds a series of accelerators and incubators to provide entrepreneurs with the resources to develop and grow their business, and to facilitate the commercialization of research from local universities. These programs have contributed to Austin having one of the major technology sectors in the United States.⁷²

Capital

Availability of early stage and start-up capital is essential to a high performing technology ecosystem. Some of this capital is private sector led and driven, while some of it is provided by, or even matched, by government. Most high growth jurisdictions we studied have some form of government direct (i.e., funds) or indirect (i.e., incentives) capital programs. Most successful jurisdictions have the public sector follow the private sector investments in early stage and start-up companies.⁷³ There are several ways government can enable capital availability to technology ecosystems, each of which are discussed below.

Tax Credits

Early stage technology companies do not benefit from low corporate tax environments given that they, for the most part, are not making profit due to a focus on growth and development. Some technology jurisdictions utilize their tax systems to encourage technology sector growth through other tax tools, including ones that provide support for the expense side of the growth and development phase, targeted tax credits, sales tax exemptions, and preferential tax rates on capital gains.

The vast majority of Canadian, and many American and international jurisdictions, use tax credit programs to encourage specific activities within the technology sector. Examples include tax credits on investment into technology firms, favourable tax rates on income

⁷² Texas Economic Development. "Product Development and Small Business Incubator Fund." (<https://gov.texas.gov/business/page/product-development-and-small-business-incubator-fund>)

⁷³ Lerner, Josh. 2009. *Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed--and What to Do about It*. Princeton, New Jersey: Princeton University Press.

derived from intellectual property developed in a jurisdiction, refundable tax credits for early stage research and development, and sector specific tax credits, such as for digital media companies. Tax credit programs can provide direct funding to start-ups, or can entice investors to invest in the start-ups through investor incentives. The early stage innovative technology companies then use these funds to hire skilled talent or purchase necessary equipment required to create and commercialize their product or expand their market.

Several jurisdictions use their tax system to encourage entrepreneurial activity by supporting the investments and expenses that they need to make in their early stages. Every Canadian province, except for Alberta, offers tax credit programs to encourage research and development investment, such as SRED top ups or, in the case of Prince Edward Island (PEI), a labour-based research tax credit. Other types of tax credits support labour and skills development in the technology sector. For example, tax credit programs that support digital media companies are based on labour. Ontario has an Interactive Digital Media (IDM) Tax Credit, a labour-based tax credit for IDM companies, with 1182 program recipients and \$138M in tax credits issued (2018-19)⁷⁴. These types of programs enable technology companies to hire the skilled workers required to develop their product.

The tax system can also be used to increase access to capital for technology businesses by incenting investors to make investments in high risk and innovative companies. Investor tax incentives reduce the risk of investing in early stage tech start-ups. These investments enable businesses to complete research, development and commercialization of their innovation.

Direct Investment, Grants, and Government-Backed Funds

Government investment in the technology sector, either through direct investment, grants or government-backed funds, play an important role in ensuring that firms have access to the capital they need to develop their products, grow their businesses and find new markets. Through this, governments support key growth areas of the economy and create conditions to support broader economic growth. This type of support is one of the main ways that other jurisdictions have supported their technology sectors.

Direct investment made by government to companies and entrepreneurs, such as grants and loans, is used to support specific activities within the technology sector that align with that jurisdiction's strategic economic goals or support key industries. This investment often directly supports activities in cost-intensive fields. Direct investment supports businesses in the riskiest part of product development, such as research and development. During this stage, businesses may struggle to qualify for traditional bank financing or attract investments due to the risky and long term nature of research and development. Direct

⁷⁴ Ontario Creates. "Tax credit statistics for 2018-19."
(http://www.ontariocreates.ca/film_and_tv/tax_credits/Tax_Credit_Statistics.htm)

investment supports ensure that firms with promising ideas have the funds needed to purchase equipment and hire skilled talent to bring their products to market.

Fifteen of the sixteen jurisdictions surveyed operate at least one direct investment program. The Florida Opportunity Fund's Venture Capital program, which makes \$1 million to \$3 million investments into emerging technology companies in targeted industries, is a prime example of this. This state-run program ensures that companies researching and developing new products in key areas of Florida's economy, such as defence and cleantech, have the support they need to grow. Texas' State Product Development and Small Business Incubator Fund is a loan program for small businesses developing new and innovative products. Investments range from \$1 million to \$5 million, providing support to product development companies and small business incubators and accelerators in targeted sectors, such as nanotechnology and biotechnology.⁷⁵

Government-backed funds (typically known as fund-of-funds) provide broad support for the technology ecosystem. A fund-of-fund program is when government-created funds invest into VC funds that would, in turn, make investments into early stage technology companies with the goal of generating financial returns. The benefit of the fund-of-funds approach is that it takes the investment decisions out of the hands of government and puts them in those of experienced venture investors. It avoids the oft-criticized "government picking winners and losers" scenario.

⁷⁵ Texas Economic Development. "Product Development and Small Business Incubator Fund."

Venture Capital in Texas

Venture capital in Texas ranked fourth largest in the U.S. in 2018 with US\$747 million of investment in 55 deals.⁷⁶ The state has been directly active in creating access to early stage capital in several different ways. In 2003, Texas created the Texas Enterprise Fund (TEF), the largest “deal-closing” fund of its kind in the U.S.⁷⁷ The fund serves as a financial incentive to companies considering a new project for which a site in Texas is competing with other out-of-state sites. In allowing the state to respond quickly and aggressively to opportunities, it contributes significantly to job creation and investment attraction in Texas. From inception to December 31, 2018, TEF had funded 163 projects with US\$609 million, creating over 94,000 direct jobs, and bringing in US\$27.4 billion in capital investment.⁷⁸ In 2005, the state of Texas created the Texas Emerging Technology fund (TETF) to identify key industries that would be the engine for job creation and economic development and to focus state resources on the development and expansion of those industries. Since 2006, the fund dispersed \$193 million in investments in 142 hi-tech companies, creating 1,661 jobs and attracting an additional \$1 billion in follow-on private investments.⁷⁹ This fund was ended in 2015.

Funds-of-funds not only support early stage companies, but the VC system in the jurisdiction, as well. This VC system is imperative in the long term to not only provide capital to early stage technology companies but also to provide entrepreneur mentorship and guidance to company founders. Eight of the sixteen jurisdictions surveyed operate these indirect, fund-of-fund programs.

Other Methods to Create Capital Availability

Special deductions, such as sales tax exemptions are used by several jurisdictions to encourage entrepreneurial activity by lowering the cost of doing business. All of the North American jurisdictions levy state or provincial sales taxes, except for Alberta. In the U.S., Florida and Texas provide exemptions on sales tax on eligible R&D costs to lower the cost of innovation. Data centres are also eligible for a sales tax exemption in Texas. Additionally, most digital products and software downloads are exempt from sales taxes in six of the

⁷⁶ Soergel, Andrew. 2018. “4 states control 80 percent of venture capital dollars.” *U.S. News & World Report*, May 10. (<https://www.usnews.com/news/best-states/articles/2018-05-10/4-states-control-80-percent-of-venture-capital-dollars>)

⁷⁷ Office of the Texas Governor. “The Texas Enterprise Fund (TEF).” (<https://gov.texas.gov/uploads/files/business/TEF-Overview.pdf>)

⁷⁸ Office of the Texas Governor. 2019. *Texas Enterprise Fund: 2019 Legislative Report*. (https://gov.texas.gov/uploads/files/business/TEF_Legislative_Report_2019_Final.pdf)

⁷⁹ Drew, James. 2014. “Report: Texas Emerging Technology Fund registers bump in job growth.” *The Dallas Morning News*, February 1. (<https://www.dallasnews.com/news/watchdog/2014/02/01/report-texas-emerging-technology-fund-registers-bump-in-job-growth/>)

nine American jurisdictions. In Canada, all businesses can claim input tax credits for GST and HST paid on business expenses. However, B.C. and Saskatchewan, which administer their own provincial sales taxes, do not allow businesses to claim provincial sales taxes paid on business expenses. Special capital gains treatment further reward investors for successful business investments. A capital gain is a rise in the value of an investment that gives it a higher worth than the purchase price.⁸⁰ Singapore does not levy taxes on capital gains, and most American states apply preferential tax rates on capital gains to offset investor risk and increase investment. Israel offers a preferential tax rate for capital gains derived by technology businesses, specifically.⁸¹ Some North American jurisdictions apply specific exemptions for capital gains resulting from the sale of property or the sale of certain small businesses. Three of the nine American jurisdictions (Florida, Nevada, and Texas) do not levy state taxes on personal income at all, and therefore do not collect state taxes on capital gains. Alberta has the sixth lowest capital gains tax rate of the 15 North American jurisdictions.

Governments use other methods to support capital availability in the technology sector, such as priority procurement. Israel uses government procurement programs to connect start-ups and small businesses with government's procurement process. Government procurement programs are important to start-ups and small companies as they provide the first customer and first revenue, customer validation, and an ability to reference governments as customers. This enables the marketing of their products. As well, it gives companies an understanding of working with and selling to government and potential new customers. Government procurement programs are driven by the objective of allowing small companies to collaborate with government departments in developing innovative solutions to identified public sector challenges (e.g., challenges related to sustainability, safety and productivity).⁸²

⁸⁰ Chen, James. 2019. "Capital gain." *Investopedia*, July 30.
(<http://www.investopedia.com/terms/c/capitalgain.asp>)

⁸¹ Deloitte. 2019. *International Tax: Israel Highlights 2019*.
(<https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Tax/dttl-tax-israelhighlights-2019.pdf>)

⁸² OECD. 2015. *The Innovation Imperative: Contributing to Productivity, Growth and Well-Being*. Paris: OECD Publishing.

Strategic Procurement in the U.S.

The U.S. Federal Small Business Innovation Research (SBIR) program was established in 1982 to accelerate commercialization of technologies. It is the U.S.'s largest source of early stage/high risk funding for start-ups and small businesses. The program awards federal contracts or research grants to small businesses to help them conduct R&D. The projects must have the potential for commercialization and must meet specific government R&D needs. The program supports science and technology companies with the goal of market entry, finding customers, business expansion, job creation and increasing the tax base. The small business retains the rights to the intellectual property.

Talent

The technology sector is knowledge-driven and the global competition for these talents is becoming more intense as technology permeates many sectors of the economy. For example, there is increasing demand for data scientists, software engineers, programmers, technical sales and management executives, and cyber security professionals, among others, by not just technology companies, but also by financial services companies, energy companies, and public sector organizations.⁸³ Much work has been done by provincial and federal governments, think tanks and other research bodies on the need for Canada to re-align its educational system to provide for the workforce of the future, and to be innovative in its immigration programs to attract the necessary skilled tech talent.

In Canada, Alberta competes for talent with leading jurisdictions such as Ontario, Quebec, and B.C. These jurisdictions have highly robust technology ecosystems that make them top destinations for technology workers. They have many mature and smaller technology companies developing leading edge innovations, strong access to capital infrastructure that includes venture capitalists and successful entrepreneurs, and availability of a large pool of skilled talent.

They are stronger magnets for tech talent because of their support for the sector, their focus on innovation and technology and the vast range of job openings within the critical mass of firms in these locations. Technology workers naturally prefer a more robust ecosystem because it affords them better career opportunities including being able to expand their networks within the sector, opportunities for mentorship, opportunities to work on leading edge technological innovations, and being able to easily move between jobs

⁸³ da Costa, Pedro Nicolaci. 2019. "Tech talent scramble." *Finance & Development*. 56(1): 46-49.

and employers. As a result of the intense competition for talent, many jurisdictions have created pathways within their provincial immigration programs to attract technology talents. For example, Ontario, Quebec, and B.C., all have entrepreneur streams within their provincial immigration programs. These streams allow experienced investors and entrepreneurs, including technology entrepreneurs, who meet the requirements of the program to be able to relocate their businesses to these jurisdictions.

Emerging ecosystems lacking mid-level talent need to source it from other jurisdictions.

Provincial nominee programs (PNPs) are critical in this space. Emerging ecosystems lacking mid-level talent need to source it from other jurisdictions, initially. Therefore, the ability to attract experienced talent from elsewhere is critical in being able to compete as a leading centre of innovation and to develop a critical mass of talent and firms. B.C. and Ontario have given priority to technology talent attraction within their immigration programs through initiatives like the B.C. Tech Pilot and the Ontario Tech Draws⁸⁴, which make it faster for technology professionals to immigrate to these provinces.

These programs are employer driven. Technology employers recognize a shortfall of talent and a need to source from other jurisdictions, and apply to the PNP program. Their offers must be at least one year in duration.⁸⁵

Almost all jurisdictions examined also prioritize technology talent development by supporting skills training and post-secondary institutions. For example, through a number of state-funded internship programs, Massachusetts is enhancing the talent pipeline for technology companies in the state. A 2018 report by Calgary Economic Development stated that Alberta needs more tech talent. The provincial government is projecting a major labour shortage of computer and information systems professionals by 2025, as well as a shortage of software designers, programmers and developers. As the economy grows and diversifies, many companies are finding that the lack of local IT / digital expertise is holding them back⁸⁶.

While the Alberta government's recent announcements regarding the introduction of international student, start-up and rural entrepreneur streams within the provincial immigration program is a step in the right direction, much more can and should be done as part of government's role in creating an enabling environment for businesses. Without bold

⁸⁴ The B.C. Tech Pilot and Ontario Tech Draws are opportunities that fall under their PNP programs.

⁸⁵ <https://www.cicnews.com/2019/06/british-columbia-extends-tech-pilot-to-june-2020-0612350.html#gs.216qvh>

⁸⁶ Hampel, Meagan. 2018. "Fostering tech talent in the province." May. (<https://digitalalberta.com/fostering-tech-talent-in-the-province/>)

action, Alberta's existing technology companies are vulnerable to relocation to jurisdictions with large talent pools, and new technology entrepreneurs will choose other jurisdictions over Alberta.

B.C. Provincial Nominee Program⁸⁷

B.C.'s PNP is a way for high-demand foreign workers and experienced entrepreneurs to gain permanent residency in B.C.

1. Skills Immigration

Skills Immigration is for skilled and semi-skilled workers in high-demand occupations in B.C. It uses a points-based invitation system. The process involves registering and applying online for the B.C. PNP and a paper application process for permanent residency. In this program applicants may not need prior work experience for some categories. Skilled workers may have work experience from abroad. Entry Level and Semi-Skilled category applicants need B.C. work experience. Recent international graduates of a Canadian university or college may not need any work experience, depending on the job being offered.

2. Express Entry B.C.

A faster way for eligible skilled workers to immigrate to B.C. Applicants must also qualify for a federal economic immigration program. It uses a points-based invitation system, and is an entirely web-based registration and application process for both the B.C. PNP and permanent residency process. Applicants do not require B.C. work experience. However, they must have relevant work experience as well as meet other requirements such as education and language.

3. Entrepreneur Immigration

This stream is for experienced entrepreneurs who want to actively manage a business in B.C. Applicants must have the required personal and investment funds. The Entrepreneur Immigration – Regional Pilot is for entrepreneurs who want to start a new business in participating regional communities across B.C. There is also an option for companies looking to expand into B.C., and who needs to get permanent residency for key employees.

⁸⁷ Canada Immigration Newsletter. 2019. "British Columbia extends Tech Pilot to June 2020." *CIC News*, June 3. (<https://www.welcomebc.ca/Immigrate-to-B-C/B-C-Provincial-Nominee-Program>)

ALBERTA SUCCESS STORY – JOBBER

Founded in 2011, Jobber is a cloud-based software provider for home service businesses headquartered in Edmonton. Jobber supports over 70,000 customers in 43 countries.⁸⁸ Its customers deliver more than \$6 billion annually in services using their platform. Its 2018 estimated revenue is \$20-50 million⁸⁹ and employs 219 employees, including 167 (76%) in Edmonton

Jobber's software platform helps home service businesses streamline their day-to-day business needs, ensuring they can "quote, schedule, invoice, and get paid—faster." With a mandate to help small businesses be successful, the value of Jobber to Alberta's economy extends far beyond itself. In supporting small business to grow, Jobber indirectly creates more wealth and jobs for Alberta's economy.

Their first client, an owner of a painting company with 3 employees in 1 city has since expanded to a team of 16 in 3 cities. Jobber is the perfect example of technology as enabling of other businesses. Jobber has identified approximately five million businesses in North America alone that could be using its software.

In 2019, Jobber outgrew its office space on Jasper Avenue and is currently renovating a three-story 30,000-square-foot office space in the 103 Street Centre to expand into in 2020.⁹⁰

⁸⁸ Jobber. "Our story." (<https://getjobber.com/about/>)

⁸⁹ Canadian Business. 2019. "Meet Canada's fastest-growing software companies: 2019 Growth 500." *Canadian Business News*, September 12. (<https://www.canadianbusiness.com/lists-and-rankings/growth-500/2019-software-fastest-growing-companies/>)

⁹⁰ Konguavi, Thandiwe. 2019. "Flourishing software app Jobber blazing the trail for Alberta tech startups." *CBC News*, September 17. (<https://www.cbc.ca/news/canada/edmonton/app-jobber-alberta-tech-startups-1.5285622>)

Alberta's Performance in the New Landscape

As the competitive landscape in technology and innovation has accelerated and evolved, Alberta has become increasingly uncompetitive. While we offer many important elements of a healthy technology ecosystem – quality of life, low cost of living, strong talent, energized and committed entrepreneurs, major success stories, and an attractive business environment – Alberta is

The elimination of SRED and AITC has created competitive challenges for Alberta

missing some critical ingredients of the business and policy environment needed to unleash entrepreneurs in the early stage of the technology and innovation space – specifically in the areas of vision and brand, capital, talent and infrastructure. Alberta is therefore at a disadvantage compared to its competition in other provinces and countries.

Throughout our process we heard from many entrepreneurs that have shifted investment and growth plans from Alberta to other, more attractive locations in Canada (or the U.S.). With those relocations, Alberta loses high paying jobs, personal tax revenues, household spending and the potential for economic growth.

During our consultations with investors and technology companies throughout the province, we have heard a clear message: Alberta is not competitive, and early stage technology businesses and investors do not think it makes sense to locate here. The Job Creation Tax Cut simply does not hold the same benefit – or indeed, any benefit – for early stage and start-up companies that focus more on revenue than earnings and deploy as much additional capital as possible toward additional growth.

The elimination of the provincial portion of the SRED and the Alberta Investor Tax Credit (AITC) has created a perception among investors and start-ups that the technology industry is not a priority for Alberta and not part of the economic mix for the future of the province.

There is a competitive landscape across Canada, and Alberta must ensure that the province's environment and policy for innovation and technology are suited to the realities of technology entrepreneurship and investing, and are reflective of this dynamic competition across the nation. This will be essential for Alberta getting back in the game and competing for financial capital and top entrepreneurial talent.

We will examine Alberta's performance and competitiveness through the same three key areas as the jurisdictional comparison: infrastructure, capital and talent.

Infrastructure

According to a recent study, more than 1,373 technology companies are based in Alberta, primarily in the early stages of the start-up lifecycle. 95% of these companies are based in Calgary or Edmonton.⁹¹ While travel options exist between the two cities, the geographic distance between them has contributed to a fragmentation of the sector in the province,

Alberta needs an
innovation corridor
to link our
technology hubs

where disconnected resources create confusion for technology entrepreneurs and other market participants.⁹² To enable better cooperation, Alberta requires an **innovation corridor** to connect the resources and talent development in Edmonton, Calgary and ecosystems in Southern Alberta. Alberta must compete in the technology and innovation sector as one province. We must be united and leverage resources and networks in our two major cities and communities across the province. This level of coordination and approach of bringing communities together to work collaboratively is vital to thriving ecosystems like Kitchener-Waterloo. For our early stage technology companies to be successful, Alberta must also adopt a cohesive provincial solution and an innovation corridor to link our technology hubs and their resources together.

Some of Alberta's infrastructure and ecosystem challenges are related to a lack of clear, bold technology and innovation targets. Fortunately, these efforts are already underway in the province, led by the A100, a group of mentors and experienced entrepreneurs in the province.

The A100 has established targets to be achieved in 10 years to spark a focus of activity on making Alberta a technology hub in Canada. By 2030, with an estimated capital requirement of \$2.7 billion, the targets are to have Alberta achieve:

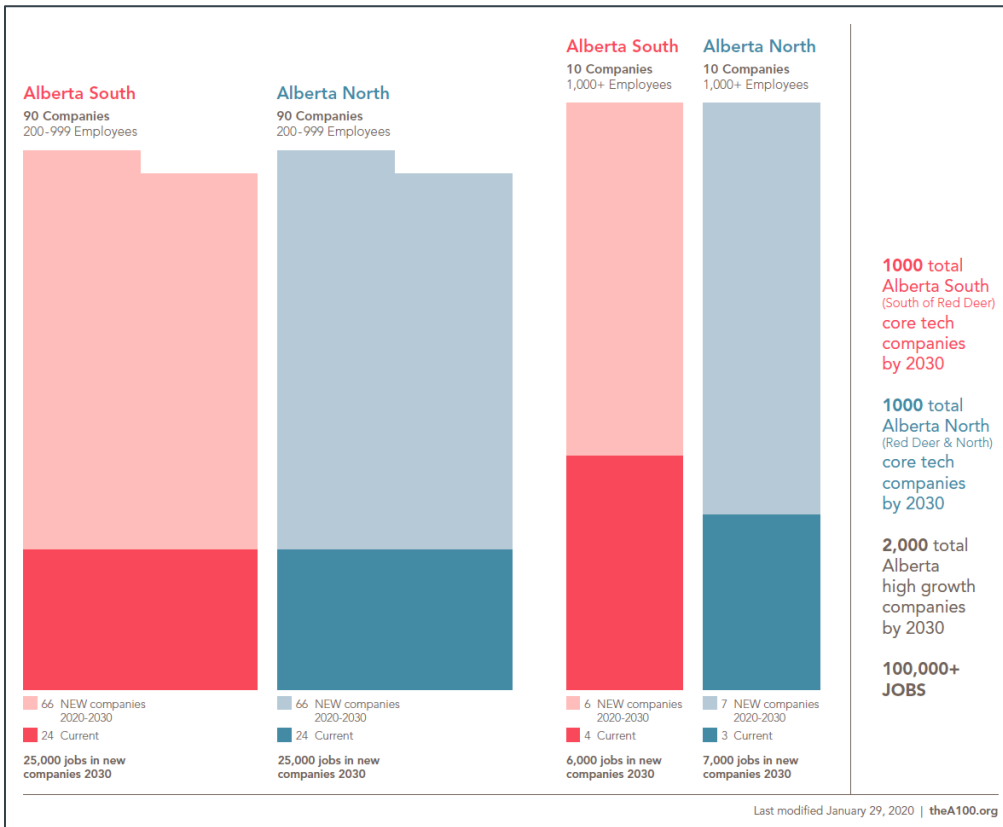
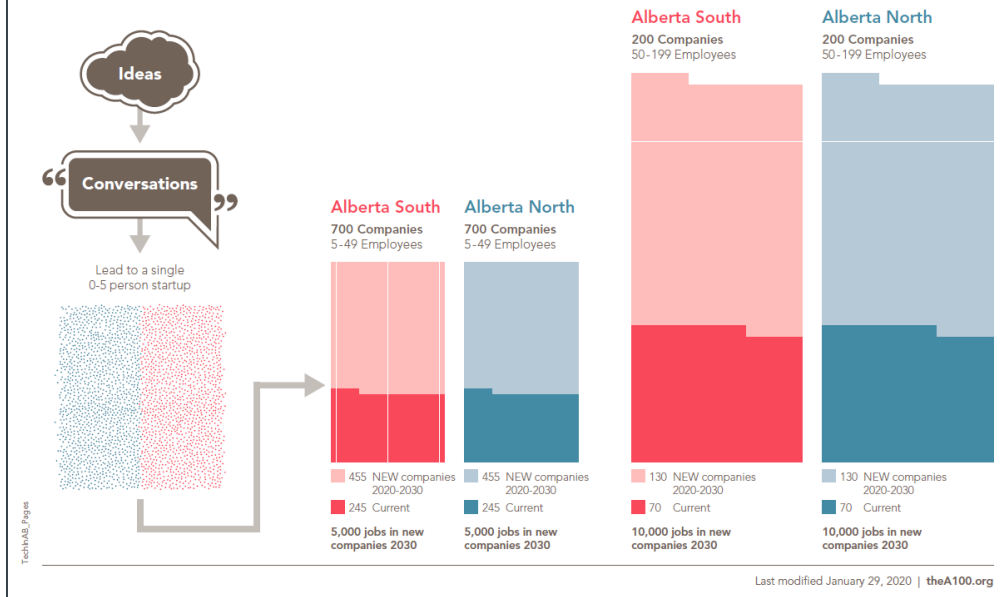
- 2,000 technology companies
- \$20 billion in annual revenue from those companies
- 100,000 technology jobs in those companies

The images below outline the some of the details of these goals. The 1,000 tech companies in each half of the province are to be comprised of 700 start-ups (5-49 employees); 200 emerging companies (50-199 employees); 90 growth companies (200-999 employees); and 10 scaling companies (1,000-plus employees).

⁹¹ Alberta Enterprise Corporation. 2019. *2018 Alberta Technology Deal Flow Study: Final Report, February 2019*. (https://www.alberta-enterprise.ca/wp-content/uploads/2019/02/2018_DealFlowReportFeb.pdf)

⁹² Deloitte. 2018. *Alberta Technology Competitiveness Report*. Confidential report prepared for Alberta Economic Development, Trade and Tourism.

2000 CORE TECH COMPANIES 30,000 NEW JOBS IN ALBERTA BY 2030



Capital

Taxes

In the 2019 fall provincial budget, the Government of Alberta eliminated several tax credit programs, including the provincial portion of SRED, AITC⁹³, and the Interactive Digital Media Tax Credit (IDMTC). These eliminations were particularly hard on technology entrepreneurs and investors and has led to concerns about Alberta as a place to grow and invest for technology amongst many in the sector.

The elimination of these tax credit programs has resulted in Alberta becoming the only Canadian province that does not support technology entrepreneurs through the tax system and is not providing mechanisms to attract and entice innovation capital.

The cancellation of SRED was particularly impactful. SRED, as discussed earlier, is an important component of the financial operations of an early stage technology company. It helps cover start-up costs and acts as a bridge to traditional bank loans. As a joint federal-provincial program, and now the only province without it, Alberta is uncompetitive. Many view SRED as table stakes for a competitive tax regime in this sector. The absence of the SRED program in Alberta creates conditions where the province is being overlooked as a place to start and grow an innovation or technology company.

A comparison of support levels across provinces is presented in the tables below.⁹⁴

Canadian-controlled private corporations (CCPCs)					
Provinces	Provincial credit rate	Provincial credit refundable?	Federal credit rate	Federal credit refundable?	Combined credit rate
Quebec	30%	Yes	35%	Yes	54.50%
Manitoba	20%	50% refundable	35%	Yes	45%
New Brunswick	15%	Yes	35%	Yes	44.75%
Newfoundland and Labrador	15%	Yes	35%	Yes	44.75%
Nova Scotia	15%	Yes	35%	Yes	44.75%
Yukon	15%	Yes	35%	Yes	44.75%
Ontario	8.0% refund + 3.5% credit	Yes/No	35%	Yes	42.50%
Alberta (pre-budget)	10%	Yes	35%	Yes	41.50%
British Columbia	10%	Yes	35%	Yes	41.50%
Saskatchewan	10%	Yes (on first \$1M)	35%	Yes	41.50%
Prince Edward Island	N/A	N/A	35%	Yes	35%
Nunavut	N/A	N/A	35%	Yes	35%
NWT	N/A	N/A	35%	Yes	35%
Alberta (post-budget)	N/A	N/A	35%	Yes	35%

Foreign-controlled corporations and other corporations not eligible for CCPC status					
Provinces	Provincial credit rate	Provincial credit refundable?	Federal credit rate	Federal credit refundable?	Combined credit rate
Manitoba	20%	50% refundable	15%	No	27.75%
New Brunswick	15%	Yes	15%	No	27.75%
Newfoundland and Labrador	15%	Yes	15%	No	27.75%
Nova Scotia	15%	Yes	15%	No	27.75%
Yukon	15%	Yes	15%	No	27.75%
Quebec	14%	Yes	15%	No	26.90%
Ontario	8.0% + 3.5%	Yes/No	15%	No	24.54%
Alberta (pre-budget)	10%	Yes	15%	No	23.50%
British Columbia	10%	No	15%	No	23.50%
Saskatchewan	10%	No	15%	No	23.50%
Alberta (post budget)	N/A	N/A	15%	No	15%
Nunavut	N/A	N/A	15%	No	15%
NWT	N/A	N/A	15%	No	15%
Prince Edward Island	N/A	N/A	15%	No	15%

⁹³ The AITC offered a 30% tax credit to investors who provided equity capital to Alberta small businesses doing research, development or commercialization of new technologies, products or processes.

⁹⁴ While PEI does not have offer a provincial SRED program, it does have an Innovation and Development Labour Rebate (IDLR) that mirrors SRED. It offers a refundable labour rebate of 25% on eligible salaries and wages which support the development and/or commercialization of new products, processes, and services to be sold primarily outside the province.

As illustrated in the tables above, the tax credit available to a Quebec entrepreneur is 54.5% compared with 35% available to an Alberta entrepreneur. On a qualifying expenditure of \$1 million, this results in a tax advantage of \$195,000 to the Quebec entrepreneur; enough to hire two or three software engineers. Such a sum may represent twenty or thirty percent of the workforce of that company. It's a game changing differential and one that due to the elimination of the provincial portion of SRED, Alberta-based technology companies are at a serious competitive disadvantage relative to their peers in the rest of Canada.

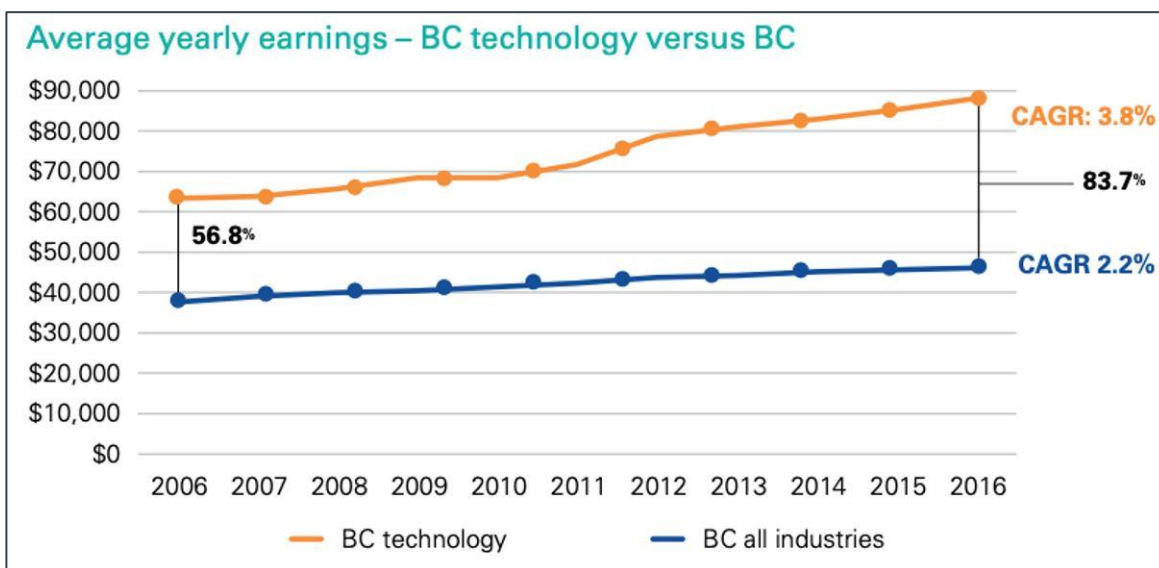
It can reasonably be expected that the result of the SRED decision in the absence of countervailing measures will be a substantial reduction in research and development within Alberta and a longer-term decline in related jobs and economic activity. Anecdotal evidence provided in several submissions to the ICWG indicate that this is already occurring.

For several stakeholders who provided feedback to our working group, the elimination of SRED and other technology incentives has resulted in a loss of:

- competitiveness in terms of innovation;
- investment, as investors were attracted to the incentive programs;
- innovation and R&D;
- jobs, as these programs were used, in part, to employ technical experts;
- tax revenue from employees due to job losses; and
- companies, as they choose to relocate to more competitive jurisdictions or expand operations in provinces that offer assistance.

In the technology sector, the economic benefit of payroll taxes outweigh the corporate income taxes that are collected. The graph on the following page shows that technology jobs pay significantly more than the B.C. industrial average. In 2016, the wage premium grew to 83.7% compared to 56.8%.⁹⁵ The payroll taxes, jobs, personal spending, and real estate transactions create a multiplier effect that could create a shockwave on Alberta's economy.

⁹⁵ KPMG. 2018. *British Columbia Technology Report Card: From Growth the Scale*.



Source: BC Tech Sector 2016, Key Data Points, Sean Languedoc

Alberta has become “a conspicuous outlier” by being the least competitive jurisdiction in Canada.⁹⁶ This loss of competitiveness may ultimately end up benefiting neighbouring provinces. As companies feel forced to leave Alberta to remain competitive, or bypass Alberta altogether in deciding where to locate, Saskatchewan and B.C. may win technology that has been, at least partially, innovated and funded in Alberta. As such, future innovation and employment may be judged to be more beneficially located in those provinces. This will make it more challenging to establish SME-led innovation in Alberta in the future.⁹⁷

The 2019 provincial budget adopted a broad-based tax approach. The Job Creation Tax Cut was implemented to lower the corporate tax rate from 12% to 8% over the next four years. The reduction of corporate income tax has been estimated to create significant economic benefit for the province. However, as discussed in the previous section, early stage and start-up companies are very limited in their ability to leverage this benefit as they focus on reinvesting in their own growth rather than on generating earnings, which incur taxes, for a period that typically spans 5-10 years.

⁹⁶ Stakeholder Submission.

⁹⁷ Stakeholder Submission.

A corporate income tax reduction will not benefit the typical early stage technology business and is not a factor in their decision to locate. As discussed early in the report, start-ups and early stage technology companies are focused on revenue and will nearly always re-invest to focus on growth as opposed to short-term earnings. They look for jurisdictions that have critical mass, availability of capital, support tools and talent.

Ecosystems are more important than corporate tax for tech company location decisions

Companies that will benefit from the reduced tax rate are drawn from a completely different cohort than those in the early stage and start up space. They exist in entirely different tax environments.⁹⁸

Talent

Alberta has a world class post-secondary system, not just with the University of Alberta and the University of Calgary, but with 26 total publicly-funded post-secondary institutions operating in the province. The University of Alberta, in particular, is ranked third globally over the last 20 years when it comes to artificial intelligence and machine learning research, making it a world class institution and producer of talent.⁹⁹

Unfortunately, recent reports suggest that “despite Alberta’s competitive advantage in education, especially with respect to specific sub-sectors such as artificial intelligence, many top graduates leave the province after graduation for more lucrative opportunities with foreign technology companies.”¹⁰⁰ As stated earlier in this report, Alberta is losing its young population faster than the national average. Calgary has seen a 5.5% decline in those aged 20-24.¹⁰¹

Losing graduates from our post-secondary institutions to other jurisdictions should be deeply concerning to Alberta leaders and decision makers. Not only are we not leveraging our collective investment in the post-secondary system, we are also losing (or risk losing) a generation of talented Albertans who see better opportunities to chase their dreams and elsewhere. This speaks to the urgency of our task, creating a vibrant technology ecosystem that will provide opportunities for graduates to remain in Alberta and grow the economy.

⁹⁸ Ibid.

⁹⁹ Deloitte. 2018. *Alberta Technology Competitiveness Report*. Confidential report prepared for Alberta Economic Development, Trade and Tourism.

¹⁰⁰ Ibid.

¹⁰¹ Fletcher, Robert. 2020. “Why Calgary is losing its young adults.” *CBC News*, Feb 3.

(<https://www.cbc.ca/news/canada/calgary/calgary-losing-young-adults-census-data-analysis-1.5444969>)

In addition to this, even with our competitive education system, there are still gaps in the “talent pipeline”. This is where an effective, competitive PNP can play a critical role in attracting international talent.

Alberta’s recently announced Start-Up Visa PNP will help, but it is the strong belief of this Working Group that, on its own, the PNP will have a limited impact on attracting top tech and innovation talent to the province. Alberta should seek to model the B.C. PNP, which has attracted the biggest global technology companies and made technology the biggest contributor to GDP over other sectors, including forestry, fishing and tourism, combined. Even in Victoria, tech employs more people than all levels of government.¹⁰²

Alberta entrepreneurs benefit from business accelerators like the Creative Destruction Lab - Rockies and community drivers like Platform, Innovate Edmonton and Rainforest Alberta. However, the province lacks accelerators compared to jurisdictions it’s competing against, such as Ontario, which boasts one of the best accelerators in the country, Communitech.

ALBERTA SUCCESS STORY – ATTABOTICS

Attabotics, founded in 2015 by Scott Gravelle, is a Calgary-based company providing a robotic warehousing and fulfillment system designed to meet the needs of modern commerce. The company has taken a different perspective on technology; instead of developing technology to speed the human workload, Attabotics is a robotic-centric storage and retrieval system.

Attabotics employs approximately 250 people; a team of roboticists, engineers, technicians, business management and operational staff. It is the automated storage and retrieval system for large US retailer Nordstrom’s strategy for online retail. Attabotics has also contracted with five different customers in two short years including an international wholesale food provider and Canada’s largest retailer.

Attabotics was awarded \$4.5 million from the Opportunity Calgary Investment Fund. The company plans to use these funds to expand its operations in Calgary, hiring 150 more employees and constructing a new production facility at the YYC Global Logistics Park at Calgary International Airport.

In 2019, Attabotics announced that they raised \$25 million in Series B funding from financial and strategic investors. Participants in the round include Coatue, Comcast Ventures, and Honeywell alongside returning early investors Forerunner Ventures and Werklund Growth Fund.

Attabotics is proudly Canadian and proudly Albertan and is often quoted as saying that the support of the Alberta and Canadian governments has helped, and continues to help Attabotics compete in a global multi-billion dollar competitive environment.

¹⁰² Stakeholder Submission.

Strengthening Alberta's Future Prosperity – The Time is Now

Alberta is at a crossroads. There is a burgeoning opportunity for Alberta to lay the groundwork for generations of prosperity. There is unlikely to be a “next Silicon Valley”. But, rather, 30 hubs, distributed across the world. 100 cities are predicted to cross the \$4 billion threshold in ecosystem value. Edmonton and Calgary are projected to be among them.¹⁰³ Make no mistake, there is a global race to capture market share of this fast-growing sector, and Alberta is well-positioned to be among the leaders. In a rapidly evolving industry like technology, however, this can change quickly.

The problems of today are daunting – a global pandemic, balancing the provincial budget, getting our resources to market and putting Albertans back to work. At the same time, Albertans do not want to wake up and see that a technological revolution has passed them by and that we missed an opportunity to be at the forefront. This is how we continue to prosper in addition to the prosperity created by our natural resources. This is how we keep our youth employed in Alberta. This is how we keep the fabric of our province intact. This is how we keep being Alberta – a leader, a winner, and a bold trailblazer – long into the future. **This is our opportunity, and the time is now.**

This path to the future starts with understanding the world through the eyes of those that finance the future – the investors – and what they deem important, to not only attract their capital, but also to enable their Alberta-based investments to grow. For three months, our Working Group spoke to investors around North America. We asked for their feedback. We obtained their data. This formed the backbone of our recommendations. We also talked to entrepreneurs. The small companies fighting to be competitive, to stay relevant. We needed to understand the world from their view. What would it take for Alberta to become a technology hub? How could we become the next Texas – with an abundance of natural resources AND a global innovation centre. Understanding the landscape from the entrepreneur's perspective was fundamental to our approach.

And so we gathered the insights, the feedback, the criticism, and the advice, bringing the information together into themes – what we heard, what we learned – and ultimately, forming recommendations. Our recommendations are rooted in sound analysis, consideration of what works and what doesn't work, and the following key principles outlined below.

¹⁰³ Startup Genome. 2019. *Global Startup Ecosystem Report 2019*.

A barrier currently exists for ecosystems of \$4 billion in value. Though the number of ecosystems around the world is increasing, this \$4 billion threshold in Ecosystem value holds steady. The report argues that once this threshold is broken, it will open the doors for many viable startup ecosystems globally to do the same.

Fiscal Environment

The recommendations of the Innovation Capital Working Group are brought forward with a clear understanding of the Government of Alberta's commitment to balancing the provincial budget and reining in spending to align with revenues. Key principles for our working group are proposing options that leverage current assets to be deployed in different ways and ensuring our recommendations are:

- Not significant new expenses/revenue offsets
- Not administratively burdensome
- Not government picking winners and losers
- Not corporate welfare

Long Term Focus Needed

We also believe that short term fixes will not work. The recommendations must be implemented and left to operate with sufficient time to create stability, certainty and sufficient runway to assess actual performance. Short-termism is fundamentally at odds with what we know about the entrepreneurial process and financial capital decisions needed to unleash our technology entrepreneurs.¹⁰⁴ This will take decades but is worth it.

Guidelines for Developing Entrepreneurial and VC Activity

We subscribe to the 12 guidelines that Josh Lerner, a Harvard Professor, American economist, and author of *Boulevard of Broken Dreams*, identified to enable and nurture the development of entrepreneurial and venture capital activity:¹⁰⁵

1. Remember that entrepreneurial activity does not exist in a vacuum – it is dependent on partners and an ecosystem.
2. Leverage the local academic scientific and research base.
3. Respect the need for conformity to global standards (of the investment community).
4. Let the market provide direction – government should not dictate where investment goes. Use matching public-private funds to determine where public subsidies should go.
5. Resist the temptation to over-engineer.
6. Recognize the long lead times associate with public venture initiatives – “impatience or creating rules that force program participants to focus on short-run returns – is a recipe for failure.”
7. Avoid initiatives that are too large or too small.
8. Understand the importance of global interconnections.
9. Institutionalize careful evaluations of initiatives.
10. Realize that programs need creativity and flexibility
11. Recognize that “agency problems” are universal and take steps to minimize their danger

¹⁰⁴ Lerner, Josh. 2009. *Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed--and What to Do about It*. Princeton, New Jersey: Princeton University Press.

¹⁰⁵ Ibid.

12. Make education an important part of the mixture – about local market potential, educating entrepreneurs, public sector on realities of entrepreneurship

Our recommendations are based on our belief that Alberta can lead as a centre of innovation and technology to create jobs and economic activity, and that the time is now.

Our recommendations are centred on reinvigorating the Alberta's technology ecosystem in 3 key ways:

1. **Vision, Communication and Branding:** Alberta requires a clear brand, aspirational targets and strategic advice flowing into government leaders, and activated in a way that government is walking the talk by creating demand for technology.
2. **Capital:** Availability of early stage and start-up capital is vital to Alberta establishing itself as a centre of innovation and entrepreneurship.
3. **Talent:** The successes of a technology ecosystem are directly related to the ability to attract and retain talented people.

Enhancing Alberta's Competitiveness – Vision, Communication and Branding

Alberta must commit, engage and communicate that the province is “in the game” and THE place for entrepreneurs and those wanting to solve the world’s most difficult challenges. This will require Premier and all of Cabinet to vocally support technology and innovation as a key pillar of Alberta’s future prosperity and part of the economic and social fabric of Alberta. The province requires a clear brand, aspirational targets and strategic advice flowing into government leaders to ensure Alberta develops a robust technology and innovation ecosystem. One way for government to “walk the talk” is by positioning itself as a customer for early stage technology companies. This is a transformative opportunity to use the Government of Alberta’s size, data and buying power to boost Alberta’s economy and create new revenue or cost savings for the province.

What we heard

In order to be competitive for innovation capital, Alberta must communicate a compelling vision and commitment to the technology sector and its central importance to the future of the province. Stakeholders were universal in this view. This vision, backed by strong and consistent public government messages, is especially important for a sector that places premium importance on operating in an environment that is supportive, welcoming and attractive to other technology start-ups.

A strong vision is needed to shift Alberta’s brand in the eyes of technology entrepreneurs and investors. With many technology entrepreneurs unclear about how they fit into the future economic mix for Alberta, these companies expressed to our Working Group the desire for the Government of Alberta to publicly support the sector and its importance as a key part of Alberta’s future prosperity. Alberta politicians speaking about the successful companies that were started here and Alberta’s desire to see more started and scaled in Alberta – while a seemingly modest gesture – would resonate loudly with the technology sector.

Improved vision, communication and branding is needed to unify the multiple and fragmented technology groups in the province. Alberta needs better coordination of its resources to be competitive. It needs something that companies and investors can rally around and work together for — to build one great brand for Alberta. Alberta is small and needs to compete globally and within Canada.

Making young technology entrepreneurs excited about building their businesses in Alberta and contributing to an ecosystem that other start-ups outside Alberta want to be a part of will also require Alberta to build on its existing strengths and strengthen its brand. Our Working Group heard that, as it currently stands, technology entrepreneurs are being advised to build their business in other, more technology-friendly locations. This holds tremendous risk for a province that is serious about retaining its youth, keeping families

intact and preserving the social fabric in Alberta. A compelling vision is the best thing we can do to retain our talent, to show them that this is a place where they can be entrepreneurial and succeed.

One factor creating discouragement is the struggle for Alberta entrepreneurs to get an early customer from the local economy. Many entrepreneurs indicated that it is virtually impossible to sell to government. They also indicated that it is also hard to sell to Alberta corporations. In speaking with purchasers, it was evident that there is a perception that start-up Alberta technology companies are not deemed capable of delivering large scale enterprise solutions and therefore they are unwilling to take the risk in being early customers. We have observed the Government of Alberta exercising foresight in this area. Service Alberta, whose mandate includes providing all technology services to government, shared with us a vision of leveraging Alberta entrepreneurs to solve government problems that are ripe for disruption. This vision, which would solve government problems, provide customers to Alberta entrepreneurs, and create attractive returns for investors, is a strong proposition for the technology sector in Alberta.

Another way government can put this vision into action is by monetizing Alberta's world class data sets. This is a substantial intangible asset on Alberta's balance sheet that could generate new revenue streams for Albertans. Protected by licensing and royalty models, existing data sets could be a significant opportunity for the province.

Alberta will continue to be a natural resource economy. But, it can be more than that. This is an opportunity for the Government of Alberta to demonstrate that there is tremendous opportunity to build on traditional sectors; that Alberta can build a thriving technology ecosystem for, and in addition to, its traditional economic sectors. The creation of a diverse and expanded economy, where Alberta can be a top energy producer in the world **and** a globally competitive centre of innovation and technology entrepreneurs is within reach.

What we learned

The research and data we studied confirms that Alberta needs a unifying vision and an improved brand to attract innovation capital to its technology sector. In their work assessing Alberta's technology competitiveness, Deloitte surveyed/interviewed 80 stakeholders. They found that many held the view that Alberta is reluctant to invest in branding and promotion at a scale that would change global perceptions. The lack of a unified effort to promote Alberta, its sub-sectors and its success stories enforces the perception that Alberta has not had success in the technology sector and is not welcoming to technology companies.¹⁰⁶

¹⁰⁶ Deloitte. 2018. *Alberta Technology Competitiveness Report*. Confidential report prepared for Alberta Economic Development, Trade and Tourism.

The findings also indicate that “Alberta needs large-scale success stories to provide world class work experience to future founders, create wealth within the ecosystem, and attract the attention of foreign investment and talent. Alberta therefore needs policies that accelerate the commercialization and scale up of local technology startups and attract more established growth-stage technology companies to the province.”¹⁰⁷

Startup Genome’s 2018 Report ascertains that the branding of Alberta may not be targeted enough to highlight the province’s leadership in specific sub-sectors and that smaller ecosystems often need to focus on sub-sectors to be globally competitive.¹⁰⁸

Research by Calgary Economic Development confirms that the views of Canadian workers in major centres across the country have diminished in terms of Calgary’s image as a place of innovation, dropping from 68% agreeing Calgary is an innovative centre in 2017, to 59% in the fall of 2019.¹⁰⁹

We also learned that the aspiration of utilizing Alberta entrepreneurs to help solve government’s biggest problems is not without precedent. In 2011, the Government of Canada appointed the Independent Panel on Federal Support to Research and Development. Of the six recommendations made by the “Jenkins Report,” one was specific to “government as a customer.” The panel recommended that the federal government “make business innovation one of the core objectives of procurement.”¹¹⁰

¹⁰⁷ Ibid.

¹⁰⁸ Ibid.

¹⁰⁹ 2019 External Perceptions Fall Pulse Check 2019, Calgary Economic Development

¹¹⁰ Jenkins, Tom, Bev Dahlby, Arvind Gupta, Monique Leroux, David Naylor, and Nobina Robinson. 2011. *Innovation Canada: A Call to Action. Review of Federal Support to Research and Development – Expert Panel Report.*

Recommendations

Recommendation 1: Establish the Premier’s Advisory Panel on Technology and Innovation

Description: Establish a permanent Premier’s Panel to provide strategy, stewardship, guidance, and advice to ensure Alberta develops a competitive, robust innovation ecosystem. Comprised of a diverse group of technology and innovation leaders, the Panel’s objective is to help shape a vision for technology and innovation in the province, develop policy priorities and focal areas and to advise on the health of the ecosystem. Ideally, the Premier should participate on the Panel. The Panel will be responsible for developing the visionary brand that is discussed in the next recommendation.

Why It Works: Regularly engages experienced entrepreneurs in informing government policy, investment and activity in the technology space. Provides sound and rational advice for Premier and Cabinet.

Investment: \$250,000/year for operations support

Timing: Immediate

Recommendation 2: Develop and communicate a visionary brand and narrative for innovation and technology in Alberta

Description: The Panel will work with Premier and senior ministers to develop a visionary brand and narrative for Alberta, and to actively engage and positively communicate technology and innovation as a key pillar of Alberta future prosperity and part of the economic and social fabric of Alberta. Clear communication that Alberta is “in the game and open for business” is critical, as is the pledge to have a **long-term** vision. Brand and vision for technology and innovation should create a similar impact as Travel Alberta has for tourism.

Why it Works: Entrepreneurs are highly sensitive to the tone and environment in which they operate. A clear, compelling and inspiring vision for innovation and technology for Alberta, articulated from the highest roles in government, will shift the perceptions and beliefs in Alberta as a place to launch and grow a technology company. It creates goodwill among technology entrepreneurs who are feeling unwanted, as well as a sense of place and inclusivity for young Albertans wanting to be in the technology sector. It enables our graduates and young people to see their future in Alberta, strengthening the social fabric of the province.

Investment: Minimal

Timing: Immediate

Recommendation 3: Adopt and communicate targets for innovation and technology

Description: Government of Alberta should adopt the A100 targets for technology companies, capital, and jobs – 2,000 core technology companies, \$2.7 billion of capital invested and 100,000 tech jobs by 2030 – and report regularly on progress. As part of this, the Alberta government would establish and fund data collection protocol through Alberta Innovates and/or local innovation support organizations.

Why It Works: Adoption and commitment to targets forces action – what gets measured gets done. These targets have been established by a credible and influential group of entrepreneurs in Alberta.

Investment: Minimal

Timing: Immediate

Recommendation 4: Create a single voice and ecosystem for the technology sector in Alberta and an innovation corridor to streamline multiple technology groups

Description: Eliminate overlap and fragmentation by streamlining multiple technology groups in the province to create designated entities to achieve alignment, cohesion and efficiency. This, in turn, will increase the impact and effectiveness of the sector and its diverse organizations. This streamlining should emphasize the corridor feature of Alberta from Edmonton to Calgary down to Southern Alberta. A similar model exists in Ontario with the MaRS Discovery District and Communitech as the lead entities for Toronto and Waterloo respectively. This recommendation would build off the good work that organizations like Platform Calgary and Innovate Edmonton have done in their own communities.

One initiative that has helped other jurisdictions, including Atlantic Canada, achieve cohesive and high performing technology ecosystems is the MIT Entrepreneurship Acceleration Program (REAP). Participants include a team of 5-8 leaders from five key stakeholder groups, including government, risk capital, universities, entrepreneurs and corporates. Former participants emphasized the underlying importance of strong jurisdictional leadership and a commitment from each of the five stakeholder groups.

Why It Works: United and consolidated approach to technology ecosystem development and policy enables more consistent and aligned recommendations to government and an increased ability to focus limited resources.

Investment: Approximately \$100,000/year (and maintain funding of key organizations)

Timing: Immediate

Recommendation 5: Implement the Government as Customer Initiative

Description: By creating procurement opportunities for Alberta technology entrepreneurs, the Government of Alberta can move from words to deeds in unleashing the potential of its early stage technology companies. Overseen by Service Alberta, the Government as Customer initiative is about enabling technology entrepreneurs to create companies around solutions to government challenges. By providing a small grant to enable proof-of-concept, Alberta based companies have an opportunity to generate that illusive first customer in the Alberta Government, and then to leverage that experience and sell to other governments. This option creates opportunities for broader-based Alberta supplier preferences within Government of Alberta procurement.

Why it Works: Facilitates the most prized outcome for any technology start-up: revenue. Enables Alberta companies to build a first customer and use that experience to grow a deeper revenue stream. Enables a reduction in long-term expense profile of Government of Alberta by finding innovative solutions to increase productivity and reduce costs.

Investment: Minimal

Timing: Fall 2020

Recommendation 6: Unleashing value from Alberta data

Description: This recommendation involves the creation of a “data sandbox” that enables entrepreneurs to access Alberta data (health, energy, agriculture etc.) in a way that can create solutions to improve Alberta social and economic performance. This would be created under a licensed agreement that is bound by ethical and privacy regulations. It would produce a new revenue stream associated with accessing data. Consideration would be given for income stream/royalties associated with income generated from the business opportunity created from the data set.

Why It Works: Can create business opportunities by accessing world class data sets. Generate revenue stream for Albertans via appropriate licensing and royalty model. Improve the health, wellness and economic opportunities for Albertans.

Investment: Minimal

Timing: Fall 2020

Enhancing Alberta's Competitiveness – Capital

Availability of early stage and start-up capital is vital to Alberta establishing itself as a place of innovation and entrepreneurship. Alberta is unique in having a balance sheet that we can leverage with private capital and a substantial capital pool, which was established for just such an instance as this. Alberta established the HSTF in 1976 to collect a portion of Alberta's non-renewable resource revenue for future generations. It set three objectives: to save for the future, to strengthen or diversify the economy, and to improve the quality of life of Albertans.¹¹¹ The Alberta Investment Management Corporation (AIMCo) invests the fund in a globally diversified portfolio and income produced by it supports government programs essential to Albertans like health care, education and infrastructure. Alberta is the only province to have such a long-term savings fund. As of December 31, 2019, net assets of the HSTF were valued at \$18 billion.¹¹²

Several options exist to leverage Alberta's balance sheet and make funds available to early stage, start-up and scale up companies via a number of made-in-Alberta fund approaches that will create diversification for our economy and generate a return for Albertans. Recommendations include increasing the capital available to Alberta Enterprise Corporation (AEC), as well as the creation of new funds that can co-invest with private capital, which will result in one of Canada's largest pools of public-private-capital pools. Investment is needed now to incent entrepreneurs to locate their businesses in Alberta and to capitalize on the expected growth that will provide tremendous benefits to Albertans over the long term.

What we heard

Alberta entrepreneurs have a difficult time accessing capital to start and grow their businesses in Alberta. The elimination of the provincial portion of SRED and that of AITC and IDMTC drew a strong negative reaction from the companies and investors with whom we spoke. Many feel it compels them to consider relocation or considering alternate locations for expansion. Most stakeholders the Working Group engaged with wanted a reinstatement of AITC and SRED as a means of facilitating investment in early stage technology companies in Alberta. In the case of AITC, there was an acknowledgement of its drawbacks but also a strong sentiment that it did not have sufficient runway to show its full potential.

Our Working Group found that an educational gap exists with many entrepreneurs. We heard that many entrepreneurs do not know how, or where, to access capital after they have financed their early growth with personal debt and funds raised from friends and

¹¹¹ Government of Alberta. 2020. "Alberta Heritage Savings Trust Fund Historical Timeline." (<https://open.alberta.ca/publications/alberta-heritage-savings-trust-fund-historical-timeline>)

¹¹² Government of Alberta. 2020. *Alberta Heritage Savings Trust Fund: 2019 – 20 Third Quarter*. (<https://www.alberta.ca/heritage-savings-trust-fund.aspx>)

family. Many felt that the pools of capital were limited in Alberta while some investors indicated a lack of good investments were to be found. Greater public information and awareness is needed in Alberta pertaining to how to raise capital and how to prepare a company pitch for investment. This gap could be addressed, in some ways, through an improved ecosystem in the province.

What we learned

Venture Capital Funding

Given that economic growth is driven by entrepreneurs and innovation, VC markets boost this growth by funding innovators.¹¹³ VC markets bring several benefits to the economy and are, therefore, in the government's interest. Simply allowing them to emerge organically, however, may not be enough. VC activities create an inherent virtuous cycle whereby industry becomes a self-sustaining ecosystem once a critical level of activities has been established. This may require some initial help getting off the ground.¹¹⁴ Research and innovation, promoted through VC activities, also have positive spillover effects on the economy. The benefits VC markets have on the economy warrant government consideration. Governments have an opportunity to shape the institutional environments that allow VC markets to thrive, particularly through key institutions such as the legal environment and financial market development.¹¹⁵

Josh Lerner, Harvard professor, economist and researcher in the field of early stage venture capital has found two key themes that our Working Group has incorporated into our recommendations. The first is in using public funds in ways that follow the investment of private dollars. This avoids the “government picking winners and losers” scenario and works to build off more experienced and sophisticated investors. In *Boulevard of Broken Dreams*, economist Josh Lerner says, “Programs are more successful if the entrepreneurs or VCs receiving funds have to raise matching capital from private sector sources, as well. In this way, the market can help to sort out which players are likely to succeed, and who will probably be ineffective.”¹¹⁶

Overall, Alberta's VC market is significantly lagging behind leading Canadian jurisdictions. The Canadian VC and Private Equity Association found in a 2019 report that Alberta captured just over three percent of all VC investments made across Canada in 2019.

¹¹³ Lerner, Josh and Joachim Tag. 2013. “Institutions and venture capital.” *Industrial and Corporate Change* 22(1): 153–182.

¹¹⁴ Ibid.

¹¹⁵ Ibid.

¹¹⁶ Lerner, Josh. 2009. *Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed—and What to Do about It*. Princeton, New Jersey: Princeton University Press. pp.135-136.

In analyzing the Government of Alberta's current state, strengths and weaknesses, one asset in particular we have been impressed with is the Alberta Enterprise Corporation (AEC). The AEC is a crown corporation that operates a fund-of-funds to grow Alberta's venture capital industry, which in turn supports businesses in the technology sector. In our estimation, AEC is fulfilling its mandate of growing the technology sector by supporting the development of VC funds in Alberta. We view AEC as part of the solution to increasing innovation capital in Alberta, evidenced by their strong track record and strong endorsement within the Alberta tech and VC stakeholders.

As of 2019, \$183 million in AEC investments in 17 venture funds that contribute to our economy and, most importantly, provide the essential capital Alberta companies needed to successfully bring their ideas and products to market. With strategic investments, AEC has created a 9:1 leverage ratio, creating access to over \$1.7 billion. AEC's VCs and their partners have invested over \$494 million in 42 Alberta technology companies.¹¹⁷ These 42 companies have created more than 1,400 direct jobs and an estimated 1,800 indirect jobs in Alberta. Every \$1 invested by AEC has resulted in more than \$4 of investments back into Alberta companies. Their performance is such that the Government of Alberta has realized a net gain on its funds invested, even after accounting for operating expenses. Every \$1 invested by Alberta Enterprise is currently worth \$1.17, a value that will increase even further as funds mature.

The second insight of Lerner's that the Working Group adopted was that of using more back end incentives rather than front end incentives. His research shows that the effectiveness of front-end tax incentives is limited and that governments should look to create incentives that are realized at the back-end, or after an exit.

According to Lerner, "One of the powerful features of the venture capital process is the alignment of incentives. No one – whether limited partner, venture capitalist or entrepreneur – gets substantial gains until the company is sold or goes public. Substantial tax incentives at the time of the investment can distort this alignment of incentives."¹¹⁸

Capital Gains Tax

Extensive research has been done on how capital gains tax reform can create a competitive advantage for investment dollars. A capital gain is a rise in the value of an investment that gives it a higher worth than the purchase price.¹¹⁹ Income taxes are applied

¹¹⁷ Alberta Enterprise Corporation. 2019. *Strength + Number5: Ten Years of Investment in Alberta – Annual Report 2018-19*. (<https://www.alberta-enterprise.ca/wp-content/uploads/2019/06/alberta-enterprise-corporation-annual-report-2018-2019.pdf>)

¹¹⁸ Lerner, Josh. 2009. *Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed--and What to Do about It*. Princeton, New Jersey: Princeton University Press. Chapter 9.

¹¹⁹ Chen, James. 2019. "Capital gain." *Investopedia*, July 30. (<https://www.investopedia.com/terms/c/capitalgain.asp>)

to a portion of a capital gain when it is sold. While the capital gains tax is a federal tax, there is a way to exempt capital gains income from provincial income taxes. By eliminating provincial capital gain taxes, Alberta could give itself the distinct advantage as the only Canadian province that does not tax capital gains. Eliminating capital gains taxes from provincial income tax in Alberta would send a powerful signal to would-be entrepreneurs, investors, and business owners that the province is intent on establishing itself as a place for entrepreneurs to grow their business.¹²⁰ This is a finding also supported by economic think tanks such as the Fraser Institute, the Montreal Economic Institute and the School of Public Policy at the University of Calgary.

Capital gains taxes are collected under Tax Collection Agreements by the federal government on behalf of the provinces, so it is not practical for one province to change its tax rate or its inclusion rate unilaterally. On the other hand, it is possible for a province to implement this concept by way of a tax credit, which would provide the taxpayer with tax relief of similar value. This would be calculated as part of the provincial income tax return by Alberta-domiciled investors in Canadian Controlled Private Corporations that experience a capital gain.

¹²⁰ Eisen, Ben, Jason Clemens, and Niels Veldhuis. 2019. *Alberta Prosperity: A Plan for Opportunity and Growth*. Fraser Institute. (<https://www.fraserinstitute.org/studies/alberta-prosperity-a-plan-for-opportunity-and-growth>)

Recommendations

Recommendation 1: Increase capital available to Alberta Enterprise Corporation

Description: Allocate approximately 2.5% of the HSTF (est. \$450 million), or other means to ensure long-term investment ability, to AEC to be invested in accordance with its established fund-of-funds approach, with a minimum of 20% of new funds to be allocated for early-stage co-investing dedicated to Alberta.

Why it Works: Using proven and established vehicle to increase capital available to Alberta companies. Creates additional job opportunities in Alberta capital markets and financial services sector.

Investment: \$100 million in 2020; \$150 million in 2021; \$200 million in 2022.

Timing: Immediate

Recommendation 2: Create Alberta Venture Capital Investment Fund (AVCI)

Description: Allocate approximately 1.25% (est. \$200 million) of the Alberta HSTF, or other means to ensure long-term investment ability, and establish the AVCI Fund. The AVCI should ideally be started and operated on a Government Backed Enterprise (GBE) basis. AVCI would operate as a public-private co-investment approach with government providing a portion of funds to a private sector led and managed fund. AVCI would incorporate preferential return hurdles for the private sector and/or preferential return payouts as done by the federal Venture Capital Catalyst Initiative. AVCI could create multiple funds with different investment focus areas. The fund is evergreen – having a long-term horizon and free to re-invest its financial returns.

Why It Works: AVCI is for inexperienced tech individual investors diversifying their portfolio into technology who want funds managed by a seasoned and experienced technology investor. This will result in private capital, which is currently on the sidelines being deployed into the Alberta technology sector. This also creates the opportunity for federal government participation. Government participation de-risks the private investment making it more attractive to increase the availability of capital. This is a market-based solution. The government is not picking winners and losers, and this fund has no government administrative burden.

Investment: \$50 million in 2020; \$50 million in 2021; \$100 million in 2022

Timing: Immediate

Recommendation 3: Create a tax credit to offset Alberta capital gains taxes

Description: Changes to capital gains taxes would require changes to federal government tax legislation and agreements. However, Alberta could introduce a tax credit to provide taxpayers with tax relief of similar value. This would be calculated as part of the provincial income tax return by Alberta-based investors in Canadian Controlled Private Corporations that experience a capital gain.

Why it Works: Extensive research by Fraser Institute, Montreal Economic Institute and the University of Calgary's School of Public Policy indicate that elimination of capital gains taxes could assist in increasing capital available for innovation companies and attracting entrepreneurs to Alberta. This tax mechanism would have a similar outcome. This would be a unique and made-in-Alberta solution.

Investment: Estimate to be provided by Ministry of Treasury Board and Finance

Timing: 2021/22

Recommendation 4: Re-instate the Alberta portion of the SRED tax credit

Description: Implement Alberta SRED program with same eligibility as federal SRED but with a cap on recipient size. A maximum revenue threshold between \$15 million and \$25 million is recommended.

Why it Works: Alberta participation in SRED is a critical table stakes investment. Research indicates that return on investment for SRED is high when accounting for indirect and spin-off impacts including the personal income taxes generated as result of incremental employment created by the tax credit.

Investment: Estimate to be provided by Ministry of Treasury Board and Finance

Timing: Immediate

ANALYSIS: FLOW THROUGH SHARES AS A FUNDING OPTION

The Innovation Capital Working Group (ICWG) was specifically charged in its mandate to consider the implementation of Flow-Through Shares (“FTS”) as a potential funding mechanism in promoting capital formation for start-up and early-stage technology companies. Although not limited to any one industry sector or policy option, the Minister requested that:

“The Committee will review and provide advice to the Minister on how a flow-through program for individual investors could be designed, developed and implemented. Further, the Committee would provide advice as to whether a flow-through policy could be designed to provide targeted support to certain industry sectors (for example, but not limited to, clean-tech, renewable energy, emissions reduction technologies, orphan well remediation, and the commercialization of artificial intelligence). Also, the Committee will provide advice on how the Federal Government could be engaged in the development and implementation of a flow-through program.”

The Committee has reviewed the concept in some detail, has received submissions from several experts on the matter and has concluded, for various reasons, that it is not a practical consideration for the Government of Alberta at the present time.

Overview of Flow Through Shares

The Canadian FTS regime is a uniquely “made in Canada” tax-based financing incentive that was introduced in 1958. Generally, expenses incurred by a corporation can only be deducted by that corporation and cannot be deducted by its shareholders. The Federal FTS Regime provides an exception to this general rule as it permits certain expenses incurred by the corporation to be transferred or “renounced” so that they can be deducted directly by a shareholder of the corporation. This provides an incentive for individual investors who can use the deductions to reduce their personal income and taxes.

This exception was intended to encourage more oil, gas, and mining exploration activities and to encourage economic growth and Canadian energy self-reliance. The results have been exceptional; over the last 30 years, FTS have been instrumental in enabling resource companies to raise billions of dollars of financing for their exploration and development activities, which they may not have otherwise been able to do given the high degree of risk and long term life cycle associated with such activities before any revenue would be earned. In part due to this innovative tax strategy, Canada has become a global leader in the resource sector.

The FTS rules were originally introduced only for oil and gas companies, but the regime was subsequently extended to include mining companies. In 1996, the FTS rules were further extended to include renewable energy companies such as those involved with wind, hydro and solar projects. There is some speculation that the rules may soon change to

include some categories of “clean-tech”.¹²¹ There is also a compelling argument that early stage, innovative technology companies are not much different than resource companies in terms of being higher risk and generally having longer-term development horizons before revenues and earnings are realized.

Potential benefits of introducing a “made-in-Alberta” FTS regime include the familiarity that the concept is well understood by the investment community, that it could be done with much less bureaucratic oversight than the former Alberta Investment Tax Credit (AITC) and that it would provide Alberta with a genuine point of competitive differentiation relative to the other Canadian provinces. Furthermore, it was expected it could be done without the participation of the federal government of Canada, which to date has shown no interest in participating in such a program.

Conclusions of the Committee

The ICWG has considered the evidence available to it and concluded that a FTS would not be an effective catalyst to stimulate capital formation in the technology sector for the following reasons:

FTS investors receive tax benefits equal to their marginal tax rate; this can exceed 53% in many Canadian provinces and reaches 48% in Alberta. In the absence of federal participation, the tax benefit is reduced to the provincial component only, which is 15% for an Alberta taxpayer.

The provincial rate of 15% is exactly half of the benefit that was provided by the recently cancelled AITC program. The differential might be surmountable if the number of participating companies was much larger than for AITC, if the application process was meaningfully simpler and if all the expenditures incurred by these companies were considered eligible. Unfortunately, while the first two points are likely achievable, the third is problematic. Direct research and development expenses may typically represent perhaps 20- 40% of the total expenditures incurred by a technology start-up, which, if applied in the manner of SRED, would reduce the value of the renunciation proportionately, (i.e. the tax benefit would be reduced to between 3% and 6%). In order to provide enough incentive to attract participation, companies would need to be able to renounce expenses incurred on non-technical endeavors such as marketing, business development and administration. Doing so however, would potentially invite abuse as these types of expenditures are incurred by all corporations.

To the extent that a company that qualifies for federal SRED tax credits has expenditures covered in a renounceable manner, those expenditures would no longer be eligible for federal SRED tax credits. In other words, the flow through mechanism would decrease the SRED benefit for the companies that it is intended to support.

Under the Tax Collection Agreement in place between the Government of Canada and the Government of Alberta, Alberta has agreed to utilize a common definition of “taxable

¹²¹ “Clean-tech” is broadly defined as any process, product or service that reduces negative environmental impacts through significant energy efficiency improvements, the sustainable use of resources or environmental protection activities.

income”. Introducing flow-through shares would result in a deviation from “taxable income” as calculated under the federal Income Tax Act and would conflict with Alberta’s commitments under the Tax Collection Agreement. Deviation from this definition would require changes to the Tax Collection Agreement, which would be time consuming and potentially difficult to achieve or potentially require the termination of the Tax Collection Agreement. This challenge was identified by the Ministry of Treasury Board and Finance and confirmed by the Ministry of Justice and Solicitor General. The problem is exclusive to individual investors rather than corporate investors; however, it is the view of the Committee that a FTS regime available only to Alberta-incorporated businesses would be inadequate.

In sum, it is the view of the Committee that while the FTS regime has been extremely effective in helping to build world-class mining and energy sectors in Canada, an Alberta-only approach to FTS in the technology sphere faces too many difficult hurdles and lacks sufficient financial incentive to provide an effective path for implementation at this time.

Enhancing Alberta's Competitiveness – Talent

The success of a technology ecosystem is directly related to the ability to attract and retain talented people. Introducing an Alberta Tech PNP will position Alberta to bring top talent into the province in areas in most critical immediate need. Working with post-secondary educational institutions and enabling greater output of technology and innovation graduates is key, as is ensuring that Alberta creates the right conditions to support important tactics such as work-integrated learning and micro-credentialing.

What we heard

People are the number one input in tech supply chains. Talent is a critical ingredient for a healthy, thriving technology sector. Investors are drawn to markets that are successful in attracting new talent, growing their own and cultivating technology hubs and labour pools where entrepreneurs are supported in developing themselves and their companies together with like-minded people.

While Alberta has a world-class education system headlined by a deep roster of universities, colleges and polytechnics,¹²² it is challenged to retain its home-grown talent. The investors and companies we spoke with were concerned about the rate at which young Albertans are leaving the province. This has a direct impact on the province's ability to build a cluster, a hub, an ecosystem that has proven to be a magnet for investment and foreign talent in other locations, such as Vancouver, Toronto, Waterloo and even Halifax.

Stakeholders we met with disclosed that Alberta start-ups in their network are considering re-locating to jurisdictions with better and more competitive funding and supports. This migration of talent away from Alberta cities will see a reciprocal – if not greater – movement of financial capital, which is also mobile and goes where the talent goes.

We also heard from stakeholders that a need of Alberta's technology ecosystem is a major hub to work with start-up communities, provide mentorship and coaching, and support Alberta technology entrepreneurs in executing their business models.

What we learned

We were encouraged to learn about Alberta's new Start-Up Visa PNP Stream and believe it is a step in the right direction and a positive signal to the marketplace about the province's desire to attract top talent to Alberta.

This was especially important as, previous to the announcement, Alberta was the only province in Canada without a technology-focused PNP immigration program. However, the

¹²² Deloitte. 2018. *Alberta Technology Competitiveness Report*. Confidential report prepared for Alberta Economic Development, Trade and Tourism.

announced program is very limited in scope and not expected to have much impact on the technology and innovation talent needs due to design constraints.

The challenge for Alberta will be complimenting its Startup Visa Stream to give it a competitive advantage over other provinces in attracting and retaining talent. In the absence of any vehicles to reduce risk for angel investment or research tax credits like SRED, it is unreasonable to expect angel investors to risk capital on technology entrepreneurs with little or no business experience in North America. As well, because there is a competitive marketplace for talent, it will be challenging for Alberta to attract qualifying nominees when other provinces have more incentives in place for both entrepreneurs and investors.

It is our belief that Alberta should use its new Startup Visa Stream as a building block for a broader, more expansive approach to attract top talent to Alberta, build a technology hub where graduates will want to stay and build their businesses, and where investors will see tremendous potential in funding new start-up companies.

We have also reviewed research on business accelerators as a foundational element to support start-ups. Accelerators take many forms but generally include a shared physical space that provides new businesses with opportunities to access opportunities, mentoring and other support services. One of the major strengths of an accelerator is their ability to connect multiple community levels together (for example: university scholars, business professionals; investors and government officials). A literature review of business accelerators deemed that:

- Accelerators are a vital support to start-ups
- They provide support that start-ups would not receive from other places
- Different accelerators offer different environments to start-ups (i.e. the acceleration effect is not uniform among accelerators)
- They offer unique resources to start-ups¹²³

Recommendations

Recommendation 1: Encourage post-secondary institutions to expand program development in areas of technology, and broaden the reach of entrepreneurial thinking in programs more generally.

Description: This would target academic programs of high demand for the innovation economy, such as computer science, software engineering, and coding. In addition it leads to increasing integration across a wide range of programs in order to “connect” more students to innovation and technology. For instance, this could lead to programs bridging knowledge, between business and computer science, the social sciences and the STEM

¹²³ Richter, Nancy, Paul Jackson, and Thomas Schildhauer (eds). 2015. *Entrepreneurial Innovation and Leadership: Preparing for a Digital Future*. Cham, Switzerland: Palgrave MacMillan.

fields¹²⁴. Funding to increase work-integrated learning opportunities is another important consideration. This would support re-skilling and re-training programs to assist those with career transition into technology related occupations. The Hunter Hub for Entrepreneurial Thinking at the University of Calgary is one good example of current efforts in Alberta to broaden entrepreneurial thinking at post-secondary institutions.

Why It Works: Alberta post-secondary institutions would have the ability to increase graduates in technology fields. These graduates bolster Alberta technology ecosystem, as they bring new ideas and new initiatives/companies to add value to Alberta's economy. It also provides students in other disciplines more opportunities to learn about and use technology, further preparing them for the future of their chosen professions and fields.

Investment: Minimal

Timing: Immediate

Recommendation 2: Create Alberta Technology Provincial Nominee Program

Description: Modeled after the B.C. program, implement a technology nominee program that enables tech companies to bring experienced foreign talent to Alberta to work in approved technology related occupations. Employers would need to assure a minimum of one-year contract to access the PNP. The PNP should enable translation of nominee to permanent resident status. A new wage level requirement under Alberta's PNP should also be considered to ensure it is competitive. Currently, wage levels under Alberta's PNP are higher than provinces such as Ontario and B.C. This is a disincentive for technology companies to locate here because it is more costly for them to pay wages for talent sourced from other jurisdictions.

Why It Works: Alberta is currently the only province without a PNP for technology workers. This program will fill a gap in the ability to hire experienced talent for technology companies in Alberta. Numerous Alberta companies cannot fill certain job vacancies because Alberta talent pool does not exist. This program will enable growth of these companies in Alberta versus growing in other locations. This is aligned in spirit and focus with newly announced Start-Up Visa Provincial Nominee Program from the Government of Alberta.

Investment: Ministry of Labour and Immigration to provide cost estimate and analysis of whether outcome could be achieved through existing programming.

Timing: Immediate

¹²⁴ STEM fields refer to academic disciplines in science, technology, engineering and mathematics.

Recommendation 3: Determine feasibility of creating a new business accelerator as a foundational element of Alberta’s Innovation Corridor.

Description: Business accelerators are important components in technology ecosystems. Many of the locations that Alberta is competing with for financial capital and talent have prominent accelerators in their jurisdiction, such as Communitech in Waterloo and MaRS in Toronto. Our working group was unable to study business accelerators in significant depth, but based on the strong desire and feedback we heard in our consultations, a deeper dive and exploration about a more formalized accelerator in the province is warranted.

Why It Works: Accelerators bring together the many actors of a technology ecosystem into a single hub, which fosters collaboration and a culture of entrepreneurship. They function as connectors, linking companies with access to capital, mentorship and support. As we have discussed earlier in the report, entrepreneurs and technology companies seek out locations with a strong ecosystem and thriving entrepreneurial culture. A prominent accelerator would be a key way to retain, develop and attract talent to Alberta.

Investment: Minimal

Timing: Immediate

Recommendation 4: Increase funding of internship opportunities for graduate students and postdoctoral fellows.

Description: Mitacs is a nonprofit funded by the federal and provincial governments, academic institutions and research partners. Its core business is a research internship program that connects highly educated graduates to private sector companies. Alberta currently invests in the Mitacs program at \$250,000 a year, compared to BC (\$5 million); Ontario (\$5.5 million) and Quebec (\$12 million). An initial investment of \$5.1 million by the Government of Alberta can be leveraged for a total investment of \$22 million (through additional investments from private industry and non-profit partners) that would support 1,200 internships in Alberta.

Why it works: Through the Mitacs program, Alberta businesses obtain a highly educated, highly skilled intern for a competitive salary that is shared by program partners. For early stage technology companies with constrained operating budgets, this program would be highly valued as a way to acquire top talent at a price-point they can absorb.

Investment: \$5.1 million

Timing: 2021/22

Conclusions

Alberta is facing adversity like it hasn't seen for decades. A global health crisis, plummeting oil prices and landlocked resources are all threatening our economy, companies, and most importantly, Alberta families and their futures. It will take boldness, creativity and innovative thinking to lead the province out of the current situation.

However, the seeds of something great are often borne in the face of hardship. There is opportunity here for Alberta, even in this challenging time. If there was ever a time to start a new chapter in Alberta, one that builds and strengthens our current economic base, that time is now.

We believe that the technology sector can be a cornerstone of Alberta's economic recovery efforts. Even now, the companies on the frontlines of COVID-19 are life sciences companies using technology and innovation to find a vaccine. We are able to maintain social distance and stay healthy by working from home because technology companies developed the software and technology to allow us to do so.

We have nearly all the building blocks already in place. With a few meaningful policy shifts and strategic investments, Alberta could grow a technology ecosystem that will diversify and fortify the province well into the future.

This won't happen overnight. It took Texas 30 years to become one of the world's largest technology ecosystems. Austin was at the centre of this technology movement. It was a city of about 100,000 people that was in an economic downturn in 1989. Then the city's leaders rallied around the idea of becoming a tech-oriented start-up community and the Austin Technology Incubator was built, creating part of the bedrock of the city's technology ecosystem.¹²⁵

There are no shortcuts to becoming the next Austin, but there is urgency to start now. We are at a specific point in time where the market has a clear need, and Alberta is uniquely positioned to meet it. Technology entrepreneurs need new location options, affordable commercial space, reasonable housing costs and competitive incomes. Overheated traditional innovation hubs can no longer meet these demands.

These market forces will create a new wave of technology hubs, and Alberta must act now to be one of them.

¹²⁵ University of Texas. 2019. "The History of Texas' Startup Ecosystem." *UT News*, June 12. (<https://news.utexas.edu/2019/06/12/the-history-of-texas-startup-ecosystem/>)