

The background features a grid of hexagonal icons containing symbols like a laptop, a person, a location pin, a bar chart, and a group of people. Overlaid on this are snippets of assembly code in various colors (red, green, white) on a blue background. The code includes instructions like 'ADD', 'SI=0000', 'DI=0000', 'NU UP PL NZ NA', 'DS=0000-W', '#define ASM_VMX_VMREAD_RDX_RAX', 'static __always_inline unsigned long vmcs_read1(unsigned int vmcsid)', 'asm volatile (__ex_clear(ASM_VMX_VMREAD_RDX_RAX', ': "=r"(value) : "d"(vmcsid) : 0', and 'return value;'.

GROWING TECH, CREATING JOBS

February 22, 2021

Alberta's
NDP Caucus

Alberta's
FUTURE.ca

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Message from NDP Economic Development and Innovation Critic Deron Bilous

Technology and Artificial Intelligence is a sector that has proven that it can be an economic driver and create jobs for Albertans. During the pandemic, Alberta's Tech and AI companies were among the few that continued to hire staff, and grow their businesses.

Globally, the technology sector continues to see strong growth and the COVID-19 pandemic has further demonstrated the value technology can provide in everyday life. Throughout the pandemic, the use of technology allowed people all over the world to continue working, maintain bonds with loved ones, access support, and connect to their communities.

In recent years, Alberta's technology sector has experienced challenges. The lack of government support and the cancellation of successful programs over the last two years has created significant uncertainty and held many companies back.

Despite this, technology companies in Alberta continue to demonstrate the important

role they can play in growing our economy, creating jobs, and facilitating the growth of an Alberta innovation ecosystem.

Alberta is home to many innovators that are capable of building world-class companies if we set the right conditions.

Based on Alberta's long history of entrepreneurship and innovation, we are confident that Alberta can grow an environment for technology and AI that will attract innovative companies, and give Alberta a place in the new knowledge economy.

I want to encourage all Albertans to provide us with feedback on our strategy and continue to propose their own ideas. Alberta needs a robust debate on how we build our innovation ecosystem that can be the backbone of our economic diversification and future job-creation.

Sincerely,
- **Deron Bilous**

Response to Government Policy

Early in their mandate, the UCP government canceled a series of tax credits and other initiatives that were successfully supporting innovation and growth in the technology sector. There was no consultation before these decisions were made despite tech companies publicly stating that cutting the tax credits would hurt the sector. There was no rationale for these decisions but the consequences of the cuts were immediate and decisively negative.

Much of the positive momentum that grew in 2017 and 2018 under the NDP government has largely evaporated. The tax credit was almost a 4:1 payout for the economy, and mainly in Calgary. The \$28.1 million in tax credits had, by 2018, leveraged \$94 million in investment for small and mid-sized businesses.

Recently, the UCP government has restored some support for technology and innovation in Alberta; however the damage has been done. Companies have been clear that predictability and consistent Government support for tax credits is necessary to make the programs success.

Recent increases in tech jobs, and growth in the tech sector is attributable to the ingenuity of the sector.

Further, it demonstrates the exciting potential for Alberta's technology and innovation sectors.

The UCP government has demonstrated a lack of commitment to growing Alberta's technology and innovation sectors. Ignoring this opportunity will limit Alberta's growth potential in multiple sectors of Alberta's economy.



Setting the Stage for This Report

Employment in Alberta's technology sector grew by 25 per cent in 2020. This puts the technology sector in a rare position as one of the few sectors in Alberta's economy that continues to grow, and create jobs despite the pandemic and economic decline.

Globally, the technology and Artificial Intelligence (AI) industries are showing enormous growth potential. As the world moves toward a knowledge-based economy, innovation and technology are increasingly becoming key factors in value creation. Alberta has the building blocks in place to be a leading jurisdiction in research and development. We can attract new tech companies, invest in training and post-secondary excellence, and the development of patents. We can create much-needed jobs by pairing companies and skilled workers with specialized knowledge in energy, renewables, medical research, and agriculture and agribusiness in order to diversify, innovate, and grow our economy.

Alberta's research institutions provide world-class research and education, we have a young, well-educated workforce,

and a tradition of entrepreneurship and innovation. The Alberta Machine Intelligence Institute (AMII) is a leading research institution in AI and has a record of attracting researchers to Alberta. Alberta also attracts people and families who see a future here due to our world-class public healthcare and education system both of which offer high quality of life in our communities. Our proposals aim to leverage this advantage and build on successful initiatives in jurisdictions around the world.

Alberta can develop an environment that supports and attracts innovative companies. During our term in Government, targeted tax credits were successful in growing Alberta's technology and AI sectors, and in levelling the playing field with other Canadian provinces.

Alberta's NDP is committed to ensuring that Alberta is once again a competitive destination for these investments by creating the best possible innovation environment that will attract new business and grow the industry here at home.



ATTRACT GROWTH CAPITAL TO FUEL ALBERTA'S TECHNOLOGY AND AI SECTOR

In the technology and AI space, it is crucial that companies are able to raise sufficient capital in order to continue growing and improving their technologies.

Attracting capital for innovative companies has been identified as a key challenge to diversification in this province.

During our time in government, Alberta made progress in developing an environment in which companies were able to access capital, create jobs, and grow their businesses. We listened to the sector and learned from what works well elsewhere - help de-risk early stage investments and drive economic spinoffs, including jobs.



ENABLING PRIVATE SECTOR RESEARCH AND DEVELOPMENT

The private sector must play a leading role in funding research and development investments and in building a foundation for growth. In several of the most innovative economies, private sector research and development plays a significant role. In Germany, for example, the private sector represents 69 per cent of investment. Governments can support private sector investment by establishing the right incentives and support in order to build an innovation ecosystem.



THE NEED FOR MORE INNOVATION IN ALBERTA

Currently, Alberta lags behind many jurisdictions when it comes to funding for innovation and investment in the tech sector.

Other measures also show that Canada lags behind many other countries in terms of innovation such as Bloomberg's Innovation Index, which assesses countries annually against their achievement in: research and development spending, manufacturing, market share of high-tech companies, post-secondary education, number of professionals working in R +D, and patents. This is further indication that Alberta still has a long way to go to fulfill its potential.

Data from multiple sources indicate that Alberta has a long way to go to become a leader in innovation, technology, and artificial intelligence. However, this evidence also points to an immense, untapped opportunity for Alberta to create good jobs, diversify our economy, and become world leaders in technology and innovation. Alberta's technology and AI sectors have already shown their potential to develop solutions to global problems and create jobs here in the province. The proposals in this paper aim at taking decisive action to create jobs and develop technology that is needed around the world and in Alberta.

FUNDING TIMELINE FOR BUSINESSES

Funding for tech and AI start-ups is required at multiple stages of growth. Access to early capital is often secured by founders of tech start-ups, or their close affiliates. This first phase of funding is described as pre-seed funding. The second phase is called seed funding, which is necessary before a start-up becomes operational and helps improve and refine products in order to prepare them for the market. Series A funding supports growth for companies that already have products on the market but are looking to develop a business model

in order to access new markets and new customers. Series B funding helps companies that have a business model in place but are looking to scale-up. Series C funding supports established businesses that may be looking to develop new products, enter new markets, or increase their attractiveness for Initial Public Offering. Government interventions need to be targeted to where return on investment and economic flow-backs, like jobs and other businesses in Alberta, are highest.



Proposals

Our proposals are aimed at supporting Alberta start-ups throughout the entire timeline illustrated above. As companies move across the timeline their ability to raise capital increases.

A secure funding environment must be in place in order to retain the most promising and innovative companies, support job creation, and further diversify Alberta's economy.

GROWTH CAPITAL

- 1 Establish the Alberta Venture Fund
- 2 Grow and Modernize Alberta Enterprise Corporation
- 3 Attract a Global Accelerator
- 4 Reinstate the Alberta Investor Tax Credit

DIGITAL GROWTH & INNOVATION

- 5 Establish a Dedicated Research & Development Fund
- 6 Invest in Applied Research in AI
- 7 Create a Competency Centre for Digitalization
- 8 Reinstate the Digital Media Tax Credit

1 ESTABLISH THE ALBERTA VENTURE FUND

Access to venture and risk capital has been a long-standing issue in Alberta. The Alberta Enterprise Corporation, as well as the Alberta Investor Tax Credit, help address these challenges but more is needed if we want to see Alberta's tech and AI sectors reach their full potential. An Alberta Venture Fund would invite all Albertans to invest directly in the growth of Alberta's tech and AI sectors. The fund would exclusively support Albertan early-stage companies, start-ups and scale-ups.

We propose that the fund would be professionally managed and arms-length from the provincial government. It would be given a clear mandate to focus on investing in innovative Alberta businesses and re-investing in businesses and venture funds in Alberta's private sector.

Alberta have a long history of directly investing in sectors and projects that help secure the future of our economy. This proposal is inspired by examples in Alberta's history, such as Premier Ernest Manning's Great Canadian Oil Sands project in the 1960s which attracted investments of \$1,500 (closer to \$13,000 in today's dollar) from roughly 100,000 Albertans. These investments represent an important step forward in the early success of Alberta's Oil Sands and laid the groundwork for companies like Suncor to become the leading energy company that it is today. Similarly, Premier Peter Lougheed set up the Alberta Energy Company, in which Albertans had 49 per cent ownership. Likewise, this contributed to advancing Oil Sands development and helped Syncrude become a successful, world leading energy company.

Both initiatives demonstrate the possibilities of a new Alberta Venture Fund. History tells us that when Albertans are given the opportunity to bet on themselves, great things are possible. Together, we can contribute directly to creating the wealth and the opportunities that we have enjoyed for the last 50 years. Investing in the fund would provide Albertans the opportunity to earn returns themselves and support economic growth, diversification, the creation of good jobs, and the long-term well being of the province.

The establishment of an Alberta Venture Fund would include setting clear parameters, such as a clear minimum term of investment and checks and balances that reflect the nature of venture capital and the long turnaround times of venture funds. Further, it would be critical to provide public education about the risk to potential investors and how the investment might differ from traditional mutual funds.

The fund would help Alberta build a world-class innovation environment. It would provide capital to founders and start-up companies that struggle to secure risk capital. It would also help build Alberta-based technology leaders, and provide Albertans with direct returns in a new, diversified economy¹.

In addition to direct investment from Albertans, we would consider inviting larger Alberta-based companies to invest as well. The German High-Tech Gründerfonds has a similar model that has proven successful in building industry networks and facilitating co-operation and corporate venture capital.

Lastly, we would consider an initial investment of \$200 million from the Government of Alberta to get the fund started and to show confidence to other potential general and corporate investors.

While this model is unique, we have seen in other jurisdictions such as Singapore that public funds can provide great returns. We would also monitor public venture fund approaches and learn from best practices to ensure the best returns for Albertans.

¹ In today's dollars Albertans would have raised \$1.3 billion, if 10 per cent of Albertans would invest \$13,000 each that would raise \$5.7 billion. Even if 10 per cent of Albertans would invest the original \$1,500, that would raise \$656 million. This indicates that the potential for the Alberta Citizen Venture Fund is quite significant.



2 GROW & MODERNIZE ALBERTA ENTERPRISE CORPORATION

The Alberta Enterprise Corporation (AEC) can also be a mechanism for attracting more risk capital to our technology sector. The corporation currently invests in venture funds with representation in Alberta and co-invests in early-stage startups (before series A funding). These investments lead to both economic and financial returns.

Targeted investments led to an estimated 1400 jobs in 2018/19 according to the AEC's audited annual report, and every \$1 investment leveraged private investment for a total of \$4 invested in Alberta companies between 2015 and 2019.

The Innovation Capital Working Group recommended investing an additional \$450 million into the AEC. The UCP's commitment of \$175 million falls short of meeting that recommendation

and back-tracks on the steady and increasing investments made in innovation between 2015-2019.

We would consider investing the additional \$275 million over four years and would consider the recommendation of meeting the 20 per cent minimum target for early-stage co-investing of the new funds. According to the Innovation Capital Working Group, every dollar invested is currently worth \$1.17 and additional appreciation is to be expected. This means that in addition to the potential economic benefits, the investments may provide a return as well.

3 ATTRACT A GLOBAL ACCELERATOR

A technology accelerator is an organization that supports local technology entrepreneurs in the early stages of their business. It helps entrepreneurs to develop their product and business models as well as to connect with investors and experts in their fields. Accelerators can meet entrepreneurs' needs for mentorship and training in addition to capital.

Local accelerators are doing great work and we need to build on that work by supporting them, but a globally connected accelerator can complement that work and bring global networks and capital that will grow the province's tech ecosystem.

When in government, the NDP AI strategy was focused on supporting and attracting technology accelerators in the province as a cornerstone for the Edmonton-Calgary technology corridor.

Many of the most promising companies seek out leading technology accelerators in their field to position themselves for rapid growth opportunities. Having access to accelerators

helps retain companies and supports promising start-ups in Alberta.

A global accelerator would help many of Alberta's innovative companies to maximize their potential. Evidence suggests that companies graduating from an accelerator tend to do better, as well as having positive effects on the economy.

We propose to address this gap by attracting a globally-connected accelerator (e.g. Techstars, Y Combinator) through a competitive process ensuring the best fit for the province and value for taxpayer money. This could be complemented by a campaign highlighting Alberta's great potential and world-class research environment.

Any successful proponent would be required to demonstrate how it would grow Alberta's tech ecosystem as opposed to duplicating the work being done by existing accelerators in the province.

4 REINSTATE THE ALBERTA INVESTOR TAX CREDIT

Innovators have repeatedly told us that the AITC was a great tool to de-risk investments in the province, making it very helpful to attract investors. The tax credit was also very successful, leveraging three times the private sector investment the government invested in its first year. We would restore the tax credit immediately and would strive to simplify the application process. Twenty American states have a similar tax credit and as do other Canadian provinces that compete with Alberta for investments.

The Tax Credit was instrumental in establishing many small companies and set them up for long-term success, creating thousands of good jobs. By the end of 2018, the tax credit supported over 200 companies in Alberta, over 150 of which (70%) were located in Calgary. The UCP halted this momentum and we will work with industry, in particular in Calgary, to restore and redouble it.



5 ESTABLISH A DEDICATED RESEARCH & DEVELOPMENT FUND

Engaging in research and development is often a risky commitment for companies because it requires the ability to take risks. Israel's Innovation Authority's Research and Development Fund has been very successful in de-risking research and development by supporting 20-50 per cent of a research project with the condition that the support turns into a loan that is repaid through the royalties of the research.

This fund provides the support companies need to find funding for research that allows them to take risks while also allowing the benefits of successful projects to be shared. The fund has been a key program of the Israel Innovation Authority for several years and has helped the country become a global hub for innovation. We believe this would potentially be a helpful tool for Alberta Innovates to advance innovation and research and development in Alberta.

6 INVEST IN APPLIED RESEARCH IN AI

Part of our NDP Government's AI Strategy was to support more applied research through AMII. It would have enabled more cooperation opportunities between Alberta companies and AMII to develop practical AI solutions that focus on growing productivity while increasing job numbers.

AI applications are increasingly becoming a key factor for productivity and competitiveness. Helping companies in Alberta develop AI solutions makes Alberta companies more competitive and facilitates innovation.

7 CREATE A COMPETENCY CENTRE FOR DIGITALIZATION

Digitization can increase efficiency, increase accessibility of information, and improve business systems. We propose looking at partnerships with universities, industry, and other innovation centres in order to help businesses take full advantage of digitization opportunities.

In Germany, the government built competency centers for innovation in cooperation with universities and industry. These centers are physical places where businesses can learn what digitalization opportunities are available to them and how they would work. They can also get advice about solutions relevant to their business.

A similar concept could be implemented in Alberta so that companies would be able to identify technology solutions that are right for them.

This will strengthen the competitiveness of Alberta's businesses and will enable small and medium-sized businesses to take advantage of the opportunities to improve their businesses through digitalization.

8 RE-INTRODUCE THE DIGITAL MEDIA TAX CREDIT

The Digital Media Tax Credit attracted and supported the expansion of several digital media companies in Alberta. Start ups such as in the gaming sector say that incentives are needed, given the competitive environment and tax credits in other provinces and states. According to the Alberta video game association Interactive Arts Alberta, the credit helped Edmonton's Improbable grow its business from 4 to 70 in 2018, whereas BC-based East Side Games with 150 employees and an active HR recruitment, announced that the UCP cancelling the tax credit cancelled their plans to expand into Calgary. Re-introducing the tax credit will be a critical step to restoring investor confidence in the digital media sector and reversing the trend we have seen since its cancellation.

The tax credit supported job creation in the digital media sector, by removing risk which is typically the single biggest cost to companies. Many other jurisdictions have similar tax credits that are attracting companies. Therefore, re-introducing the tax credit would increase our competitiveness in the sector.



Potential Costs

The costs detailed on this page are neither prescriptive nor exact. They represent a range based on preliminary study and conversation with experts in the field. They're offered solely as means to provide a sense of the scope that would likely be required to achieve these objectives. This is not a budget, this is merely a starting point to facilitate discussion. We welcome feedback on the costing of each proposal put forward as part of Alberta's Future.

POLICY	Estimated Cost (in million CAD)
ESTABLISH THE ALBERTA VENTURE FUND	\$1 to establish \$200 in initial funding to start fund on positive track
GROW AND MODERNIZE THE ALBERTA ENTERPRISE CORPORATION	\$275 over 4 years
ATTRACT A GLOBAL ACCELERATOR	\$13
REINSTATE THE ALBERTA INVESTOR TAX CREDIT	\$30
ESTABLISH A DEDICATED RESEARCH & DEVELOPMENT FUND	\$50 Israel's fund is around \$375 USD but this would be a very significant investment and base to develop the fund
INVEST IN APPLIED RESEARCH IN AI	\$20 over 5 years
CREATE A COMPETENCY CENTRE FOR DIGITALIZATION	\$4
REINTRODUCE THE DIGITAL MEDIA TAX CREDIT	\$30

Next Steps

The eight proposals put forward in this paper are only the beginning of our work to support tech, innovation and AI research. We believe these programs, both the new ideas and the reinstated offerings, can have a demonstrable effect on Alberta's economy.

This is what true diversification can look like. However, we want to hear from you. Sign up for further consultations at AlbertasFuture.ca in this critical area and share you feedback on the site at any time.

We also continue to assess numerous other programs and will likely produce proposal papers specifically detailing them in the months ahead. They include:

- *Innovation Partnership Programs that provides in-residence development of technology-based solutions for companies, various levels of governments and independent entrepreneurs.*
- *A broad-scale open-data initiative for Alberta, including major improvements to the current open data portal.*
- *Commercialization options for researchers that allow them to shift their innovation from a lab setting to a successful business.*

As well, Alberta's post-secondary sector is crucial to growing innovation. Alberta has among the highest ratios of world-class universities per capita; however, recent cuts from the UCP Government have created a great deal of uncertainty and cut off access to higher learning for many potential innovators.

In response, we will develop and put forward proposals in the weeks ahead to revitalize our universities, polytechnics and colleges and to turn them into destinations for Albertans and students from elsewhere with big ideas in the area of technology innovation.

We also believe new opportunities for retraining and skill recognition and transition to AI are needed.

Cuts to post-secondary serve only to slow Alberta's potential. We will go another route and turn the post-secondary sector into an economic driver.



Conclusion

This paper presents another opportunity to diversify Alberta's economy. Our technology and AI proposals are part of the Alberta NDP's Alberta's Future project.

Our ideas are built around five principles:

- *Job creation for Albertans;*
- *Equity and inclusion of all Albertans;*
- *Diversification as a priority;*
- *The recognition of the role of the Public Service in growing the economy;*
- *and the rejection of a race to the bottom.*

Our proposals are based on experiences from other jurisdictions and consultation with stakeholders and subject matter experts.

We believe that by taking strategic actions and committing to supporting the sector over the long-term we can create an innovation ecosystem that will help new and existing companies to be leaders in the knowledge economy and support job creation in the province.



Give Us Feedback

WE WANT YOUR FEEDBACK

Alberta's Future is an initiative to build a new economy that benefits every person in our province. We want you to share your thoughts and ideas on proposals like this one.

We welcome you to submit your own proposals too!

All of our proposals and those contributed by Albertans like you can be found at AlbertasFuture.ca. On that website, you can also register for in-person and online conversations happening right across Alberta.

We are also hosting this conversation on social media, using the hashtag **#ABFuture**

Engage directly with NDP Leader Rachel Notley on YouTube, Twitter, Instagram, and Facebook



@RachelNotley

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