



**Innovation to Prosperity
Tech Industry Paper**

“Defining Canada’s Innovation Agenda”

October 2017



NORTHOF41.ORG

Innovation to Prosperity

"Canada's Innovation Agenda"

North of 41-Background

North of 41 is a tech based organization with over 12,000 members across North America. The core of the organization's membership base is comprised of tech entrepreneurs whose companies are in the hyper growth phase of their business life-cycle. As part of the organization's mandate, North of 41 hosts various in person and online events along with other programs including hackathons, roundtable discussions and subject specific training. In addition, North of 41 also organizes annual tech days both at the federal and provincial level as a way to encourage dialogue between tech entrepreneurs, policy makers and politicians.

Recent Testimony

Representatives from North of 41 testified before the NAFTA Modernization Hearings in Washington D.C. on June 27, 2017. This was part of a congressionally mandated committee tasked with preparing for the upcoming NAFTA renegotiations. In addition, a representative from North of 41 testified before the Standing Committee on Industry, Science and Technology in Ottawa on June 15, 2017. This was part of a government review of Canada's intellectual property and technology standards.

Executive Summary

According to the Global Innovation Index, in 2016, Canada ranked 15th out of 128 countries when it came to innovation. ¹ As a country, if we are to embrace an innovation agenda, we should set a

¹ Global Innovation Index, Johnson School of Management Cornell University, WIPO & INSEAD Business School

goal of being ranked as one of the top five most innovative countries in the world by 2025 and set a further goal of being number one by 2030. The focus of this discussion paper is to provide recommendations for Canada's innovation agenda from Canada's tech industry to Canada's policy makers on how to achieve this goal.

The first step in this process requires the adoption and implementation of a national cohesive strategy that will foster economic growth through a robust innovation policy. The issues of investment capital requirements and alignment of tech talent/human capital with industry needs are subjects that must be addressed. In addition, there is a growing need in Canada to focus on strengthening our IP strategy, including tech and knowledge transfer between academia and industry; devoting resources towards cyber security as well as encouraging participation by Canadians in the digital tech economy outside of the traditional tech hubs of Toronto, Kitchener/Waterloo, Montreal and Vancouver.

Introduction

The Canadian economy and the overall Canadian tech eco-system are at a crossroads. A convergence of timing and tech advancement are creating economic opportunities that will drive Canada's economic prosperity for generations to come. However, if we as a nation are going to leverage this convergence, then we must act quickly to align investment capital and human capital to foster growth and innovation.

New sectors are continually emerging within the tech industry. A perfect example of this is the shared economy. These new sectors are going to be the engine that will drive job growth for Canada in the future and will redefine the Canadian economy. As part of Canada's innovation agenda, an employment and retraining strategy must be established. Failure to act now will have a detrimental effect on the Canadian economy for years to come.

Historically, Canada has always placed a large emphasis on the development of natural resources. Technology must be viewed through a similar lens because technology is the resource of the future; a digital resource. For an innovation strategy to be adopted across the country, it must first be

encouraged through education both in school and through corporate training opportunities. Following the establishment of an innovation agenda, the first action item that Canada should undertake is to “double down” on key technology sectors across this country.

The size of Canada’s tech industry must be put into perspective. Currently, when compared to the U.S., Canada’s tech industry is approximately one tenth the size. In fact, the total population of Canada is equivalent to the total population of the state of California. The chances of the Canadian tech eco-system evolving into the next Silicon Valley are remote and minimal at best; primarily due to the sheer size differential. In addition, Canada doesn’t have sufficient investment capital in comparison to Silicon Valley, nor does it possess the culture of risk which has been engrained for generations in the valley. A better strategy would be for Canada to focus on positioning itself as a world leader in a few select areas within the tech ecosystem. If implemented properly, the end result would be the creation of hundreds of thousands of well-paying jobs which would provide wealth and prosperity for generations to come. Canada should compare itself to countries and geographic tech eco-systems where world class businesses have been built in key strategic areas. A perfect example of this is the Israeli tech scene; one of the best known tech hubs thriving on a global scale. The tech scene in Israel focused on key areas of tech security and other related sectors. Because of these efforts, the Israeli tech eco-system has evolved as one of the world leaders in the areas of security technology.

For the Canadian tech sector to flourish and compete globally, it must be led by industry. Once an innovation strategy is agreed upon, there are many stakeholders, including government that must work as partners in order to execute on this vision. The pivotal role that the government must play is one where it creates an environment through policy initiatives for innovation to thrive. Areas where these initiatives must take place include but are not limited to a) an aggressive tax cutting policy b) robust immigration policy c) retraining, retention and education strategy d) an open border investment policy that will assist Canadian tech companies to not only survive, but to prosper for years to come.

“INNOVATION TO PROSPERITY”

Digital trade drives a substantial part of the world economy. Political boundaries provide few barriers to the digital economy and this open environment acts as a large window of opportunity for ambitious entrepreneurs. In capitalizing upon this opportunity, Canada needs to create a mindset that encompasses a powerful ideology centred on innovation.

Borrowing from the highly successful Canadian Olympic movement called “Own the Podium”, the Canadian tech sector must embrace a similar theme called ***“Innovation to Prosperity”***. This mission statement must be embraced from coast to coast. Just as “Own the Podium” required both financial and non-financial resources to be deployed in support of the strategic vision, so too must the theme of ***“Innovation to Prosperity”*** garner the same level of support. The Canadian Olympic campaign and the powerful slogan “Own the Podium” was executed with precision, thereby allowing Canadian athletes to succeed at the Vancouver Olympic Games where a record number of Olympic medals were awarded to Canadian athletes. At the same time, the “Own the Podium” movement fostered a deep sense of national pride throughout Canada that is still felt to this day.

In order for the Canadian tech sector to be a world leader, a similar advocacy strategy must be adopted and implemented throughout the country. Within every sector of the Canadian economy, ***“Innovation to Prosperity”*** must be the rallying cry of our tech-business, academia, and government partners.

Problems/Solutions

What is the proper role of innovation in the Canadian economy?

The proper role of innovation in the Canadian economy is to foster growth that will spark a prosperous future for all Canadians. Any approach vis-a-vis the encouragement of innovation in Canada must begin with the recognition of the fundamental change that is looming before the world economy. Canada must position itself to lead this change in a way that is healthy and

sustainable, rather than react to it with a patchwork of half-measures. A Canadian economy with innovation at its core foundation will in turn provide well paying, high quality jobs. It will also help bolster the overall knowledge base of its citizens because in order to truly grow and nurture a competitive economy, the education and knowledge base of its work force must be high.

Education and retraining of individuals to fit the new economy must be central to government policy. The approach must be fully integrated; stemming from education beginning in elementary school and leading right up to the CEO level. Knowledge is the new gold; a resource that needs to be tapped into at an early stage. Higher education achievement tends to be a predictable indicator of future success. Our economic prosperity depends on this, therefore it's crucial that government spending is efficiently placed in key sectors that will spur opportunities, innovation, jobs, and ultimately economic growth. Individuals who fail to embrace this new reality will be left behind as was witnessed first-hand after the 2008 recession and global economic crisis. Despite the rhetoric from certain parts of the world, there is no turning back the clock. Every decision made by the various layers of government should have an innovation policy as its cornerstone and embedded in its core.

Recommendations:

1. Government must incentivize retraining through the use of tax credits to individuals and companies who invest in themselves or in their employees' further education and training. Just as government tax policy encourages companies to upgrade an organization's equipment through tax credits, a similar emphasis must be placed on work related education and skills training.
2. As a temporary measure to quickly fill the knowledge base requirements of Canadian companies and in order to accelerate innovation, priority must continue to be given to those individuals who seek to immigrate and who will be able to contribute to our national goal of ***"Innovation to Prosperity"***. Once tech sectors within the eco-system have been identified as areas of support, then it is important for our immigration policy to support this pursuit.

How Should Government Effectively Support the Tech Economy?

As stated earlier, due to its limited size, the Canadian tech eco-system cannot be everything to everybody. As a result, it is necessary to focus on a few key areas and to grow various parts of the tech sector on a global basis. Some of the areas that Canadian entrepreneurs have demonstrated world class business and innovative leadership are in the areas of cyber-security, shared economy, artificial intelligence (AI) and fintech/block chain development to name a few. All of these areas are embedded in every sector of the overall tech economy as well as every industry in the Canadian economy.

This isn't to say that Canada should not support tech businesses that lie outside of these areas; quite the contrary. The Canadian government should support the entire tech eco-system, but if there are areas where special emphasis should be placed, it is in these very niche and emerging areas of cyber security, shared economy, artificial intelligence (AI) and fintech/block chain technology. As stated above, all of these areas touch virtually every industry that exist in Canada today.

This brings us to the question, how do we begin to galvanize support towards these areas? First and foremost, from a government engagement perspective; education and information flows are essential components of the nation's innovation economy. Although this encompasses much more than the formal education acquired in academic institutions, it should also entail a higher regard of information sharing along with increased transparency between businesses, government, and Canadian society as a whole. One topic that must be addressed is in the area of open data. Government policy makers must be willing to learn the particular means through which tech businesses require support and one of these areas is through the sharing of data.

When looking at the "risk spectrum", technology and government could not be more opposite. The tech eco-system is "risk tolerant", whereas government could at best be described as "risk adverse." It is important for government to be more risk tolerant, however a better solution would be looking at how government could better manage and mitigate risk.

Recommendations:

1. We should prioritize and align Canadian strengths with the new tech economy. By “strengths” we are referring to block chain/fintech technology; cyber-security, artificial intelligence (AI) and the shared economy. The end result in supporting these key areas will allow companies in these sectors to grow and thrive while enabling companies in those areas in which they can’t compete, to transition to areas where they can. A thorough adjustment and competitive analysis should take place on an on-going basis. This will ensure that Canada’s efforts in the tech industry support initiatives where we can achieve wins and leverage continuous opportunities.
2. Government must learn to innovate and to accept innovation in and of itself. Procurement policies can be a useful tool because they can be used both to support early-stage tech companies while at the same time encouraging government to modernize its own delivery of services. The current five-year procurement cycle is too long; therefore a shorter “beta” procurement system would be necessary to encourage industry participation. The ability to list the government as a client/customer can help enhance a tech company’s client roster. Such procurement policies can be a win-win for government and the tech industry.
3. Employment growth should be a key consideration in the support of all technologies; since this ultimately entails economic sustainability for Canadians. An advanced set of skills tends to be required for jobs in highly innovative industries. Government programs should be streamlined to assist employees with upgraded education along with skills training support. Government must be willing to develop proper metrics to measure the success of the innovation strategy because most current evaluation methods used by governments were not designed to measure such metrics.
4. Most politicians and policy makers do not have a technology background. Therefore, they require an unbiased resource to assist them when it comes to understanding tech related issues. It is no longer an option, it is a necessity that politicians and policy makers have a trusted resource to turn to when it comes to the tech sector. We support the government’s initiative of creating the position of a Chief Information Officer. This position is a key resource for a number of people to rely upon as the digital economy continues to grow. However it is also important that government

and industry to work together if Canada's innovation agenda is to move forward and be successful. One area that this occurs is through better cooperation. In order to facilitate and promote this interaction, it is proposed that an executive exchange program be established to allow for government employed individuals to spend time in Canada's fast growing tech companies. This would allow those inside government to better understand the needs of Canada's tech sector. A program such as an executive exchange program would be a low cost, high value initiative that could be established in a short time frame. This would also further assist Canada to achieve the goal of being the most innovative country in the world by 2030.

Key Success Factors: Investment Capital, Human Capital and IP Strategy

There are certain key success factors that are necessary if Canada is to attain a #1 ranking as the most innovative country in the world. Investment capital, human capital and IP strategy must all work hand in hand. Sufficient investment capital is required for any tech eco-system to grow and thrive. This capital is either deployed from investments within a country or through external sources by allowing foreign capital investment. When compared to other jurisdictions around the world, in Canada we rank near the bottom when it comes to the total amount of technology investment capital as a percentage of overall capital invested. Canadians by and large are risk adverse. As a result, investment capital is often deployed in mature sectors such as mining or manufacturing but much less frequently in tech/digital industries because of the tech sector's relative new age. For *“Innovation to Prosperity”* to occur and thrive in Canada, the current investment strategy and climate must undergo a significant change.

Human capital is described as the skill set of workers within the tech eco-system. Innovation must be made to sustain and nurture employment for all Canadians, and the skill sets of workers must align with the skill sets of the jobs that the tech industry requires. Where a disconnect exists, innovation will be impeded. For *“Innovation to Prosperity”* to be embraced in Canada, the current human capital strategy must evolve to reflect current market needs.

One area of national importance relates to cyber security. Cyber-attacks come in two basic forms; those that are malicious and those that are non-malicious and/or a nuisance. Cyber security is the

new playground of the criminally intent and is also the new frontier in the battle to protect Canadians from those individuals who wish to harm our nation. Wars in the future are not going to be won or lost based on physical geography, they are going to be won or lost in cyber-space. As a nation, we must be prepared. Canada's tech sector has built a solid global reputation in the area of cyber-security. It is important to understand that not only is government susceptible to cyber acts, but so too are corporations. It is imperative that as a national tech sector, we are not only aware of this fact, but that we are adequately prepared. This is where cooperation among government and industry is not an option, rather a necessity.

The second area of IP strategy focuses on the IP assets created within Canada. Intellectual property is considered the new digital gold. Similar to how countries protect their natural resources, countries must now focus on protecting their digital resources. As part of this IP strategy, it is essential to improve the commercialization aspects of tech and knowledge transfer that occurs in Canada. Currently, the record of commercializing technology created in Canada's academic institutions is less than optimal. This must be improved through better academic/industry collaboration and a streamlined process in which this tech transfer occurs.

Recommendations:

1. Investment capital in Canada should be redirected from traditional investment areas to the tech sector and specifically to support tech businesses that are scaling out, not starting up. There is a general consensus that there is sufficient investment capital funding for start-ups in this country, however, there is a lack of investment capital for businesses that are trying to scale up. The cost of starting a business today is a fraction of what it cost even 5 years ago. This is both an opportunity and a challenge. It's an opportunity because entrepreneurship is a big generator of jobs in this country. It's a challenge because just about everyone with an idea and a computer can start a business, so there are minimal barriers to entry. This creates a problem because it allows some businesses that have little chance of succeeding to divert investment from businesses which are more likely to experience successful growth. In order for the *"Innovation to Prosperity"* agenda to succeed, investment dollars must focus on areas where there are opportunities, while at the same time investment dollars should be scaled back from areas where opportunities no longer

exist. In addition, foreign capital should be allowed to supplement Canadian investments as a means to support businesses/industry on a selective basis.

2. Human capital is in high demand vis-a-vis the tech industry. It is what drives the entire tech eco-system, similar to how mineral exploration drives the mining industry. You can't have one without the other. Currently, there is a mismatch of skill sets and job requirements that Canada has not experienced since the industrial revolution. Employment has shifted from traditional industries to the tech industry. As a result, there is a need to have proper retraining programs in place until such time that the education system begins graduating people with the necessary skills to fill the jobs that the tech industry requires. Programs such as Start-up Visa and Canada's Global Skills Strategy Program only provide a temporary solution. However, a further hybrid solution would be to embark on a re-training program for individuals currently holding skill sets not in alignment with tech industry requirements. This presents an opportunity for the tech industry and government to work together to increase employment in the tech sector.

3. Cyber security is an issue that is of great national importance and as such, the government should be providing sufficient investment and human capital to defend against such threats. Just as the CBSA (Canada Border Services Agency) is mandated to protect our geographic borders, there should be a federally mandated department created that is responsible for protecting our cyber-space borders. This department would work closely with CSIS because many of the cyber threats are generated outside of Canada's borders. The input required to create such a department should be made with recommendations from both government and the Canadian tech industry.

4. Government should embark on streamlining the process of how tech transfer occurs in Canada between academia and industry. Government should reward institutions that prioritize commercialization with industry partners. Further, the tech transfer agreements between academia and industry should be standardized. This will reduce the time for commercialization, reduce costs, all the while improving the chances of successful deployment in the marketplace. Ultimately, a process that is streamlined will allow the potential for more jobs to be created by allowing companies to quickly hire, if they so choose, those individuals who were working on these IP projects in the various academic institutions.

5. In order to have better co-operation between academia and industry, it is recommended that an industry led committee be formed which would meet on a semi-annual basis. This committee would be formed with CEOs from the tech industry, academic researchers, industry associations and members from government. The purpose would be to address key competitive issues facing the Canadian tech industry. Issues such as increasing the amount of commercialization of tech research could be an initial focus of this group. It would build upon the work started by the Industry, Science and Technology committee hearings that were convened to study intellectual property and technology transfer in Canada. Further working groups of this committee could focus on increased skills development, capital investment, trade agreements/border issues and potentially a regulatory efficacy working group. This would be a first of its kind tech committee that would bring together stakeholders from industry, academia and government to talk about areas of cooperation in the tech sector. A similar type of group has been formed in the automotive manufacturing industry which would be a template for this tech committee. North of 41 has the resources to organize a group such as this and would be willing to facilitate such an endeavour.

Participation in the Tech Economy Outside of Traditional Tech Centric Areas

There is a real threat that areas outside of the traditional tech corridors (Toronto, Kitchener/Waterloo, Montreal and Vancouver) will be left behind as the country's economy shifts rapidly to a tech based economy. The question to ask is; are there actions that can be taken to help areas like the Maritimes, rural areas such as Northern Ontario and traditional manufacturing centres such as Windsor, Ontario to encourage tech investment? Providing a solution to this problem is critical for Canada's economic future. Without a comprehensive plan, these areas will not participate in the country's innovation agenda. Government has acknowledged these problems and should be commended for this, however efforts and capacity must be increased in order for the "*Innovation to Prosperity*" program to succeed.

Recommendations:

1. Government can encourage participation in the tech sector outside of the “major tech corridors” by creating the necessary set of digital infrastructure investments which will facilitate the progression of better engagement. For instance, building, maintaining, and improving telecommunication centres which also includes better internet connectivity should be a priority. Furthermore, financial incentives should be established for participation in the tech economy in such non-traditional tech areas. These efforts may also encourage people to remain in these areas and could even incentivize individuals to relocate to these areas from the increasingly more expensive major tech corridors.

2. Government must also extend its innovation agenda to areas where it has not normally done so in the past. For example, there are opportunities emerging in the area of agriculture and tech (AG-Tech) which have the potential to become a large area of focus for innovation moving forward. For the *“Innovation to Prosperity”* agenda to flourish, people must embrace this challenge. By introducing technology to non-traditional tech areas, it creates buy-in and a sense of empowerment in joining a national movement at the grass-roots level. People will be able to lay claim that they are doing their part to turn the *“Innovation to Prosperity”* agenda into a national reality.

3. A framework similar to the Atlantic Growth Strategy program could be used as a model and be customized for the tech industry as a way for promoting innovation outside of the traditional tech hubs. The purpose would be to encourage tech innovation in areas where it is not occurring at the same rate as Canada’s tech hubs. This could be done through tax incentives, training incentives along with R&D credits. Government’s role should be seen as a facilitator to bring the various parties to the table.

Job Growth in the Tradition Tech Economy and the Shared Economy

Canada had minimal job growth coming out of the last recession. One of the after effects of this reality has been the emergence of the shared economy within the past 5 years. The shared economy

can trace its roots to the lack of job creation in the economy and a stagnation in wage growth. As a result, more and more people became entrepreneurs within the shared economy. To understand the magnitude and impact of the shared economy, one need look no further than the world's largest transportation company which doesn't own a single vehicle or the largest provider of accommodations in the world which does not own a single hotel. Government can no longer disregard the shared economy and pass it off as a fading trend. It's an economic force that drives innovation and one that is definitely here to stay. As for the traditional tech economy, many of these same relevant points hold true. Employment within the innovation industry will depend largely upon one's adaptability, willingness to continuously learn and their adherence to trends.

As innovation is embraced throughout the nation, demand for higher skilled workers tends to result in higher levels of specialized education and with it, higher national salaries to reward these efforts. As salaries rise, so do contributions to taxes, which ultimately plays in a cyclical manner and enables further governmental spending. This in turn contributes to the creation of more technology based industries and a more diversified and robust economy.

Recommendations:

1. As mentioned previously, the shared economy is here to stay. It not only is a great generator of jobs, but also a sector which unlocks the revenue potential of individual assets that would otherwise be underutilized. The federal government must focus on tax policy and regulations to keep pace with this new sector. Rather than create policy after the fact, it is important for the government to bring together existing stakeholders to craft open input to the development of fair regulations for this growing industry. In other words, government needs to be proactive and not reactive.

NAFTA Renegotiations

Canada's innovation agenda needs a fair and modernized NAFTA agreement to help achieve an increased level of economic prosperity. History teaches us that the opportunities to advance U.S.-

Canada trade do not appear with great frequency—now is the time to “get it right.” The cost of getting it wrong will have a detrimental effect for tech entrepreneurs for generations. From a tech sector perspective, the greatest deficiency in the current NAFTA agreement is the failure to establish a modern framework to govern the rise of the integrated U.S-Canada tech sector, as well as prescribed rules for managing the continental digital economy.

In order for North America to have a prosperous tech sector, it is imperative for all stakeholders from Canada, the U.S. and Mexico to be focused on growing together. There was a report released on May 24th, 2017 which concluded that the current NAFTA agreement as it is written largely has reached its potential. New provisions will be needed to experience increased economic and employment growth for Canada, the U.S. and Mexico.

Recommendations:

1. **Digital Visitor Visas:** No modernization of the digital provisions of NAFTA can be complete without addressing the cross-border movement of legitimate business travelers in the digital tech sector. This has a direct effect on the ability of Canada’s innovation agenda to prosper. Presently, business visitors (e.g, B-1 visitors) may move within the NAFTA areas for legitimate travel relating to sales calls, meetings, training, emergency repairs, and after-sales service. Unfortunately, inconsistent treatment of those travelling to raise venture capital, discuss digital products and services, collaborate on projects, provide training and installation on digital products is a concern. Customs and immigration officials utilize interpretative guidance in field manuals and other areas that does not account for the modern day movements of digital business visitors and the ever changing job descriptions. In essence, current job titles and descriptions that reflect current jobs in Canada’s tech sector do not exist in the NAFTA field manuals that border officials base their entry admittance. It is imperative that job descriptions be updated every 18-24 months rather than every 10 years to better reflect the changing digital economy.

2. **Harmonization of Regulations:** Streamlined regulations across North America will help to reduce costs for Canadian tech companies. The U.S.-Canada Regulatory Cooperation Council (RCC), launched in 2009 has been given the mandate to harmonize regulations between Canada and the US. This council is working towards regulatory convergence on emerging and new technologies such as autonomous vehicles, artificial intelligence, next generation air traffic control systems, and other technologies. These framework provisions must be included in a digital chapter of the upcoming NAFTA negotiations to ensure that the RCC is embedded into the Agreement.

3. **Forced Localization:** It is important that the upcoming NAFTA agreement prohibits the forced localization of computing facilities. To do otherwise will have a negative and costly affect on the Canadian tech sector. In addition, it is imperative that the renegotiated NAFTA agreement prohibits a country from requiring the “transfer of, or access to, software source code as a condition for the importing and distribution. Without this protection, the Canadian tech companies would be at a severe disadvantage since they rely on exports to generate revenue and grow their businesses.

Conclusion

Where to go from here? Currently, with the ever-changing dynamics in the global economy, the Canadian economy must grow and flourish. It is imperative that as a nation we embrace innovation as the catalyst for economic and job growth along with overall prosperity. Decisions made by both government and industry must focus on the strategy of ***“Innovation to Prosperity”***. In order to be world leaders in the area of technology, as Canadians we must all work towards this common goal of an inclusive policy approach.

It is hoped that the recommendations presented in this paper and advocated for by tech industry stakeholders, will contribute to the discussion on Canada’s Innovation Policy moving forward. Government cannot do this alone and neither can industry. It will only take shape if stakeholders

work together towards this common goal, thereby encouraging the Canadian economy to grow and prosper for years to come.

This paper was written and supported by members of the tech organization North of 41.org



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