

TECH IMPACT

# Innovation Position Paper



April 2018

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## 2 EXECUTIVE SUMMARY

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Atlantic Canada's economic outlook is dire should our current course and speed perpetuate. The Provincial governments within the region are materially indebted, demographics aren't sustainable with an aging workforce and youth migration, and unemployment rates are high.

Atlantic Canada is facing highly complex problems that require methodical, long-term solutions.

*"Innovation is the fuel that will transform the Canadian economy. TechImpact will work to encourage increased innovation in all parts of our economy. This includes supporting increased private sector and university research and commercialization that will lead to new products or services to build companies around. Innovation is not only for the private sector; we will also encourage the development of innovative and cost-effective ways to deliver traditional public services."*

**- Martin Davis (VP of IT, J.D. Irving Ltd) & Ed McGinley (CEO TechImpact)**

TechImpact serves as a body, represented by over 30 different technology-related companies throughout Atlantic Canada, that is collectively collaborating to solve some of these highly complex problems our region is facing. At TechImpact, we believe in the power of technology to unlock our region's prosperity and build a strong, lasting economy for Atlantic Canada.

Innovation is not a new concept, it's been at the root at some of our greatest societal advancements. It has challenged previous lines of thought while simultaneously spurring significant economic growth. Due to the globalization of our world and economies, competition for companies across the world has dramatically increased. To remain competitive in today's global market, it is imperative that we begin exploring innovation across all industries in the region.

Through this position paper, we will demonstrate what we view innovation to be, the significant opportunity at hand, the relevancy of technology associated with innovation, and the critical role of various stakeholders in making our vision of a prosperous Atlantic Canada a reality.

### 3 OUR DEFINITION OF INNOVATION

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*“Innovation is the specific function of entrepreneurship, whether in an existing business, a public service institution, or a new venture started by a lone individual in the family kitchen. It is the means by which the entrepreneur either creates new wealth-producing resources or endows existing resources with enhanced potential for creating wealth.”*

*- Peter Drucker, Harvard Business Review*

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This is a very simple, straightforward definition of innovation; however successful innovation is neither simple nor straightforward. It is critical to remember that not all novel ideas, inventions or enhancements will be commercially successful. This is an important concept to be aware of when discussing research, development, invention, and process improvements. There are many factors that come into play to deem an innovation as commercially successful. In fact, most innovative never make it to market, or if they do, they are not commercially successful. Most often, the technical aspects of invention are the easy part of the process to successful innovation. Scaling up, marketing, distribution and sales are often the most challenging and expensive part of the innovation process. Managing these challenges and risks is critical to successful innovation.

Although TechImpact is an IT organization, the positions that we outline in this paper focused solely on the application of innovation across many disciplines, including those that span outside the IT sector. This includes both product and service companies, as innovation must occur to create and commercialize new products as well as for process improvements such as sales funnels and assembly lines.

Technology is not essential for all innovation; however, it is important to remember that anything that is done to scale (meaning large scale and high volume), technology is required. Whether it is within new IT industries such as mobile app development or more traditional “non-tech” industries such as fishing, farming or forestry.

### 4 WHY DO WE NEED TO INNOVATE?

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Innovation is a critical factor for the success and livelihood of the Atlantic Canadian region. Our provincial governments are highly indebted, our workforce is aging, youth are out-migrating, and unemployment rates are high. Should Atlantic Canada want to maintain or improve the current quality of life, innovation will be required.

The problems Atlantic Canada is facing today are highly complex and require intricate and long-term solutions.

Increasing our exports as a function of GDP will be a key component of any solution. Businesses that focus on exporting expand their growth potential beyond our relatively small regional market to larger global markets. This enables sales volumes to increase dramatically, resulting in higher profit margins. It also brings new money into the region rather than recirculating the same funds within the region. To

support the demands of international markets, businesses must be prepared to scale, which amplifies the need for innovation and technology.

Economies that embrace a high level of innovation generally lead to increased GDP, increased export, increased employment and population growth, enabling a stronger culture both economically and socially.

This approach to innovation has proven to be successful in other regions of our world. Estonia is a great example of this.

## 4.1 PROVEN SUCCESS – ESTONIA



Estonia has quietly become one of the most tech-savvy countries not only in Europe, but worldwide. Former Soviet-controlled nation, Estonia is home to just 1.3 million people. Although it has a small population, Estonia holds the world record in start-ups per person. With some of the fastest broadband speeds, coding incorporated into all grade levels across the nation, online health records and mobile parking payment, Estonia has demonstrated excellence in innovation and technology. Furthermore, 95% of residents of Estonia can typically complete their taxes online within 5 minutes.

*“The country also instituted a cutting-edge X-Road [data highway] technology platform to help organize, manage and share private and public data between government institutions. That system allowed Estonia to institute online voting in 2005, becoming the first country to ever do so.” (Horowitz, 2016)*

The economic result of this emphasis on technology was validated when Estonian engineers developed the code for Skype, producing a \$2.6 billion sale to eBay in 2005. This sale was significant as it demonstrated that anyone could play in the technology/innovation space.

*“As the Skype founders became rock stars, a new generation of young Estonians flocked to try their hand at tech. Today, high-tech industries now make up about 15% of Estonia's total GDP. There are an estimated 350 Estonian start-ups — one for every 3,700 citizens.” (Horowitz, 2016)* Furthermore, the export of goods and services exceeds approximately 85% of the GDP (Government of Estonia, 2018).

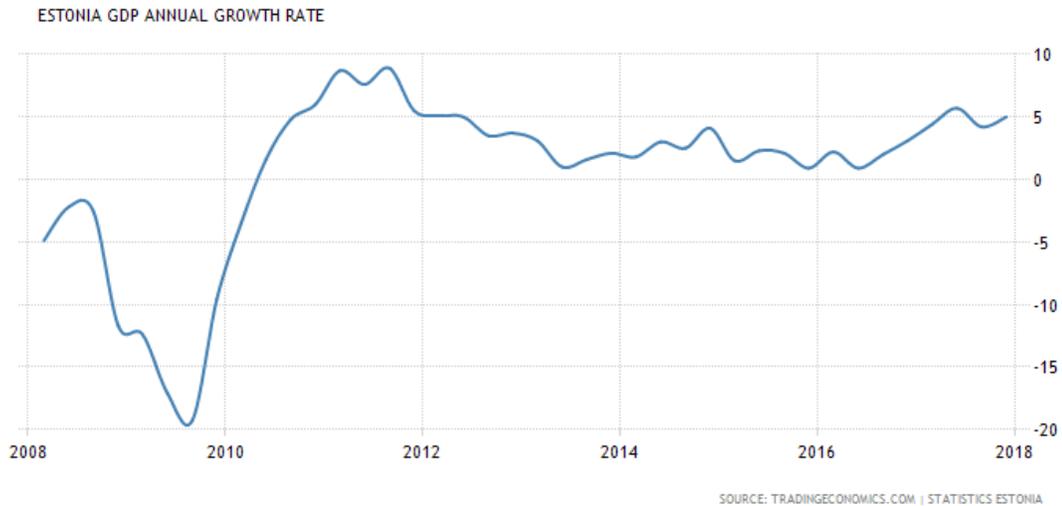


Figure 1. (Trading Economies , 2018)

Estonia is a good example of how innovation can lead to prosperity. Atlantic Canada can do the same despite our relatively small population and relatively low economic activity base. Creativity and success are not necessarily proportional to size; in fact, small and nimble companies and societies have proven to have the agility to change and innovate much faster than large companies and societies.

#### 4.2 PROVEN SUCCESS: GANONG CHOCOLATES



Ganong is a large company operating in Atlantic Canada. They have been innovating for many years and were the first to do many things which have made Canadian candy history including: the first Canadian lollipop in 1895; the first 5 cent chocolate nut bar in 1910; the first heart shaped box in 1932; and inventors of the original Chicken Bone in 1885, which remains a Christmas favourite with consumers to this day. Ganong continues to innovate to meet the needs of today's consumers and to remain competitive in a rapidly changing retail environment.

*"Innovation over the years means we've been able to adapt to changes because we understand our business environment,"* explains David Ganong. *"Because of our uncompromising focus on the quality of our products, and because we know our market, we've survived through price spikes, commodity shortages, consolidations within the industry and fierce competition from multinational competitors with vast marketing budgets."* (Kohane, 2003)

It can be shown that all successful businesses have been innovative at some point in their history or in many cases, throughout their history. Established companies that stop innovating will eventually fail.

A very relevant example of this is Blockbuster. Blockbuster was once a leader in its market but failed due to its unwillingness to adapt with the changing times. The company didn't have the foresight to see where the Internet and technology would take the movie rental industry. Instead, it did what many corporate giants do: deny the influence of transforming technologies and ignore the changing needs of their customers. To top things off, Blockbuster missed a valuable opportunity when it declined to buy out Netflix for \$50 million early-on. Now Netflix is worth over \$80 billion (Above the Fold, n.d.).



*To successfully export and compete on a global scale, Atlantic Canadian companies must be constantly improving their products and service offerings.*

## 5 HOW DOES INNOVATION OCCUR?

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Innovation occurs in several ways. It can be the result of unplanned events or circumstances, it can be the result of a planned methodical approach to product or service evolution or revolution or it can be a combination of both.

Unplanned events or circumstances can be because of:

- **A Business or technical necessity or opportunity**
  - “If we don't change how we do things or how our product works or how we deliver our service, our competitors will put us out of business or our costs will sink us.”
  - “There is a terrific opportunity in this market sector if we can only create a mobile version of our product and allow users to customize the color scheme to their liking”.
- **A eureka moment**
  - “I think we can turn the video rental industry on its head if we can create an online streaming service that will allow users to stream videos to their TV's over an internet connection” (Netflix). It was a radical idea at the time, with high bandwidth home connections still expensive and with the upfront investment in infrastructure and licenses very high.

Planned incremental improvements to a product or process over time can be achieved through working methodologies such as 6 sigma process improvements, for example, or by eliminating rework or low value tasks in a workflow process. It could also be an enhancing feature that customers are asking for. Incremental improvements are the day to day product or service sustaining activities that most companies must do to enable them to keep the doors open.

In terms of a planned approach to innovation, one tried and true method is to first create User Experience Roadmaps, sometimes called Innovation Roadmaps. This will define a company's product, business or service evolution/revolution for 3 to 5 years into the future in terms of user features and

functions and allows a planned systematic approach to innovation. Figure 2 below illustrates an example of a hypothetical user experience roadmap for an automotive dashboard.

### A Sample User-Experience Roadmap

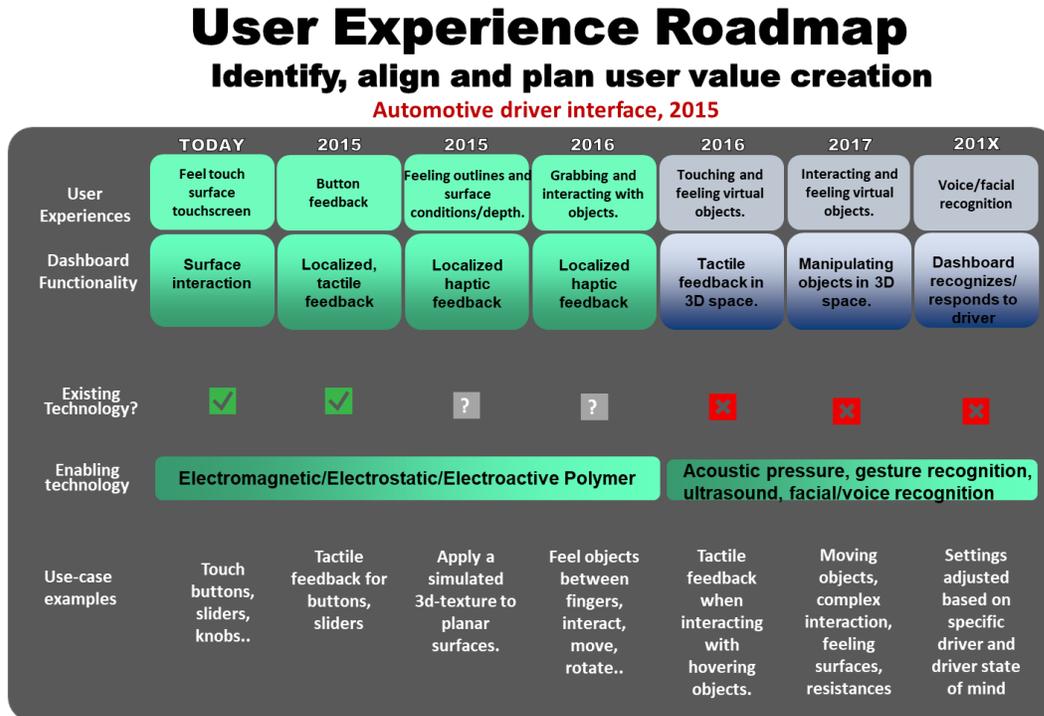


Figure 2. User Experience Roadmap (Innovation Roadmap)

The important aspects of the User Experience Roadmap:

- Predict what you believe the users of your product or service will want in terms of enhanced experiences over the next 3 to 5 years. This information can be derived from your knowledge of the market and from observing trends in adjacent industries and society in general. Remember that most of your product/process users are likely not aware of future possibilities if you ask them what they want.
- Plot this progression out in a logical sequence over time and determine the enabling technology or processes required to create these new user experiences.
- Finally, derive use-case examples that can be rapidly prototyped to validate the new user experience with minimal cost and effort.

This approach can give you the opportunity to become a leader in your industry. Combining this user centric approach with a stage gate innovation process can be a very efficient and cost-effective planned innovation strategy. Below is an example of a typical stage gate process for innovation.

## Innovation Process – Fail Fast Fail Cheap

Decrease risk, increase probability of success, reduce cost

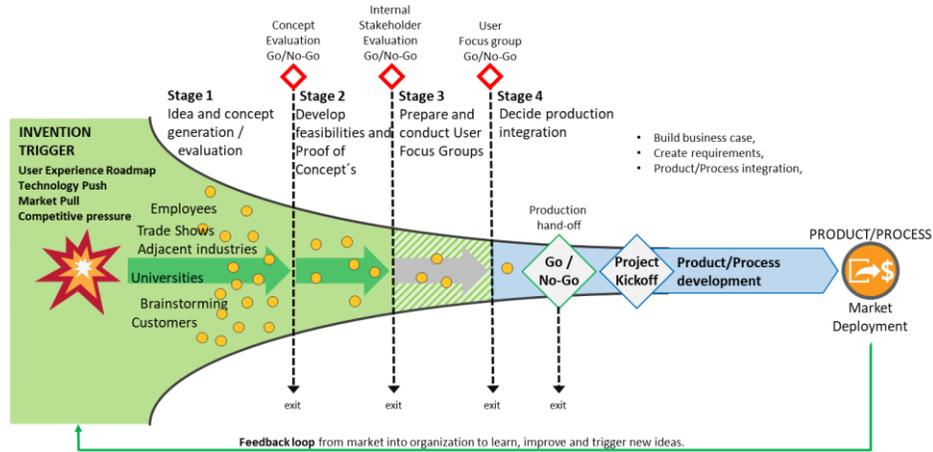


Figure 3 – Stage Gate Process

The important aspects of the stage gate innovation approach are as follows:

- A planned, methodical process that identifies and retires risk early on
- A series of small experimental steps and decision points culminating with commercialization
- Minimizes time and money spent on concepts doomed to failure (fail fast and fail cheap)

Strategies such as **fail fast and cheap** implies that you break down a larger project into smaller segments, each with a go-no go decision point. You identify the most significant risks to the project success and try and retire them first. You will only invest small amounts of resources at each stage and can kill a project quickly if it fails early on, minimizing losses. This is a Best Practice that companies should follow.

Since most companies do not possess all the expertise or have the available resources required to innovate their products or processes by themselves, they must reach out and **collaborate** with 3rd parties (other companies, academic institutions, private/public labs and research facilities.) Having the foresight to do this in a timely and cost-effective manner can make or break your innovation plans.

### 5.1 PROVEN SUCCESS: CLEARWATER



Clearwater, a large public seafood company based in Bedford NS, recognized an opportunity to improve vessel harvest efficiencies and create more sustainable environmental management

and assessment processes by applying sophisticated seabed imaging and GIS techniques to their process. To access this expertise, they reached out to the Nova Scotia Community College (NSCC) and the Natural Sciences and Engineering Research Council of Canada (NSERC) to establish a Chair in Integrated Ocean Mapping Technologies. Together with NSCC and a few other external partners, they are developing innovative seafloor mapping methods and techniques to support a variety of offshore activities, initially focusing on fisheries applications.

External collaboration can be a key to successful innovation, whether you are a large public company like Clearwater or a small start-up.

## 6 IS INNOVATION ALWAYS TIED TO TECHNOLOGY?

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TechImpact promotes the use of technology to enable innovation in all sectors. Our members know first-hand how it can create novelty, efficiency and accelerate the innovation process. However; technology is NOT essential in all cases.

### 6.1 PROVEN SUCCESS: MCDONALDS



In 1948, the MacDonalld brothers in California experimented with novel kitchen floor plans and an assembly line approach to making hamburgers. They eventually revolutionized the restaurant industry and created the first fast food restaurant chain. At the time, technology played little or no part in this innovation, but it certainly was commercially successful.

Innovation is key to success for both product and service industries and may have nothing to do with technology. As was the case for MacDonalld's, improving how you run your business can be as innovative and commercially successful as any technology related improvement.

There is one exception to this rule. , Technology is essential to effectively scale up to higher volumes. It is important for companies to first optimize their manual processes, then apply technology to scale up to high volumes to decrease unit costs, increase throughput and maximize margins.

## 6.2 INCREMENTAL VS RADICAL INNOVATION?

Innovation can be incremental such as in the gradual evolution of a product or service. At the other extreme, radical or disruptive innovation can create chaos in an industry and generate huge financial gains (high risk, high returns).

Another way to look at this is to ask, “do you wish to be a leader or a follower?” Companies must decide if they wish to be leaders in their industries or fast followers. A leader must emphasize radical innovation along with ongoing incremental innovation. Fast followers must closely monitor changes in the competitive landscape and respond rapidly. Both approaches can be successful, and both have their advantages and disadvantages.

## 6.3 PROVEN SUCCESS: SPIELO GAMING



When Spielo Gaming in Moncton first broke into the government sponsored lottery, business selling Video Lottery Terminals in 1990, they were competing with large multinationals such as Bally, Aristocrat and IGT. Their first products were designed to emulate successful competitors’ products (they were fast followers) and this allowed them to gain a foothold in the market. Over the years as the company grew, Spielo evolved to become an industry leader, launching successful industry firsts such as 3D and 4D technology into the gaming sector. The eventual inclusion of radical innovation into their R&D portfolio was very successful; however, it still comprised only a small fraction of their overall innovation budget. Spielo was eventually acquired by American lottery giant GTECH which then acquired IGT to become part of the largest lottery and gaming company in the world.

The decision to lead or to follow is key to how you structure your innovation plan. How much risk are you willing to take in terms of time and investment to disrupt a market with a radical new product or service versus its gradual evolution?

Many companies struggle with getting the right mix. On the one hand, incremental innovation is generally required on an ongoing basis to keep a product or service current and respond to customer requests and customer deliveries. This is typically minimal risk with a low ROI (return on investment) and is the bread and butter activity that will keep the lights on. Diverting resources from a low risk revenue generating activity to a high risk but potentially high ROI activity is a tough call. Most established companies will focus 90% or so of their efforts on incremental innovation.

“Companies that allocated about 70% of their innovation activity to core initiatives, 20% to adjacent ones, and 10% to transformational ones outperformed their peers, typically realizing a P/E premium of 10% to 20% (An adjacent innovation involves leveraging something the company does well into a new space)” (Nagji & Tuff, 2012).

Many smaller companies or start-ups take the radical or disruptive innovation approach on a new product/service or potential industry disruptive offering. The risks are much higher, but the rewards can be significant if done right.

## 7 STAKEHOLDERS IN ADVANCING INNOVATION IN ATLANTIC CANADA

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### 7.1 PRIVATE SECTOR

This position paper is not intended to provide an exhaustive list of programs and stakeholders that have a role in advancing Atlantic Canada’s innovation agenda. It is intended to provoke and encourage “thought leadership” on the agenda and leverage those thoughts and ideas into action.

Responsibility for innovation does lay within many stakeholder camps. In this section we would like to highlight our thoughts on some of the stakeholders that may hold the keys to igniting and innovation movement within our Atlantic region.

Companies must be proactive and prioritize innovation to be as productive and successful as possible to remain competitive in global markets.

It’s often been shared that many companies are too consumed with their daily operations to dedicate the required time for innovation. This is where a properly planned and methodical approach to innovation can help. Innovation can be planned like any other project. Creating a project plan with a timeline, milestones, budget and resources followed by execution, at a manageable pace is a realistic method to make innovation more of a common practice within a large business. Additionally, collaborating with other parties will extend a business’s capabilities and expertise.

Government funding can be a crucial factor in de-risking your innovation plans and extending your research capacity, but most government funding agencies do not have enough resources to educate and promote their programs in Atlantic Canada. In order to access these programs, companies must reach out and make the first contact. The National Research Council (NRC) employs regional Industrial Technology Advisors (ITA’s) as part of their Industrial Research Assistance Program (IRAP). IRAP ITA’s are experienced Research Managers who can help you structure your research plans and identify possible sources of government research funding.

For further information in the Industrial Research Assistance Program: <https://www.nrc-cnrc.gc.ca/eng/irap/>

To collaborate with university or college researchers, Springboard Atlantic represents all post-secondary institutions in Atlantic Canada and is a good first stop to identify potential academic partners.

For further information on Springboard Atlantic: <http://www.springboardatlantic.ca/>

Larger established companies in Atlantic Canada must lead by example, encourage and assist smaller businesses and try to leverage them to help solve their challenges and take advantage of opportunities that larger companies face. This leadership is imperative to nurturing a culture of innovation within the region.

## 7.2 PROVEN SUCCESS: RTTECH SOFTWARE & J. D. IRVING LTD.



A good example of this is J.D. Irving, Limited and RtTech Software Inc. One of J.D. Irving's companies, Irving Consumer Products, headquartered in Dieppe, New Brunswick was looking for a cost-effective solution to improve real-time data acquisition from their factory floor to allow them better insight into their manufacturing processes.

Although several large multinational firms had product offerings in this space, J.D. Irving managers recognized a small local startup company, RtTech, who had an attractive solution. J.D. Irving partnered with RtTech, became their lead customer and helped them develop and demonstrate their technology. RtTech has since become a successful company with customers all over the world while still working closely with J.D. Irving.

Large companies can provide best practices to smaller firms and start-ups. This can be done when large companies collaborating with smaller local firms by imposing quality control standards on them, bringing them into their supply chain processes and ISO 9000 practices where applicable, and exposing them to confidentiality and intellectual property protection practices. They can also become lead customers for smaller firms, giving them an opportunity to prove their product or service offering and becoming a showcase client. The result of doing so boosts the economic capacity of the local Atlantic Canadian economy while simultaneously developing a stronger export-ready product.

## 7.3 REVIVING A PROVEN "CONCEPT" TO DRIVE MORE SUCCESS

The **Business Community Living Lab (BCLL)** is a new concept in our region being actively promoted by TechImpact where established companies are provided with a mechanism to bring their opportunities and challenges forward and have local organizations (academic and research institutions, startup community and support organizations and established local businesses) propose solutions.

The potential for Atlantic Canada to become a leading area for innovation through the collaboration of the Innovation Community and the broader Business sector is promising, allowing our region to realize the social and economic potential we hold. The Business Community Living Lab model advocates leveraging the strength of our existing business sector with the talent of the new

knowledge/technology-based sector, creating a new interwoven economy which will give rise to a new era of growth benefiting the region in all capacities and establishing a long-lasting impact.

The economic landscape of Atlantic Canada holds numerous assets, and two of which will be key to the fruition of accelerated economic growth. We will leverage our world-class business sector, and a vibrant innovation community which will be the foundation of our proposed Business Community Living Lab initiative. The innovation community comprised of an exciting start-up community, a growing technological entrepreneurship post-secondary culture, and a dynamic group of established tech companies that has sprung-up in the last 15 years.

We will utilize our assets in both sectors to create a culture and a collaborative model that enables us to bridge our business sector’s real-life challenges with our innovation community’s creativity to solve these challenges. Our smallness will be an advantage. A passionate, dedicated, and inspired coalition has come together to advocate leveraging the strength of our existing/traditional businesses with the talent of the new knowledge/tech-based sector to create a model for growth.

The focus on the Living Lab will be ideation, validation and piloting and early commercialization which will result in the commercialization of businesses who secure private funding outside what’s provided in the Living Lab. Funding will accelerate and heighten Atlantic Canada’s presence and importance in the national scope of private sector R&D and productivity. This approach provides enough opportunity to explore potential options, while also securing a safety net to reduce risks for the involved stakeholders.

To put this in perspective, if just one company, NBTel who deployed a similar Living Lab strategy 25 years ago, has continued to have such a significant long and lasting impact, you must imagine the impact on our economy and community if all our world-class businesses engaged in our Business Community Living Lab.

The Living Lab Model has proven to be successful in our region and can be our roadmap forward. Figure 4 below provides a high-level view of the labs approach.

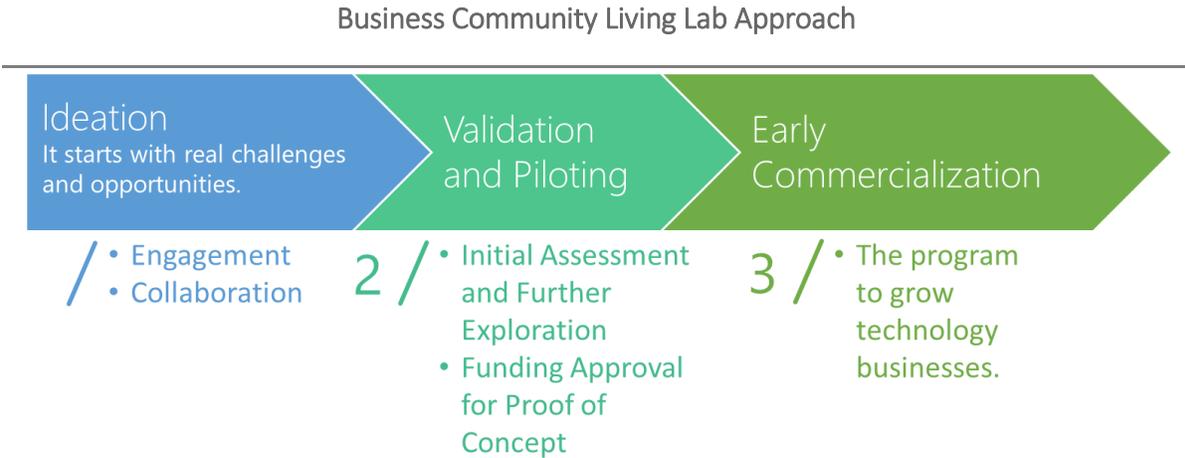


Figure 4 – Business Community Living Lab

The result will be more productivity and growth for existing businesses, the creation of new global companies, the attraction of international companies looking to innovate, attraction of new investment funds and highly skilled people. TechImpact believes that the government also plays a role in the BCLL by providing funding mechanisms to offset risk.

#### 7.4 GOVERNMENT – PROVINCIAL AND FEDERAL

Governments play a significant role in fostering innovation in the private sector by creating a business climate to encourage innovation through funding and support mechanisms to de-risk innovation. Governments also become early adopters through piloting local products and services, just as large private sector companies should do.

One concept that can foster innovation and accelerate business led innovation within Atlantic Canada is the Harmonized Innovation Incentive Plan (HIIP). This is a new program concept being proposed by TechImpact to incent and attract businesses to do R&D and early commercialization locally.

The concept is to combine and streamline federal and provincial innovation funding programs to maximize fiscal impact and minimize red tape. It is presently difficult if not impossible to bring the various government funding agencies together to jointly fund business led innovation projects.

Note that the HIIP does not necessarily imply increasing existing innovation funding budgets but rather combining and streamlining them.

A New Approach to Federal and Provincial Support

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## Harmonized Innovation Incentive Program (HIIP)

A new program to incent and attract businesses to do R&D and early commercialization HERE.

- ✓ Needs to be BOLD
- ✓ SIMPLE - Federal & Provincially harmonized

Figure 5 – Harmonized Innovation Incentive Plan

TechImpact believes that a properly structured program will deliver the following outcomes and effectively create a free R&D zone:

- Aggressively stimulate our local business sector
- Achieve a 10-fold increase in business led innovation –50 new Spielo’s, Innovatia’s, Remsoft’s or Resson’s.
- Create 15,000 highly skilled jobs
- Assist in early commercialization effort to maximize economic growth through export of new business solutions which will stimulate the creation of new exportable businesses / capabilities based on newly created IP
- Attract companies to relocate to Atlantic Canadian to grow their R&D functions
- Streamline and strengthen a federal and provincial harmonized approach to access funding for business led innovation
- Improve ROI for government programs

We recommend that the Provincial Governments work together with their federal counterparts to make this a reality.

#### 7.4.1 Fostering innovation in academia (R vs D)

Research by itself does not create innovation. Transitioning research to development can create innovation. In addition to funding basic research to create expertise and knowledge, university funding should also emphasize commercialization of the research. Many academic institutions have difficulties in reaching out to the private sector to commercialize their research or to make their skills and expertise known to the private sector. Government can fund university/college-based mechanisms to help transition research to development such as:

- Industry liaison Offices – to facilitate R&D business deals.
- Springboard Atlantic - for industry to academia connections.
- Meet and greet events for academia and industry.
- Local collaboration success story promotion.

#### 7.4.2 Building Long Term Capacity

Governments can play an important role in building our long-term capacity to innovate by supporting integration of creativity, innovation, coding, and building an entrepreneurial skillset within classrooms and educational curricula in elementary, middle and high school system. Programs such as Brilliant Labs can plant the seeds of innovative thinking at a young age. This will enable many of those students to pursue post-secondary STEM programs and help satisfy our demand for skilled workers.

*“Brilliant Labs is a not-for-profit, hands-on technology and experiential learning platform based in Atlantic Canada. We support the integration of creativity, innovation, coding, and an entrepreneurial spirit within classrooms and educational curricula.”*

[\(https://www.brilliantlabs.ca/\)](https://www.brilliantlabs.ca/)

#### 7.4.3 Innovating within the public sector

Government should adopt the fail fast and cheap approach to fostering innovation within the public sector by carrying out pilot projects with local companies, foster a culture of innovation within government and incent government staff to take measured risks with local companies.

The New Brunswick government has taken an excellent step in this direction. In 2015 the provincial government consulted with TechImpact, the Public Service, academia and other private sector stakeholders, students and citizens. The consultations were an effective first step to engage in a dialogue with these stakeholders. They provided insight and wisdom on how disrupt, challenge and improve current methods of government service delivery and citizen engagement. This was long and exhaustive exercise, but the outcome is producing a promising strategic vision. The result is the recently published Digital New Brunswick Strategy.

The strategy proposes placing citizens and businesses in New Brunswick at the center of everything the provincial government does, while leveraging digital technology as an enabler for effective and efficient service delivery. Digital technologies are electronic tools, systems, devices and resources that generate, store or process data. These include social media, cloud computing, interoperable systems, online games and applications, multimedia, productivity applications, and mobile devices. The vision is for New Brunswick to become the first digital society in North America. This type of innovation is brave and very forward thinking. The benefits should prove to be enormous for the Province.

The New Brunswick Innovation Foundation(NBIF) is another great local example of government recognizing its ability and responsibility to foster innovation amongst the private sector and academic community. **Their byline is clear and concise – “Bridging the gap between research and enterprise.”** They do this well. They provide necessary capital and expertise to companies that need the nudge to get them across the innovation goal line. This programme is available for big and small enterprises.

Recently, they announced \$11.4 million in funding to support more research and development that will benefit local companies. The CEO of NBIF is quoted as saying. “Research does the often-unseen legwork required before any innovative product or service can launch. These funds are critical for the recruitment and retention of the brightest minds in Canada and help us build the capacity to do world-class research”. He is correct. This funding is often the difference between a local company breaking onto that next level of competitiveness and revenue growth or drifting into insignificance as their competitors outpace them in the race for market share.

## 7.5 ACADEMIA

Most universities in Atlantic Canada have traditionally focused on research rather than innovation (commercialization). Colleges in Atlantic Canada have been primarily focused on education and have not played a large part in applied research. To play a meaningful part in the Atlantic Canadian innovation landscape, Academia must be able to show commercial value in the services they provide so that customers are willing to pay. Effective communications to the business community to explain how they can provide this value is a must.

### 7.5.1 Transition Research to Development

University research is essential to foster creativity, create expertise and advance knowledge; however, institutions that value and promote innovation must provide business friendly mechanisms to transition research to commercialization in collaboration with the private sector. This can involve being proactive and applying fulltime resources to finding industrial partners for professors or students with defined IP. It can involve using these same resources to connect subject matter experts within the university to private sector companies that have technical challenges to be solved or opportunities to exploit. The

New Brunswick Innovation Foundation (NBIF) that is a partner in providing funding and programs to support these efforts and are necessary partners for post-secondary institutions.

#### 7.5.2 Encourage and Incent Professors

Academic institutions should provide professional incentives to encourage staff who are interested to commercialize their IP or share their subject matter expertise to the private sector. For Professors, this could mean being granted credit toward achieving tenure as one example.

#### 7.5.3 Provide entrepreneurship educational opportunities

Another method to encourage innovation within the academia is to emphasize entrepreneurship education and facilitate multidisciplinary collaboration. Many universities now provide these programs as part of their regular curriculum or through privately funded programs. Many students will opt for starting their own business if there are opportunities to first gain some business practice knowledge while in school.

#### 7.5.4 College and University collaboration

Most colleges have traditionally focused on teaching, with minimal emphasis on applied research and industry collaboration. This is starting to change now that NSERC has been funding Chairs in applied research. Colleges should encourage and financially incent instructors to collaborate more with industry, whether it is through an applied research project or through consulting. This could also open the large number of specialized tools and equipment on the college campuses and make it available to industry. Funding industrial liaison offices will support this effort.

An increased emphasis on applied research will also create opportunities for 3-way collaborations with universities and industry. In many cases, university and industry partnerships can create technical proof of concept solutions, but there is still a need for further work to test, validate and “productize” the outcomes before they can be commercialized. This role can be a perfect fit for colleges.

### 7.6 START-UPS

We have a strong and vibrant startup ecosystem in Atlantic Canada with many not for profit organizations, venture capital companies and angel investors established to encourage, finance, support and mentor startups. In 2015, with the help of these organizations, some of which are represented below, over 355 startups were launched in Atlantic Canada. The role of the Start-up community is to continue to build new companies that will create the new wealth and products and services that will help our region thrive.

Although each of these organizations have their own specific mandates they also have the responsibility and opportunity to work collaboratively when and where it makes sense to increase their collective chances of success.

## Sample of Atlantic Canada Startup Ecosystem

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Figure 6 – Subset of Start-up Community

## 8 MOVING FORWARD

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Innovation is a cornerstone of economic prosperity for the Atlantic Canada region. The fundamental components already exist within Atlantic Canada to create a culture of innovation within all sectors, to accelerate our innovation activity and kickstart our economic growth and prosperity.

Companies will play a large role in accelerating the innovation movement in the region. Through planned approaches to innovation, companies will be able to determine the lowest risk and most cost-effective approaches to maximize their return on investment. Each business must find the right mix of radical and incremental innovation that matches their level of risk tolerance, as no two businesses will approach innovation in the exact same way. However, this provides great means for greater collaboration, which will be critical in acquiring new knowledge and expertise.

Government, private sector, the startup community and academia must all have a collective understanding of their roles and accelerate and improve the levels of collaboration with each other. Approaches, such as the Business Community Living Lab, will create space for increased innovation by connecting business problems and opportunities to potential solutions provided by local companies and/or institutions.

TechImpacts member companies will lead by example and spearhead our collaborative innovation efforts in Atlantic Canada.

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