

CENTRE FOR DIGITAL ENTREPRENEURSHIP &
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PARTNERS FOR PROSPERITY AND INNOVATION



deepcentre

**PART 3: DOMESTIC AND INTERNATIONAL BEST
PRACTICES IN BUSINESS ACCELERATION**

BY: ANTHONY D. WILLIAMS

ABOUT THE DEEP CENTRE



ADVICE - IMPACT - SUCCESS

The Centre for Digital Entrepreneurship and Economic Performance (DEEP Centre) is a Canadian economic policy think-tank. Founded by Anthony Williams in 2012 as a non-partisan research firm, the DEEP Centre's work shapes how jurisdictions build fertile environments for launching, nurturing and scaling companies that will thrive in an increasingly connected world. Its research and advisory services have helped policymakers around the world identify and implement powerful new policies, programs and services to foster innovation, growth and employment in their jurisdictions.

PARTNERS FOR PROSPERITY AND INNOVATION

PART 3: DOMESTIC AND INTERNATIONAL BEST PRACTICES IN BUSINESS ACCELERATION

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ABOUT THE REPORT

The Partners for Prosperity and Innovation Project is the first nationwide effort to assess the viability of self-sustaining business models for business accelerators and incubators (BAIs) in Canada. Drawing on a national survey and a wide-ranging series of executive interviews, the study highlights critical strategies for growing private sector revenue streams and establishes a better understanding of the challenges startup support organizations are encountering in their pursuit of fiscal sustainability.

This study on the fiscal sustainability of business accelerators and incubators in Canada was generously funded by the Atlantic Canada Opportunities Agency (ACOA), the Business Development Bank of Canada (BDC), FedDev Ontario, Innovation, Science and Economic Development Canada (ISED) and Western Economic Diversification Canada (WD). The information, opinions and interpretations expressed in this report are those of the authors and do not necessarily reflect the official policy or position of the Government of Canada. The Government of Canada and the aforementioned agencies are not responsible for the accuracy, reliability or currency of the information.



Readers should note that the research for this report was conducted before the onset of the COVID-19 pandemic. The impact of the pandemic is therefore not captured in data gathered about the revenue models and fiscal sustainability of business accelerators and incubators (BAIs) in Canada. Likewise, any forward-looking assessments of the capacity of BAIs to maintain or enhance their fiscal sustainability going forward will not account for the impact of COVID-19 on the operations of BAIs.



CHAPTER 1

DOMESTIC BEST PRACTICES IN BUSINESS ACCELERATION

The DEEP Centre's executive interviews highlight the opportunities and challenges that business accelerators and incubators (BAIs) in Canada are facing as they seek out new models that will make their operations more sustainable. As a complement to data analysis and executive interviews findings presented in PART 1 & 2 of the report, the DEEP Centre studied a handful of entities in Canada that have established significant corporate partnerships or developed other significant non-governmental revenue streams. For Canadian accelerators and innovation hubs that are new to corporate engagement or in the early stages of establishing alternative revenue streams, there will be considerable value in learning from the best practices established by more experienced entities.

Our objective in selecting the sample of case studies was to highlight a variety of models for achieving fiscal sustainability and structuring corporate innovation partnerships. For example, we look at two entities that highlight the role of large corporations in driving the success of Canadian startups. Among other things, the case studies demonstrate how corporate accelerators can help startups secure a first sale, access world-class lab infrastructure or acquire sophisticated management capabilities.

The other two case studies highlight contrasting efforts by Canadian BAIs to achieve fiscal sustainability. One organization has pursued a specialization strategy and derives revenue from a combination of equity investments, partnerships and international franchising. The other organization has turned to innovative online delivery models for entrepreneurship 101 programming in order to dedicate more of its valuable EIR resources to fee-for-service work with growth-stage companies.

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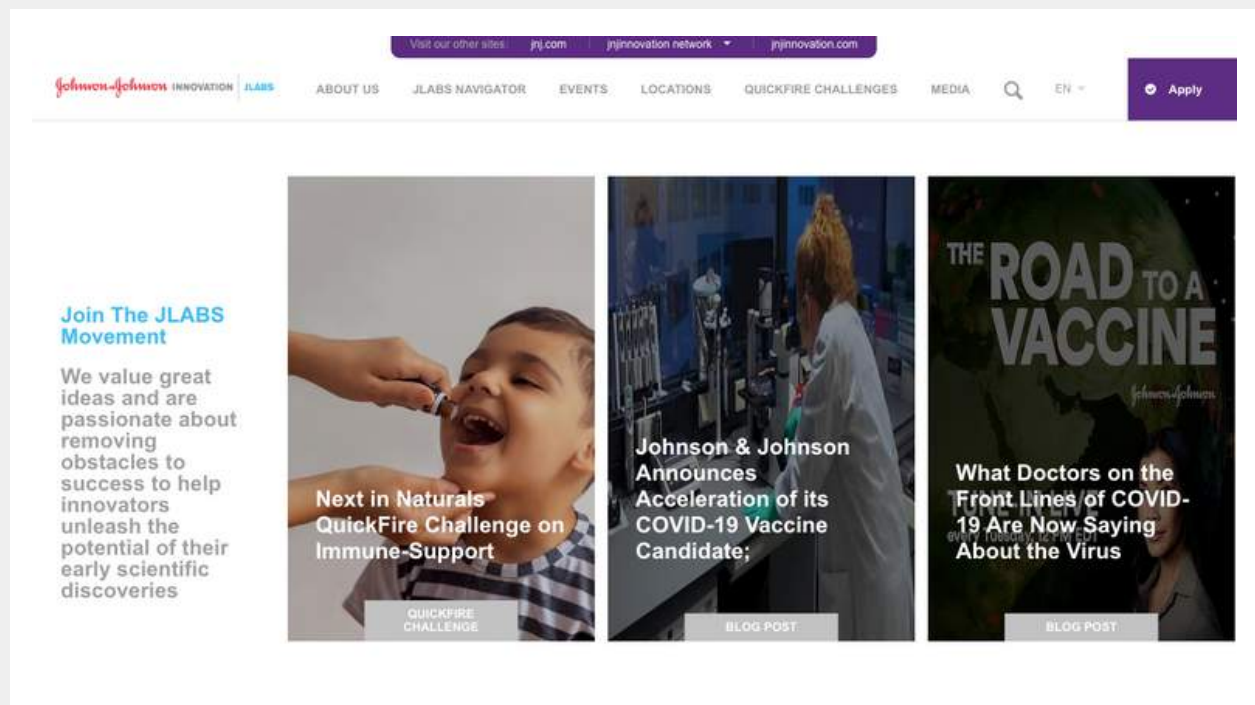
DOMESTIC BEST PRACTICES

The four case studies include:

- **JLABs @ Toronto**, the Toronto location in a broader network of no-strings-attached life science incubators enabling innovators to accelerate the delivery of healthcare solutions to patients around the world. Launched by Johnson & Johnson in 2012, JLABS now has 13 locations worldwide and a network of over 450 supported companies. The case study highlights the work JLABs @ Toronto is doing with 50 resident companies that are developing new technologies across several areas within the medical device, health tech, pharmaceutical, and consumer health sectors.
- **Evok Innovations**, a cleantech investment fund seeking to increase the scale, diversity and quality of early-stage innovations focused on addressing some of the most pressing environmental and economic challenges facing the energy sector. The case study highlights a new approach to corporate venture capital in which the BC Cleantech CEO Alliance has joined forces with two leading energy companies to accelerate the commercialization of impactful energy solutions by connecting cleantech entrepreneurs with flexible capital, mentors and industry partners.
- **Ryerson Futures Inc.**, a Toronto-based BAI that runs Zone Startups, a global brand of tech accelerators and seed-stage venture funds that derives over 90% of revenue from private sector sources. Ryerson Future's fiscal sustainability comes from a combination of equity investments, corporate partnerships and international franchises, but its key success factor is specialization. RFI has established acceleration services across a broad range of geographies and verticals, including innovation hubs in India and Vietnam and corporate accelerators in fintech, sports and media and the industrial Internet.
- **Scale-Up BC**, a partnership between VIATEC and Accelerate Okanagan (AO) that demonstrates how BAIs can strengthen their fiscal self-reliance with more efficient service delivery models. As BAIs shift their attention to helping growth-stage companies to scale, many have been challenged to dedicate enough resources to meeting the needs of early-stage startups. With online delivery of foundational entrepreneurship programming, VIATEC and Accelerate Okanagan are demonstrating how BAIs can build an early-stage funnel while conserving resources for tailored engagements with growth-stage companies.

CHAPTER 1

J-LABS: A NO-STRINGS-ATTACHED MODEL FOR CORPORATE ACCELERATORS



Health startups face challenges unlike any other emerging company and require different kinds of support to grow and take new therapeutics, devices and digital health applications to market. Large pharmaceutical giants like Johnson & Johnson (J&J), on the other hand, scour the world for new ideas, technological advances and talent, and require access to a continuously renewed pipeline of innovation opportunities to drive competitiveness and growth. While J&J harbours ambitions to become the world's leading digital healthcare company, it does not necessarily possess all of the skills, capabilities and cultural agility required to

master the array of digital technologies that are already reshaping healthcare delivery.

JLABS emerged in 2012 as a new model to meet the world's greatest medical and healthcare needs by working in partnership with a diverse global ecosystem of emerging life science companies. In other words, JLABS enables one of the world's largest healthcare companies to stay on top of the latest developments in science and technology by helping address the commercialization and growth challenges facing promising startup companies in the sector.

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JLABS: A NO-STRINGS ATTACHED MODEL

J&J describes JLABS as a no-strings-attached model. JLABS locations provide resident companies with access to the world-class lab infrastructure and leading experts and executives who can help overcome challenges and shape a path to growth. It does not take equity or intellectual property rights in the companies, though it does end up investing in some in the long run. In exchange, J&J gets an inside window into what's happening in the world's leading health innovation ecosystems.

Six years in, JLABS has 13 locations worldwide, including a site in the MaRS Discovery District in Toronto, which opened in 2016. The JLABS network now includes over 450 supported companies worldwide. It has lined up 170 JPALs—industry experts and business leaders from the Johnson & Johnson family of companies who coach and mentor resident companies. According to its [2018 Impact Report](#), 12 companies in its network are now publicly traded; 88% of JLABS companies are still in business or have been acquired; 26% have therapies in human trials, and 25% of residents have a commercial product in the market.

The JLABS location in Toronto is an impressive 40,000 square foot facility that includes modular lab units, office space, shared core laboratory equipment, business facilities, third-party services and educational events. According to Allan Miranda, head of JLABS @ Toronto, the incubator now hosts more than 50 resident companies that are aiming to make advancements and developing new technologies across several areas within the medical device, health tech, pharmaceutical, and consumer health sectors.

Three critical ingredients for attracting corporate engagement Miranda believes that J&J's investment in Toronto is one of several factors that signify the city's emergence as a world leader in healthcare innovation. "Undeniably, Toronto is having a moment," [said Miranda](#). "We're in the spotlight for the advancements the city's scientists have made in the healthcare sector, and we are attracting top talent, innovators, startups, and global leaders in tech from around the world to learn about the newest trends and developments in the healthcare space."

Miranda points to three critical ingredients that make Toronto's biomedical innovation ecosystem unique.





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JLABS: A NO-STRINGS ATTACHED MODEL

The first ingredient is the city's emergence as an undisputed center of excellence in artificial intelligence. "Toronto is a true center for innovation in artificial intelligence," said Miranda, "with the city seeing significant focus and investment in research in this area."³ As proof that Toronto is leading the charge in the AI boom, Miranda points to consortiums such as the Vector Institute, the Creative Destruction Lab, which is renowned for incubating high-potential AI startups, and hospitals like SickKids announcing their new chair in artificial intelligence. There has been a steady stream of investments in new AI labs by corporate entities like Google, RBC and Samsung. And, JLABS Toronto itself is nurturing its cohort of start-ups that are applying AI to real healthcare problems.

For example, Deep Genomics, a resident of JLABS Toronto since 2017, combines world-leading expertise in machine learning and genome biology to support geneticists, molecular biologists and chemists in the development of therapies. The company's AI-driven platform will search across a vast space of over 69 billion molecules to generate a library of 1000 compounds that are candidates for clinical evaluation in collaboration with industry partners.

The second ingredient is Toronto's vast infrastructure for commercializing biomedical innovation and discovery research. Miranda references an array of commercialization support organizations such as FACIT and Techna Institute, innovation hubs like MaRS, and consortiums such as the Structural Genomics Consortium (SGC) and the Centre for Commercialization of Regenerative Medicine (CCRM). "Skilled entrepreneurs coupled with commercialization infrastructure and world-class discovery research are why Johnson & Johnson Innovation chose Toronto as a JLABS location," said Miranda.

Since opening its doors in 2016, JLABS has added a new and valuable component to the resources and networks available to the health and life sciences innovation community in Canada. "We are here to help with the next step for these entrepreneurs," Miranda said. "Beyond infrastructure, JLABS @ Toronto provides access to educational programming, internal and external funding options and through the JPAL program we pair JLABS resident companies with internal experts from across the Johnson & Johnson family of companies, who have the R&D and commercialization knowledge, to help these companies reach their next milestone and get their technologies closer to market."

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The benefits this commercialization infrastructure provides for startups are clear, according to Jon Worren, executive lead for Venture and Corporate Programs at MaRS. "Startups at JLABS get access to costly medical equipment. They can seek advice from experts on science, marketing and regulatory issues. The J&J VC unit operates out of the Toronto location, and other investors in the biotech space are always present. JLABS is also an impressive facility and lends instant credibility to the startups that are resident there."

The economics of running a lab in the MaRS Discovery District are also highly attractive to Johnson & Johnson. The company received \$19.4 million from the Province of Ontario to establish the lab in Toronto. But the real benefit is the relatively inexpensive access to talent and innovation the lab provides on an ongoing basis.

"JLABS is hosting 50 startups with an average headcount of 5 people," said Worren. "If all of these entrepreneurs and scientists were on the payroll, J&J would need to pay at least \$100,000 per head to employ them full-time. That's \$25 million of talent that J&J gets exposure to in Toronto alone, for a fraction of the cost."

Diversity, according to Miranda, is the final piece that distinguishes Toronto as a world-class home for biomedical innovation. "Toronto, like many large cities, is a melting pot," says Miranda. "However, what sets Toronto apart is that we have worked hard to reduce the barriers to inclusion. Every day I see companies with diverse teams of employees focused on bringing their innovation to life. Having such a variety of backgrounds allows companies to think differently about problems and to evaluate their innovation potential from numerous perspectives. At JLABS @ Toronto, we put a point of focus on diversity, in both the programming and environment we create. We believe that with inclusivity, we might be able to develop better companies and better solutions."



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JLABS: A NO-STRINGS ATTACHED MODEL

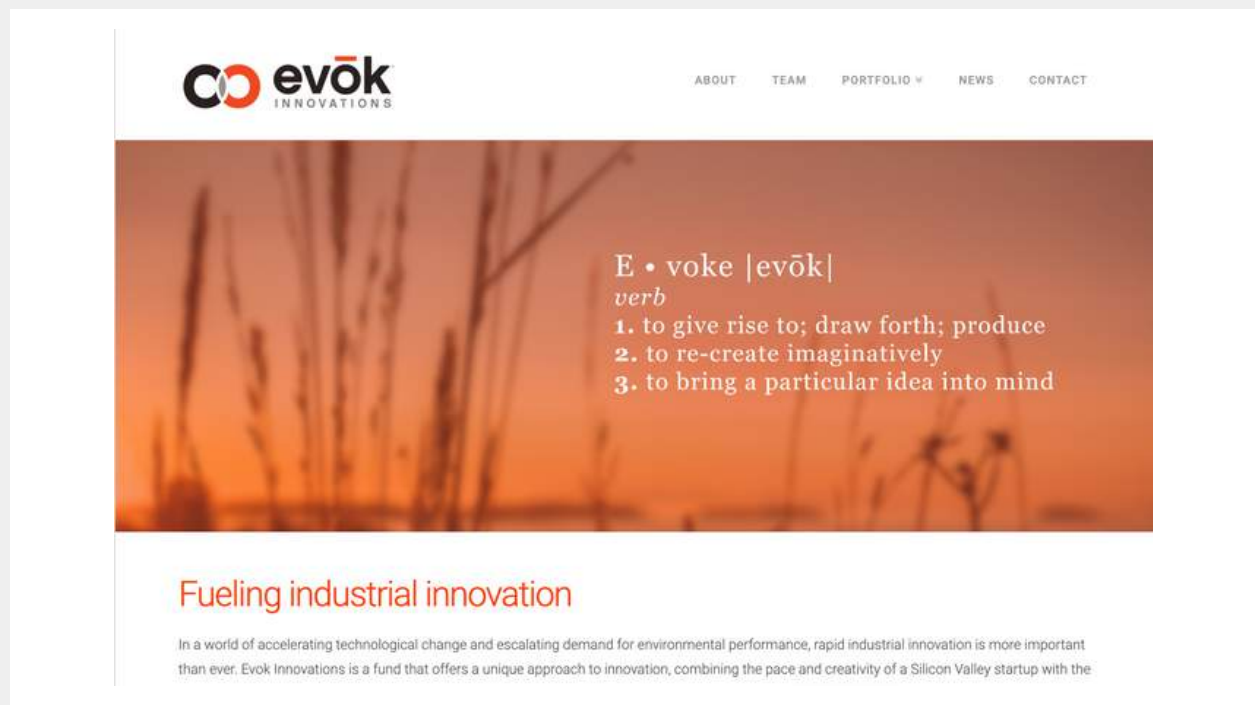
KEY LESSON

JLABs represents a serious innovation play with the capacity to deliver real benefits to J&J and its international network of supported companies. Many companies dabble in innovation hubs to gain exposure to the startup community or create an innovative halo around an ageing brand. But, in reality, very little innovation of consequence gets done at a significant proportion of the innovation outposts at Canadian BAs. JLABs is qualitatively different in its commitment to providing a full-service incubation environment for emerging life sciences companies. JLABs links the entrepreneurs of Toronto with the full breadth of Johnson & Johnson Innovation, including opportunities for funding, access to top lab equipment, and the ability to connect with research and development experts from medical technology, consumer healthcare product and the pharmaceutical teams at Janssen Inc.

At the same time, the no-strings-attached model creates an environment in which companies can maximize their capacity for growth. “The no-strings-attached model has been critical to our success in attracting many quality companies,” [said Melinda Richter](#), head of JLABs, Johnson & Johnson Innovation. “It allows entrepreneurs the freedom to operate and do what is best for their company.”⁸ That, in turn, ensures that J&J fosters goodwill and, when the time is right, is well-positioned to leverage the advances that startups make to further its own business.

CHAPTER 1

EVOK INNOVATIONS: A 2.0 MODEL FOR CORPORATE VENTURE CAPITAL



Canada's clean-technology industry now boasts more than 850 technology companies, including many small and medium-sized enterprises operating in every region of the country. The good news for Canadian cleantech entrepreneurs is that the global shift towards renewable energy and cleaner, more efficient production methods is accelerating (averaging year-over-year growth of roughly 8 percent⁹) with businesses in just about every sector seeking to confront challenges such as resource scarcity, energy security and climate change. The bad news is that the sector has been [losing global market share](#) (declining by 12% from 2008 to 2017) as international competitors have been ramping up.

In [an open letter](#) sent to Prime Minister Trudeau, the BC Cleantech CEO Alliance highlighted that Canada has been losing market share since 2008 while facing increasingly intense competition from the United States, China, Germany, Singapore, and Israel. Among the key challenges facing the cleantech sector is a general reluctance by the investment community to fund capital-intensive cleantech start-ups, and the slump in the oil and gas sector, which represents a key customer base for Canadian cleantech companies.



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EVOK INNOVATIONS

Evok Innovations – a trilateral cross-sector partnership between Cenovus Energy, Suncor Energy and the BC Cleantech CEO Alliance – was created to address these gaps and thereby increase the scale, diversity and quality of early-stage cleantech ventures in Canada. The goal is to build a cohort of enterprises that can not only serve the domestic oil and gas industry but compete head-to-head in international markets as well.

For this study, Evok represents a next-generation model for corporate venture capital in Canada. It also demonstrates how large anchor companies can inject capital, expertise and channel relationships into a sector that desperately requires domestic adoption opportunities that can serve as a launchpad for international expansion.

Helping cleantech startups access capital and channel relationships

Launched in January of 2016 in Vancouver and headed by Silicon Valley veteran Marty Reed, Evok is a \$100-million entrepreneur-led innovation fund that expedites the development and commercialization of cleantech solutions to critical challenges facing the oil and gas industry. Evok is presently funded exclusively by its industry partners, Cenovus and Suncor, who have each committed up to \$50-million for ten years.

Evok has identified four key issue areas affecting the oil and gas sector; greenhouse gas emissions, water use, the harmful effects on marine and land ecosystems, and the need to deliver products with lower environmental impacts at lower costs. As a first step, Evok and its partners identified a series of pain points and technological gaps in the value chain to help focus the fund's investments. The next step was to make investments in new companies that can bring technologies to market that will alleviate those pain points. Reed has spread the investments to date across a mixture of what he describes as "low-hanging fruit" (e.g. technologies to boost industrial efficiencies, including predictive analytics and big data applications) and transformational technologies with the potential to radically reshape the energy sector.

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Providing an entry point into the global energy value chain

Jonathon Rhone, a serial cleantech entrepreneur, CEO of Axine Water Technologies and co-founder of Evok Innovations, is keen to stress that there is much more to Evok than simply making investments in promising technologies and early-stage companies. A fundamental success factor, according to Rhone, will be helping cleantech entrepreneurs access more opportunities to market their technologies and, in particular, to win that all-important first customer.

As Rhone knows from experience, the oil and gas sector in Canada is large, complex and challenging for new early-stage companies to penetrate. The industry's sheer scale creates barriers to entry that can be nearly insurmountable for early-stage entrepreneurs seeking to market innovations to large energy firms. Scalability is often the most significant barrier to entry, and many innovators simply take their ideas to other sectors where the barriers are not so high. With Evok, entrepreneurs not only gain a visible and accessible entry point into the global energy value chain, in Cenovus and Suncor, they also have two motivated customers who can help them better understand industry needs and give them feedback on unit economics, time to market and product performance specifications.

Rhone argues that this ongoing dialogue between cleantech entrepreneurs and the large integrated energy firms will be a vital driver of success going forward. Said Rhone:

"The real value behind Evok is the conversations and the learning we have had together with tech entrepreneurs and oil and gas executives to figure out how we can work together and how each other's worlds work,

Judy Fairburn, Executive Vice President of Business Innovation at Cenovus and Evok co-founder, agrees and says there are weekly calls between Cenovus and Evok and between the entrepreneurs working on new solutions and the technology and operations managers at Cenovus who will be responsible for implementation.



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The greatest challenge for Evok, however, will be helping its portfolio companies achieve the kind of scale required to make their solutions commercially relevant and internationally competitive. Both Rhone and Reed point out that Canada is a tough environment in which to reach scale. Rhone, who advises cleantech start-ups to seek out customers in the United States as early as possible, says, "Canadian corporations tend not to be early adopters, they are fast followers or late adopters, and, in many cases, they are laggards and the last to adopt technologies."

While Cenovus and Suncor are breaking the mould, they alone can't solve the scalability challenges facing cleantech entrepreneurs. Cenovus and Suncor are sensitive to the importance of scale and understand that for a technology to be commercially relevant, it has to be adopted widely across the industry. That's one reason why Evok and its partners are not asking for exclusive rights to the technologies accelerated by their fund.

A 2.0 model for corporate venture capital

While several large Canadian firms have tried their hand at corporate venturing, they have had mixed results. As Marty Reed explains, "massive corporations are not very good at this type of work. You don't take a football player and put him on a baseball field." Fairburn calls Evok "a 2.0 model for corporate venture capital" and observes that blending the experiences and competencies of the respective partners is a critical differentiator in this new model.

While Cenovus and Suncor provide capital, industry knowledge and opportunities for implementation, seasoned cleantech entrepreneurs are managing the business acceleration process and bring both deep domain expertise and an acute understanding of how cleantech start-ups can overcome the product development, marketing and sales challenges they face. Both Cenovus and Suncor have also been careful not to impose heavy-handed restrictions on the companies that receive funding from Evok. "We're in a collaboration economy," says Fairburn. "You can't put entrepreneurs in handcuffs, or you won't get the best entrepreneurs coming to you."

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As Evok's model matures, Reed is seeking a handful of additional industry partners and can see a valuable role for government partners as well. According to Reed, the fund will continue to place bets on transformative technologies and allow its corporate partners to be early investors and adopters. Bringing additional public and private investors into the fold, however, has the potential to mobilize the kind of large-scale funding required to build demonstration projects or construct "first-of-its-kind" manufacturing plants. Sharing the risk of building out new cleantech capabilities at an industrial scale would not only boost the global competitiveness of the cleantech sector, but it would also accelerate technology adoption in Canada's resource-intensive industries. The result would be a cleaner and more competitive natural resources sector with all of the environmental and economic benefits such a shift entails

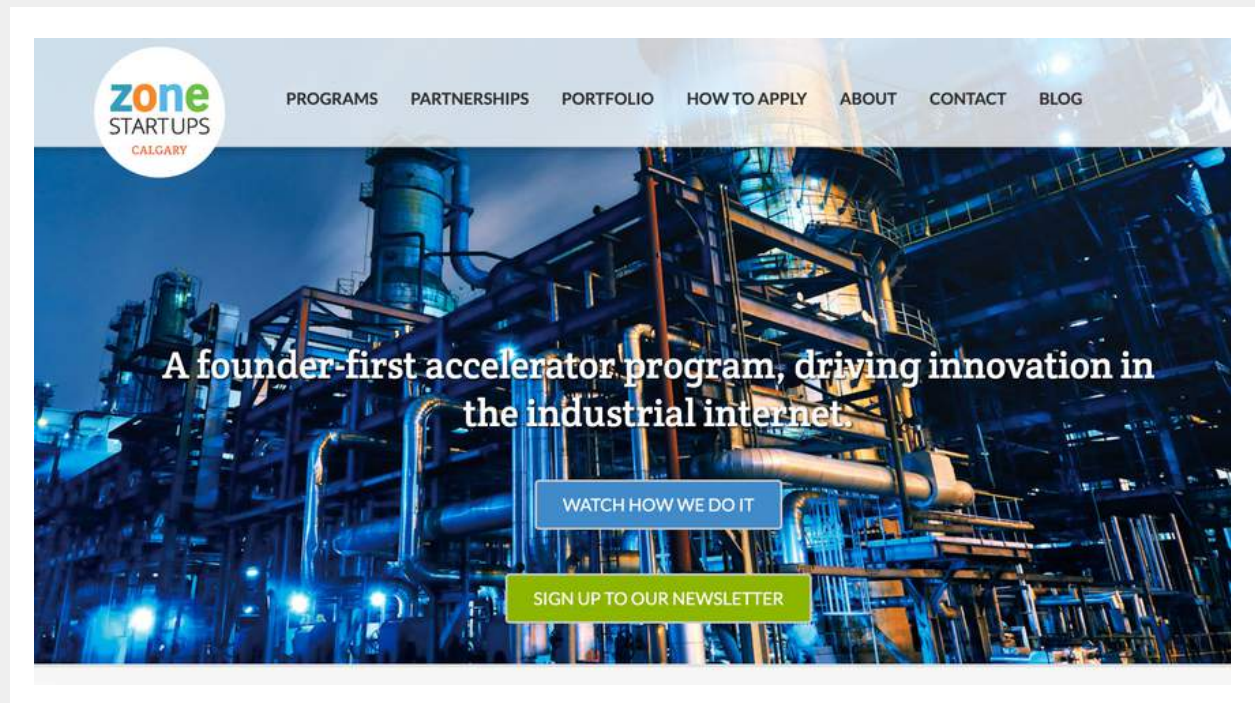
KEY LESSON

Evok creates win-win scenarios for all stakeholders involved in commercializing and adopting cleantech solutions. Suncor and Cenovus gain access to a more diverse talent pool and much greater agility in their efforts to address economic and environmental challenges. And although neither Cenovus nor Suncor retains any exclusive rights to the technology startups develop, Fairburn says being a partner in Evok provides early access to the pipeline of promising ideas and thus has the potential to dramatically speed up the rate at which Cenovus can make the transition to a zero-emissions model.

Entrepreneurs, on the other hand, get access to all of the traditional elements of a classic business acceleration model (e.g., access to capital, product development support, mentorship and a peer network). But they get something else too: a clear pathway to implementation and significant step forward in achieving scale because Cenovus and Suncor are large and willing adopters of high-impact solutions. Fairburn sums up the value exchange well: "At Evok, we are knitting together the need to enable traditional industries with cleantech innovation and the need to empower entrepreneurs to commercialize and scale-up powerful new solutions."

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RYERSON FUTURES AND THE GLOBAL ZONE STARTUPS BRAND



Zone Startups is a global brand of tech accelerators and seed-stage venture funds operated by Toronto-based Ryerson Futures Inc (RFI). Initially launched by Ryerson University in 2012, RFI was established as an accelerator program and seed investment fund to compliment Ryerson's Digital Media Zone (DMZ). In the early days, a team led by Matt Saunders invited high-potential startups from the DMZ to join a hands-on accelerator program that worked closely with founders looking to drive growth by focusing on market validation and customer acquisition.

Unlike other accelerators with three to four-month cohort windows, startups can stay at RFI for as long as a year, provided they hit their milestones. The more flexible program window offers them a place to call home for an extended period rather than having to pack up soon after they get settled. Notable alumni include fintech startups like Borrowell and Sensibill, data analytics companies like Flybits and IntelliSports and e-health ventures such as Figure1 and Swift Medical.

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RFI also runs a seed fund and will invest up to \$100,000 in high-potential startups. Meaningful exits from alumni companies such as Zensurance and Every set the stage for fiscal sustainability. RFI is one of the few accelerators in Canada that are profitable and take less than 10% of its operational funding from government sources.

The work DMZ and RFI were doing with startups began drawing international attention. Representatives from foreign universities, governments and corporations were coming to tour the DMZ on a regular basis. This international exposure opened the door to two other critical elements that underpin the fiscal sustainability of RFI and its global Zone Startups brand: international franchising and long-term corporate partnerships.

Specialization and corporate partnerships enable success

A vital element of the RFI model is the deep access it provides to a global network of corporate partners. For startups seeking introductions, feedback and pilot projects, the ability to make connections sets the stage for invaluable business development opportunities and partnerships.

"We don't focus on cohorts or demo days," said Saunders. "Instead, our programs are focused on helping startups gain traction and customers via connections to our network of corporate partners who can make a difference for a startup."

RFI's flagship corporate programs include Zone Startups Calgary, which was founded in 2016 in partnership with GE Canada, Telus and Baker Hughes to accelerate startups focused on the Industrial Internet of Things, cybersecurity, and the energy sector. Joe Martini, who heads up the accelerator, says they designed the program around the innovation needs of the lead sponsor, GE Canada. "We see many solutions looking for problems," said Martini. "Our model is customer-centric. GE Canada shares its innovation strategy. What are GE's customers telling them they need? Then we actively recruit technology companies to satisfy those mandates."



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Other corporate accelerators include Zone Startups Sports + Media, based in Toronto and the POWERED accelerator in India. The Sports + Media program is run in partnership with Rogers Communications and focuses on fan engagement and eSports. The accelerator is attracting startups that can help sports media companies to adjust to an increasingly digital world where highlights are instantly available on social media, furthering the push towards cord-cutting – especially among millennials, whose preference for streaming services has put a dent in TV ratings. POWERED, a joint initiative of the Shell Foundation, DFID UK and Zone Startups, focuses on accelerating women-led businesses in the energy value chain.

Corporate accelerators represent one of the best options for ensuring that they have a clear pathway to securing a first sale with a motivated and engaged corporate customer. Indeed, Saunders says many startups across its global family of acceleration programs are working on revenue-generating opportunities with its corporate partners. But, how has Zone Startups developed lasting corporate partnerships on multiple continents? Saunders provides a few key pieces of advice.

First, he encourages BAIs to specialize in technology niches or industry verticals. "Specialization is the key to having an impact," he says. "Ask yourself, what are you really good at? Then focus on a smaller subset of companies and work on providing exceptional service." At a time when many BAIs are doing a little bit of everything for everyone, Saunders says that both impact and corporate engagement flow from being laser-focused on helping a smaller sub-sector of companies. "The volume game doesn't work," he says. "Generalist BAIs don't want to pick winners. If you want traction, focus on the assets you have in your community."

Second, Saunders says BAIs should reverse the conventional model for corporate engagement. Most BAIs build a population of startups and then look for interested corporates to engage. RFI turns this model on its head by establishing corporate partnerships and then assembling a cohort of startups to align with the innovation objectives of the corporate partner. "More often than not, that means focusing on B2B plays and working with people who are starting companies after spending 10-15 years in the industry," he says. "They understand the pain points and the problems and have the experience to develop viable solutions."

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Challenges in engaging Canadian corporates

While RFI has succeeded with several domestic partnerships with corporates, Saunders admits that the Canadian market is difficult. "The big financials in Canada don't have many incentives to take big risks," he says. "They just have to keep pace with each other. The telco space is the same. The other big sectors are not as innovation-driven."

RFI confronts a deeply engrained culture of conservatism that runs through corporate Canada, even in its efforts to deliver new solutions to the sports and entertainment sector in partnership with Rogers. "You have to understand that sport is a very risk-averse industry," says [Mike Cotton](#), director of Zone Startups Sports + Media, who looks for "mature companies that are still raw enough to mould, connecting them to leagues and teams, so that we can get them working on more targeted problems."

Corporate risk aversion and a general lack of domestic adoption opportunities means that many Canadian startups set their sights on the US market instead. "Most companies we support are looking for big corporate clients in the US," said Saunders. "The deals will be 10x the size. Commercial deals with TD and RBC are fine for early adoption, but they are not going to double your valuation."

Regardless of which side of the border, the key to effective corporate engagement, according to Saunders, is to ensure that corporates are super clear about their innovation and commercial objectives. "There is a lot of innovation tourism with corporates looking to kick the tires," says Saunders. "We don't want to waste time for startups that are looking for genuine opportunities."

International franchising drives growth and scale

Ryerson Future's first overseas acceleration partnership was Zone Startups India, which launched in 2013 in the Bombay Stock Exchange in Mumbai. Today, Zone Startups India is home to over 160 startups, with a focus on solutions for financial institutions as well as enterprise SaaS solutions. Like the Canadian franchises, Zone Startups India has also put corporate partnerships at the heart of its model. "We launched our first corporate accelerator in partnership with Barclays in May 2016, and since then, there has been no looking back," says [Ajay Ramasubramaniam](#), the executive director of Zone Startups India. "We have been fortunate to set up accelerators in partnership with Axis Bank, Lodha Group, Shell Foundation and Kerala Startup Mission."



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Zone Startups India also has corporate innovation programs with Thomson Reuters, Viacom18, Citi, Visa, Capital First, ICICI Lombard, EY India, and the Australia Institute of Sports. These corporate connections, in turn, have been integral both to the quality of the startup support services and the fiscal sustainability of the Zone Startups operation in India. “Startups typically lack the kind of industry connections required to help them grow,” [said Ramasubramaniam](#). “So, our biggest push is to help them get these early enterprise customers through our ongoing corporate development initiatives.”

In 2018, RFI launched Zone Startup Vietnam in Ho Chi Minh, together with Uni Brands and VinaCapital Ventures. At the time, Vietnam was not an obvious tech investment destination. The country was poor and fraught with bureaucracy. And, with very few active angels and VCs, Vietnamese tech entrepreneurs were struggling to create a viable ecosystem.

According to Saunders, the country did have some things going for it: a fast-growing economy; a substantial supply of low-cost, high-tech talent; and a broad & experienced Vietnamese diaspora increasingly interested in reconnecting with and contributing to the country. These assets convinced not only Ryerson Futures but also 500 Startups and ESP Capital, to launch new venture funds in the country. Just two years later, Vietnam boasts the fastest growing tech ecosystem in Southeast Asia. Indeed, a recent report from Google predicts that the nation’s digital economy will triple in size by 2025, accumulating a value of some \$33 billion.

Ryerson Futures is not the only Canadian BAI to expand beyond Canada’s borders, but it was one of the first. Moreover, its focus on emerging markets sets it apart from BAIs like Communitel, Creative Destruction Labs and MaRS, which have established outposts and franchises in the US market but not far beyond.

RFI’s focus on emerging markets was deliberate and very much aligned with Ryerson University’s broader ambition to become a global urban innovation university. The university administration believes the growing international footprint of Ryerson Futures will bring opportunities for increased reputation and profile building, generate revenue, attract international students, and lead to invitations to collaborate on funded research projects.

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Saunders, in turn, links his team's ability to build a viable international franchise model to its willingness to do the legwork to develop business acceleration services in untapped markets.

"We have a replicable model. Silicon Valley may be saturated, but there are lots of markets that are in desperate need for the type of programming we offer. We believe our emergence as a global accelerator has been propelled by a unique model that offers a combination of hands-on strategic and tactical guidance, opportunities to work alongside fast-growing startups, and access to a global network of corporates."

The tactics and operations of running an international network of accelerators is something that Saunders has taken one step at a time. "In many cases, our international ventures start as co-working spaces," he says. "Eventually, we build out programming focused on product validation and investor readiness." Identifying local partners and local talent to help run the international accelerators ensures that the model is scalable. "All of Zone Startup franchises are joint ventures," said Saunders, "but we hire and manage the teams."

KEY LESSON

Ryerson Future's fiscal sustainability comes from a combination of equity investments, corporate partnerships and international franchises, but its key success factor is specialization. RFI has established acceleration services across a broad range of verticals, including fintech, sports and media and the industrial Internet. But each distinct entity is highly specialized with a team and approach that RFI calibrates to the needs of local corporates. RFI avoids dabbling in a little bit of everything and generally prioritizes B2B plays over consumer-facing businesses. "There is not enough risk capital in Canada to fund big consumer ventures, like the next Facebook," says Saunders. "We have all the banks and telcos in Toronto, and that helps immensely with our approach." Saunders advises other BAIs to look carefully at the key assets in the local environments. "Who are the potential customers, and who are the emerging startups that can serve those customers with innovative solutions?" he asks.



CHAPTER 1

SCALE-UP BC: THE EARLY AND LATE-STAGE BALANCING ACT



The fiscal sustainability of BAIs is linked, first and foremost, to their ability to develop robust revenue streams from a variety of sources. For venture-back entities, this often means relying on a handful of meaningful exits from their equity positions in alumni companies. Others generate income from service fees, corporate partnerships and real estate leasing. Many BAIs leverage a combination of these revenue models to enhance and diversify their balance sheets.

However, BAIs can also strengthen their fiscal self-reliance with more efficient service delivery models that deploy talent – by far the costliest resource – more effectively. A partnership between VIATEC and Accelerate Okanagan (AO) to run BC’s Scale-UP program demonstrates a promising way forward for BAIs seeking to free-up resources to put towards new and expanded offerings.

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SCALE-UP BC

The early and late-stage balancing act

For many years, Canada has produced a large and diverse population of startups but struggled to convert a significant proportion of high-potential companies into global technology champions. Policymakers have attempted to remove barriers to scaling up with investments in Canada's venture capital system, streamlined immigration processes for experienced executives, and new funding for scale-up programs at BAIs across the country. For their part, BAIs have embraced the opportunity to work with later-stage companies, citing the ability to achieve better economic outcomes on a shorter timescale. Unlike startups, scaling companies also can pay for services, which helps make BAI operations more sustainable.

While BAIs and hubs such as Accelerate Okanagan, BCTech, Communitech, Invest Ottawa, MaRS, and VIATEC have received funding to deliver scale-up programming, all of these entities continue to offer support services to early-stage startups. After all, the ecosystem needs a steady flow of startups because without startups, there are no candidates for scale-ups. The question is how to do both and still balance the books. Many BAIs across Canada are wrestling with the need to strike an optimal balance between early and later-stage programming and services. As Susan McLean, VP of Ventures Services at MaRS, put it:

“Everyone wants to do scale-ups, but we could be inverting our pyramid if we don't continue to support the pipeline. Public funding gives us the ability to deliver on the basics but also meet new and emerging needs with innovative offerings. We need to invest in the pyramid, with a wide funnel at the early stages where the success rates are really low. We need to give founders all the pieces to be successful and then you need more startups coming through the pipeline.”

As AO and VIATEC rollout their new Scale-Up program, it's a balancing act that they are striving to get right by using online delivery models for early-stage programming that will free up their executives in residence to spend more time delivering customized support to scale-ups.



CHAPTER 1

SCALE-UP BC

Scale-Up BC

The Scale-Up program delivered by VIATEC and AO targets companies with a team of 8 or more people and monthly recurring revenues of \$50,000 or greater. Whereas many accelerators invest a lot of time in shaping the product and the company, the Scale-Up BC program emphasizes coaching the people behind the startup. "We are not about the rockets; we are about the astronauts," said Dan Gunn, executive director of VIATEC.

A significant focus is placed on leadership development for the senior management team, with the hope that doing so will equip them with the capacity and confidence to expand into international markets. "If we want to continue to build on our success as a tech community and reach our full potential, we must coach the leaders, and that means supporting their development," said Brea Lake, Accelerate Okanagan's CEO.³² The premise is that training individuals to be stronger leaders will have a longer-lasting impact than merely focusing on the idea behind the venture. "No matter what happens with the venture," said Lake, "our efforts will have provided our entrepreneurs, founders and managers with skills that can be readily applied at future ventures."

For leadership training and related advisory services, VIATEC charges scale-ups about \$1000 per month. At Accelerate Okanagan, the monthly fees typically range from \$500 to \$1,500 depending on their level of maturity and the number of hours of mentorship they require. In both cases, almost all of the scale-up support involves customized coaching delivered by entrepreneurs in residence (EIRs). "The companies are generally not interested in the programmatic components," said Gunn. "The engagements are much more tailored. We do offer structured group programming on marketing, sales, communications, investment and other topics. If you offer concrete services to the group and don't call it a program, then you get ready adoption."

The \$1000/month fee can be a challenge for some, according to Gunn. "There is some push-back on the fees," he says.³⁵ However, on a cost-share basis, the \$1000/month means that, on average, scale-up companies are covering 50% of the cost of delivering the EIR advisory services. Lake says that having skin in the game is good. "Our clients pay for programs and services, and they value the services more highly. The revenues have allowed us to grow our team and support innovative programs that aren't funded by the government."

CHAPTER 1

SCALE-UP BC

Online delivery for foundational programming

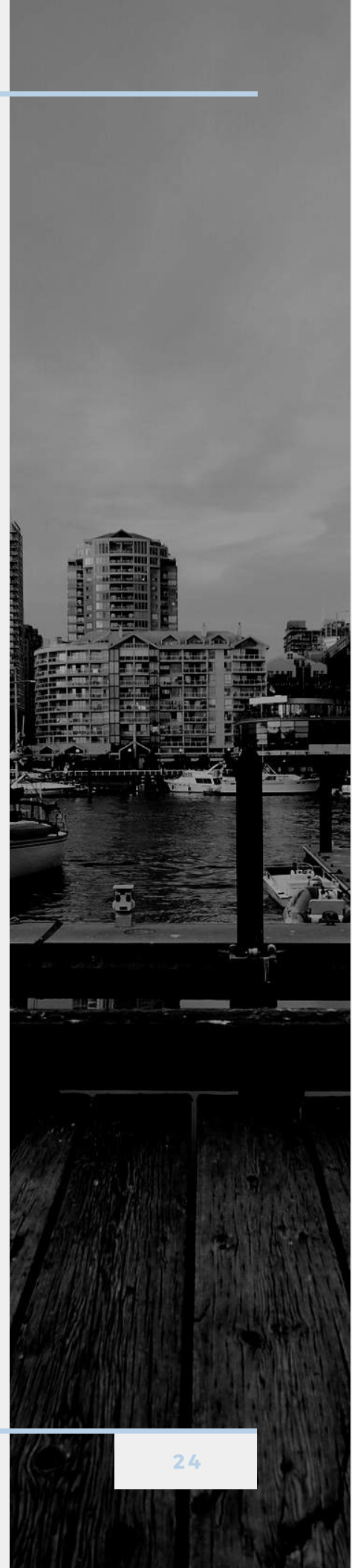
Shifting more resources into scale-up programming creates a dilemma for BAIs like VIATEC and AO that have a mandate to continue their work with first-time founders and early-stage companies. Given the lack of associated revenue opportunities, most BAI depend on government funding to deliver this foundational programming. Indeed, Lake cautions that without government, AO's community-based work would be non-existent. "We do capacity building with non-profits and local colleges and plant the seeds of entrepreneurship," she says. "This work builds the funnel, but we simply couldn't continue to do it without public funding."

At VIATEC, Gunn believes the answer lies in finding more efficient ways to serve early-stage companies:

"Our programming used to cater to very early-stage companies, but we found it hard to get traction. So now we are moving the foundational elements of our early-stage programs into an online offering." Among other things, this includes all of the essential entrepreneurship 101 material like business canvas modelling and product validation modules that VIATEC currently delivers in a classroom setting. You don't need EIRs to do that work. We would rather EIRs spend most of their time with companies that are ready to take the next step. The online program serves the wide part of the funnel and will help get new startups off the ground."

Building the online curriculum has required a considerable upfront investment from VIATEC. According to Gunn, there are five modules on market validation alone, and there will be 4 to 6 full courses when the curriculum complete. VIATEC contracted with a local online learning company to help develop the online content and has also hired a new director of leadership and learning to oversee the program.

Yet, the investment in building an online program will be well worth it. As Gunn explains:





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“We typically have 500 companies applying for our early-stage programs. We used to spend an inordinate time screening the early stage applicants. Not only did we have to review applications, but every candidate that made the shortlist also participates in a 40-minute interview. Now anyone can do the online program, and we will only screen the graduates for intensive support with EIRs. It’s a great discovery model.”

Even the world’s premier accelerators have recently latched onto the online delivery model for entrepreneurship 101 programming. In 2019, for example, Y-Combinator launched its Startup School, an eight-week free online course for first-time founders delivered by YC partners and mentors. In addition to pre-recorded video lectures, participants get access to online group sessions, moderated discussion forums and weekly Q&A sessions with YC partners. In the first year of operation, 41,777 founders participated, and 10,193 founders graduated. Some 57% of founders that enrolled in the online course are still working on their startup full-time. 62% of the founders were from outside the US.

Finding the right talent to deliver scale-up programming

While online delivery of entrepreneurship 101 programming is still in beta-mode, the success of the BC Scale-Up program is still far from assured. The biggest challenge for BAIs like AO and VIATEC is finding the right talent to deliver high-quality support to scaling companies. “We used to have EIR generalists,” said Gunn. “Now, we are specializing. We have highly technical EIRs. We have people focused on talent and HR, and others focused on term sheets and raising capital.”⁴¹ While it was easy to draw up the org chart, Gunn admits that it has been challenging to fill some of those positions in Victoria.

Lake agrees that finding the right expertise to grow their scale-up programs is tough. “Our 12 mentors are at full capacity, and we don’t always have the right expertise in house,” said Lake. “In some cases, the company can bring in an outside expert to deliver the consulting and AO will still cost-share.”⁴² One strategy is to draw on recent executive-level retirees in the region. In other cases, AO and VIATEC may fly-in specialists from other regions. “We can only grow as much as we can find resources to deliver,” said Lake. “We are looking to bring in new talent and innovative ways to do that.”

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Unfortunately, AO and VIATEC will not resolve the talent shortage easily. Even Canada's top-performing BAIs and venture funds have struggled to find shortcuts for overcoming the dearth of repeat founders and experienced mentors in our comparatively immature ecosystem. As one leader at a VC-backed BAI put it: "Human capital is the biggest challenge for our Canadian ecosystem. Even the fund management space has challenges. The expertise in creating scalable tech companies is not broadly available. There is no MBA for private sector investing at the seed and series-A level. Acquiring that knowledge is one of the biggest challenges."

KEY LESSON

With online delivery for early-stage programming, BAIs can build an early-stage funnel while conserving resources for tailored engagements with growth-stage companies. Building a big funnel of early-stage companies is time-consuming and expensive. The success rates are low, and the short-term economic impact is thin. Most BAIs call it missionary work because early-stage startups can't pay much for services, and there is minimal ROI for private sector engagement. And yet, if BAIs neglect the wide part of the funnel, the pipeline of potential scale-ups will dry up. When compared with traditional classroom-style learning, the online delivery model makes basic entrepreneurial education highly accessible without consuming an enormous amount of organizational bandwidth.

The upside for BAIs is that high-priced experts spend less time imparting the basics to early-stage companies with highly uncertain outcomes. This frees up more time for EIRS to provide specialized know-how to companies with existing revenue, validated markets and market-ready products. "Investing EIR time with later-stage companies generates way better results," said Gunn.





CHAPTER 2

INTERNATIONAL BEST PRACTICES IN BUSINESS ACCELERATION

As a starting point for the international best practice analysis, the DEEP Centre conducted an international scan of top BAIs and corporate venture activity. The scan highlights the existence of a large international pool of for-profit BAIs whose success and self-sustaining operations could serve as a model for Canadian BAIs. The international scan also reveals a greater density of corporate engagement in local startup ecosystems in the United States and certain countries within Europe, with comparatively larger investments, relationships that are longer in duration, and partnership models that are more advanced than those in Canada. Tables 1 and 2 highlight forty examples of corporate accelerators and corporate venture programs in Canada, Europe and the United States, with the bulk of those examples outside of Canada.

Building on this work, the DEEP Centre selected four case studies for further analysis. The sample includes one self-sustaining business accelerator, one corporate acceleration program, one corporate venture capital unit and one consortia project focused on robotics and advanced manufacturing that facilitates interactions between corporates and startups. As with the domestic analysis, our case study research focused on understanding the revenue mix of self-sustaining BAIs, documenting winning models for structuring innovation partnerships, and identifying key success factors.

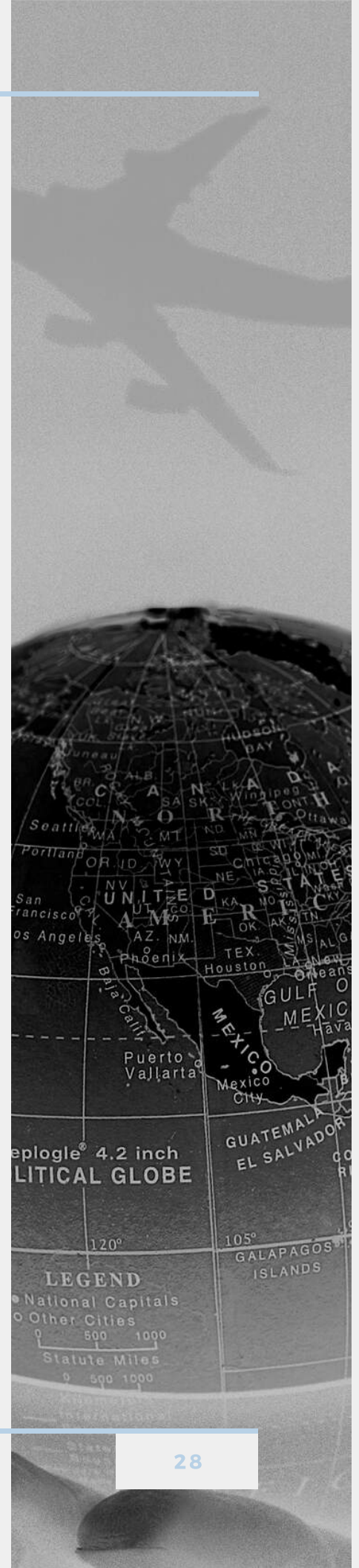
Our featured international case studies include the following:

- **SOSV, a multi-stage “full-stack” venture capital investor.** It runs multiple world-class vertical accelerator programs, and provides seed, venture and growth stage follow-on investments into its best graduates. SOSV has funded over 900 startups to date through its acceleration programs: HAX (hardware and connected devices), IndieBio & RebelBio (life sciences), Chinaccelerator (cross-border internet & mobile in Asia) and Food-X (food innovation). SOSV also has a global staff of hands-on engineers, designers, accountants, and scientists to accelerate product development, over 1,000 global mentors with deep market and technical expertise, and a network of fully outfitted laboratory & maker spaces.

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INTERNATIONAL BEST PRACTICES

- **The Disney Accelerator**, among the first corporate accelerators launched and run in partnership with Techstars. Over the years, its track record of working with a steady stream of high-growth tech startups has earned the Disney Accelerator a reputation as one of the most successful and coveted corporate accelerators. Highlighting a number of important lessons for incumbent companies and startups alike, the case study examines the evolution of Disney's intake model, its programming, and the company's approach to nurturing high-potential startups.
- **GE Ventures**, the venture capital subsidiary of General Electric. Ranked as the 5th most active CVC globally, the venture firm invests up to \$200 million annually and has more than 164 companies in its portfolio, across a dozen countries and a wide variety of sectors ranging from energy and health care to industrial software and advanced manufacturing. The case study demonstrates how GE Ventures exemplifies a number of principles that make it a model for large industrial companies seeking to use venture investments as a means to accelerate innovation and contribute to building an ecosystem.
- **Advanced Robotics for Manufacturing (ARM) Institute**, America's leading collaborative network focused on robotics and workforce innovation. Structured as a public-private partnership, ARM accelerates the advancement of transformative robotic technologies and education to increase U.S. global manufacturing competitiveness. The case study reveals how ARM is working with Pittsburgh's thriving robotics community and a network of leading manufacturers to define the future of the global manufacturing economy. ARM also demonstrates how well-curated consortia projects can provide SMEs with access to cutting edge research and a vital entry point into the R&D pipelines of global corporations.



CORPORATE ACCELERATORS IN CANADA, THE UNITED STATES AND EUROPE

TABLE 1

ACCELERATOR	PARTNERS	LOCATION	YEAR FOUNDED
BARCLAYS ACCELERATOR	<ul style="list-style-type: none"> • Barclays Bank • Techstars 	<ul style="list-style-type: none"> • London, UK 	2014
DISNEY ACCELERATOR	<ul style="list-style-type: none"> • Disney 	<ul style="list-style-type: none"> • Los Angeles, US 	2014
EVOK INNOVATIONS	<ul style="list-style-type: none"> • Cenovus • Suncor • BC Cleantech CEO Alliance 	<ul style="list-style-type: none"> • Vancouver, CDN 	2016
HEALTHBOX	<ul style="list-style-type: none"> • Blue Cross • Blue Shield • Walgreens 	<ul style="list-style-type: none"> • Chicago, US 	2011
HIGHLINE BETA	<ul style="list-style-type: none"> • RBC • InBev 	<ul style="list-style-type: none"> • Toronto, CDN 	2017
KAPLAN EDTECH ACCELERATOR	<ul style="list-style-type: none"> • Kaplan • Techstars 	<ul style="list-style-type: none"> • New York City, US 	2013
MEDIA CAMP ACADEMY	<ul style="list-style-type: none"> • Turner • Warner Bros 	<ul style="list-style-type: none"> • Los Angeles, US 	2012
MICROSOFT VENTURES ACCELERATOR	<ul style="list-style-type: none"> • Microsoft 	<ul style="list-style-type: none"> • Bangalore, Beijing, Berlin, London, Paris, Seattle, Tel Aviv 	2013
NIKE FUEL LAB	<ul style="list-style-type: none"> • Nike, • Runkeeper • Strava 	<ul style="list-style-type: none"> • San Francisco, US 	2014

CORPORATE ACCELERATORS IN CANADA, THE UNITED STATES AND EUROPE

TABLE 1 CONT'D

ACCELERATOR	PARTNERS	LOCATION	YEAR FOUNDED
ORANGE FAB	<ul style="list-style-type: none"> Orange, Visa, Hilton, Airbus, LG, AXA, Peugeot 	<ul style="list-style-type: none"> San Francisco, Paris, Seoul, Taipei, Tel Aviv, Tokyo, Warsaw 	2012
QUALCOMM ROBOTICS ACCELERATOR	<ul style="list-style-type: none"> Qualcomm Techstars 	<ul style="list-style-type: none"> San Diego, US 	2014
R/GA CONNECTED DEVICES ACCELERATOR	<ul style="list-style-type: none"> Techstars Stratsys MakerBot Industries 	<ul style="list-style-type: none"> New York City, US 	2013
RBC REACH	<ul style="list-style-type: none"> RBC Highline Beta 	<ul style="list-style-type: none"> Toronto, CDN 	2018
SAMSUNG ACCELERATOR	<ul style="list-style-type: none"> Samsung 	<ul style="list-style-type: none"> New York City Palo Alto, US 	2013
SPRINT MOBILE HEALTH ACCELERATOR	<ul style="list-style-type: none"> Sprint Techstars 	<ul style="list-style-type: none"> Kansas City, US 	2013
STARTUP HEALTH ACADEMICY	<ul style="list-style-type: none"> GE Startup Health 	<ul style="list-style-type: none"> N/A 	2013
VOLKSWAGEN ERL TECHNOLOGY ACCELERATOR	<ul style="list-style-type: none"> Volkswagen Plug N Play 	<ul style="list-style-type: none"> Sunnyvale, US 	2013
WAYRA	<ul style="list-style-type: none"> Telefonica Amazon, Microsoft Softlayer 	<ul style="list-style-type: none"> Argentina, Brazil, Chile, Columbia, Germany, Ireland, London, Mexico, Peru, 	2011

Source: DEEP Centre, January 2020

TOP INTERNATIONAL CORPORATE VENTURE CAPITAL FUNDS

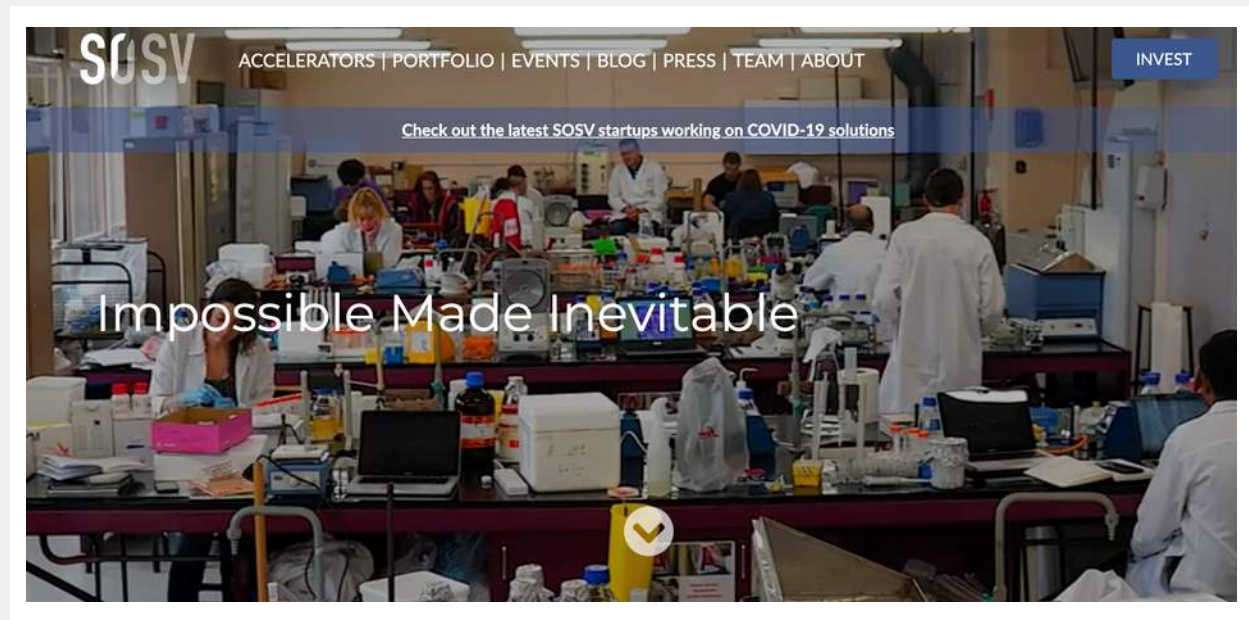
TABLE 2

FUND	LOCATION	YEAR FOUNDED	NO. OF INV'S
Intel Capital	Santa Clara, CA	1991	1,288
Google Ventures (GV)	Mountain View, CA	2008	626
Brand Capital	Mumbai, India	2005	562
Bain Capital Ventures	Boston, MA	2001	341
Salesforce Ventures	San Francisco, CA	2009	336
Qualcomm Ventures	San Diego, CA	2000	331
Comcast Ventures	San Francisco, CA	1999	276
SoftBank Capital	Tokyo, Japan	1995	270
Rev1 Ventures	Columbus, OH	2005	206
Novartis Venture Fund	Basel, Switzerland	1996	191
Legend Capital	Beijing, China	2001	173
GE Ventures	Menlo Park, CA	2013	161
Samsung Ventures	Seoul, South Korea	1999	161
Dell Technologies Capital	Palo Alto, CA	2012	159
Motorola Solutions VC	Chicago, IL	1999	158
J&J Development Corp	New Brunswick, NJ	1979	150
Bloomberg Beta	San Francisco, CA	2013	144
Mitsui Global Inv't	Menlo Park, CA	2001	136
SR One (GSK)	Cambridge, MA	1985	133
K Cube Ventures	Seoul, South Korea	2012	114

Source: Crunchbase and Bloomberg data, January 2020

CHAPTER 2

SOSV: A MULTI-STAGE, “FULL-STACK” ACCELERATOR VC



Since the advent of accelerators, venture capitalists have competed to strike deals with the top startups in a given cohort. Entrepreneur turned investor Sean O’ Sullivan thought it would be better to develop a venture firm that owned and ran its own accelerators. Today, his firm, SOSV, is a multi-stage venture capital investor that operates a family of world-class accelerator programs. SOSV also provides seed, venture and growth-stage follow-on investments for its top-performing companies and currently has over \$700 million in assets under management.

The self-described "accelerator VC" embodies several best practices that are relevant to the Canadian ecosystem. These best practices include its determination to fund breakthrough innovation in deep tech domains with applications in traditional sectors such as agriculture and food, construction, energy, healthcare and transportation; its commitment to a "full-stack" venture acceleration model that provides startups with access to deep vertical expertise and lab infrastructure; and its emphasis on global engagement, both for its startups and for its operations, which are rooted in many of the world's top innovation hubs.



CHAPTER 2

SOSV: A FULL-STACK ACCELERATOR VC

Vertical accelerators with a deep tech focus

Just as countries get better at making the products they specialize in, accelerators and VCs can achieve success by honing their expertise and capabilities in supporting startups in specialized sectors and technology niches. Specialization does not mean that accelerators and VCs can only pick one sector or niche to play in. Many of the top entities, including SOSV, pick several to spread their bets. But within each of these niches, they build specialized knowledge, connections and programming that provide their startups with an “unfair advantage.” Indeed, it’s the same advice that SOSV general partner [William Bao Bean offers](#) to the startups he works with:

Figure out what your superpower is, your unfair advantage, and focus on it. When taking a startup cross border, the obstacles are massive — it’s that much harder than just doing a startup in one’s home country. But the process is the same as you need to focus on a problem that people have and solve it better than anyone else can. Without an unfair advantage — be it tech, partnerships or even business model — you should question whether this is something you should be doing in the first place.

The cornerstone of the SOSV specialized model is its suite of six vertical acceleration streams, several of which run in multiple locations. The six streams include:

- **HAX**, an accelerator program for hardware, IoT, and connected devices with locations in Shenzhen, China and San Francisco.
- **IndieBio**, a life sciences accelerator focused on transforming deep science into entrepreneurial ventures, with locations in San Francisco and New York City.
- **Chinaccelerator**, an Internet startup accelerator focused on based in Shanghai.
- **MOX** is SOSV’s mobile-only accelerator, helping mobile apps acquire users in emerging markets. MOX is based on Taipei, Taiwan.
- **Food-X**, an accelerator for the business of food, located in New York City.
- **Dlab**, an accelerator and venture studio for blockchain startups, also located in New York City.

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SOSV: A FULL-STACK ACCELERATOR VC

Within most of these verticals lies a focus on deep tech, or deep technology startup companies that harness substantial scientific advances and high-tech engineering innovation. While SOSV does not eschew consumer tech startups, Benjamin Joffe, a partner with SOSV, argues that the consumer tech and SAAS spaces are overcrowded, making it hard for ventures and investors to stand out.

Deep tech, by contrast, typically combines software with hardware, biology, medicine, material science, physics, and other fundamental scientific disciplines. On average, deep tech products will require more extensive R&D, may take longer to reach commercial applications and may require more significant investments to achieve commercial success than your conventional consumer tech play. The upside for SOSV is the blue ocean space. There is less competition for deals in the tougher sectors, and there can be significant payoffs when transformative deep tech is successfully commercialized.

SOSV founder Sean O'Sullivan argues that the specialization in deep tech gives his firm a competitive edge:

What we do is very vertical and deep. We are like the MIT of hardware. We know how to make 3D models, and we are familiar with all the industrial and chemical applications. We have 50,000 square meters of storage space for production equipment in Shenzhen, and we provide entrepreneurs with this space for sample production. We have these equivalents in our labs for biotechnology in our accelerators IndieBio and Rebelbio. It is doubtful that other venture capitalists have this depth of in-house expertise.

In addition to a deep vertical focus, SOSV invests with a social conscience, prioritizing ventures that solve problems of high complexity and high value in sectors such as agriculture, energy, industry and healthcare, covering many of the UN Sustainable Development Goals. SOSV's mission is to contribute to solving the world's most pressing problems by funding and mentoring startups that bring positive change at a grand scale, tackling human and planetary health challenges, while improving the quality of life for all.





CHAPTER 2

SOSV: A FULL-STACK ACCELERATOR VC

A prolific multi-stage investor

SOSV invests in an average of 150 companies per year, and over its two-decade history, it has invested in over 900 startups. Crunchbase ranked SOSV the second most active seed-stage investor in the world in 2019, up from 4th place in 2018. The company claims that its unique full-stack model has delivered a net IRR of 30% over the last twenty years that puts it in the top 10% of VC funds in the world.

SOSV is the lead investor in the electric bike company Jump Bikes, acquired by Uber last year for an undisclosed amount. Other valuable portfolio companies include the 3D printing unicorn FormLabs, the peer-to-peer ridesharing company GetAround, Makeblock, a Chinese company that sells robot kits for kids and most recently raised \$44 million in Series C funding, and Memphis Meats, an alt-meat company that manufactures cell-cultured chicken and beef.

The volume of investments does not come at the expense of quality. SOSV is still very selective. “We remain very focused on just these three verticals- software, hardware, and wetware, and we choose very few companies among the annual application calls,” [explains O’Sullivan](#). He points to SOSV’s Chinaccelerator, which receives hundreds of applications but accelerates only 10-15 companies in each batch and only run two cohorts a year.

How does SOSV manage to invest in over 100 companies a year, while still being selective? [Benjamin Joffe offers several key insights](#):

- **Build great deal flow.** According to Joffe, the firm’s strategy is to pick comparatively tough sectors and invest early at the pre-seed stage through their suite of accelerators. The wide intake at the early stage means they get an intimate look at a significant share of the relevant deal flow.
- **Offer unique resources with large support teams.** For SOSV, this includes offering extensive in-house expertise, labs infrastructure and peer networks to make SOSV accelerators the first choice for the most promising startups. While the talent doesn’t come cheap, the 100+ global team members employed by SOSV provide enormous bench strength and expertise for startups.
- **Provide significant seed funding.** At \$250,000 for deep tech startups, SOSV accelerators provide some of the best pre-seed funding options around, making SOSV a top destination.

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SOSV: A FULL-STACK ACCELERATOR VC

- **Leverage unique ecosystem assets.** SOSV did not try to build an empire from its base in Silicon Valley. It positioned its accelerators in global hotspots for its priority sectors. This positioning gives its startups local access to unique ecosystem assets such as Shenzhen's supply chain, and Silicon Valley's and NYC's boom in synthetic biology.
- **Establish global reach.** The firm also benefits from the worldwide reach enabled by its cross-border bridges to Asia thanks to its Chinaccelerator program in Shanghai (an international gateway to China) and MOX in Taipei, with its deep pool of productive developer talent.
- **De-risk before doubling down.** Like many VC-funded acceleration programs, the SOSV programs last 3 to 6 months, which is enough time for the in-house team to build an intimate understanding of a founding team's technology, execution capabilities and character. In effect, the accelerator stint is a trial period and provides an opportunity for SOSV to decide whether to invest further.

Overall, [Joffe says](#) it's vital for investors positioned at the very early stage to keep their ear to the ground to adapt swiftly while retaining their edge. "Our choice has been to pursue long-term fundamental shifts — from planetary and human health to 'chips in everything' in enterprise and industry. Those trillion-dollar opportunities will create many winners among startups and investors." [Bao Bean, on the other hand, says](#) it is also essential to keep an open mind because the technology and business landscape is always changing. "Deep tech early-stage investment is focused on change," he says. "Every day, we attempt things that would have previously failed, but because of change — usually brought on by technology-based innovation — are now possible."

The full-stack model

In the past decade, VCs have increasingly moved towards what insiders call the "full-stack model." This typically means three things.

- They can support ventures through multiple funding rounds, sometimes starting as early as the seed stage and moving right through to growth stage financing.
- They build broad, multi-disciplinary teams with support for the vital functions, from accounting to engineering, that startups need to be successful. In other words, full-stack VCs don't just bring money; they bring expertise, connections and resources, and they are keen to get in the trenches along with the founding teams they support.



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SOSV: A FULL-STACK ACCELERATOR VC

- They straddle multiple geographies, giving their investment and startup support operations better reach into fast-growing markets and leading technology innovation hubs.

SOSV embodies all three characteristics: multi-stage investment capabilities, multi-disciplinary teams and multi-ecosystem reach.

- **Multi-stage investment capabilities.** SOSV's entry point is almost always at the pre-seed stage when they admit companies to one of its acceleration programs. The accelerator deals are standardized for each program, with \$100,000 investments in software startups and \$250,000 investments in hardware and life sciences startups. SOSV aims for between 8 percent and 16 percent ownership at the accelerator phase, then looks to either establish or maintain a 15 percent stake in the top 20 percent to 30 percent of its companies. In recent years it has increased the number of follow-on investments both in terms of rounds and the amount of capital deployed. The increased follow-on investment allows SOSV to support portfolio companies for a longer duration and to maintain its relative shareholding in the highest potential companies.
- **Multi-disciplinary teams.** While the seed capital may get founders moving, SOSV pledges a lot more than just money. It boasts a global staff of hands-on engineers, designers, accountants, and scientists to accelerate product development, over 1,000 global mentors with deep market and technical expertise, and a network of fully outfitted laboratory and maker spaces to equip startups with the infrastructure required to get highly engineered products to market faster.
- **Multi-ecosystem reach.** SOSV is comparable in its global reach to other global accelerator brands like Techstars and Startupbootcamp and multi-stage VCs such as Sequoia, Y-Combinator and 500 Startups. About half of SOSV's portfolio companies are in North America, with another quarter in Asia, and the remainder split between Europe and the rest of the world. The presence and expertise in the world's leading tech markets, in turn, makes it easier for SOSV portfolio companies to prioritize - and achieve - international growth from day one.

CHAPTER 2

SOSV: A FULL-STACK ACCELERATOR VC

As noted earlier, deep tech poses some risks for early-stage VCs. It can be slower to commercialize and is typically more complicated, costly and prone to expensive failures than your classic Internet startup. SOSV believes its full-stack model helps to allay some of these risks. More specifically, SOSV ensures that the viability of the core technology can be proven in a lab setting before it invests. It brings in outside experts to help validate the science, especially in its life sciences work. It leverages non-dilutive capital to lower R&D costs, including grants, tax credits, contests, pilots and co-development partnerships with corporates. It also deploys two decades worth of in-house experience with deep tech to accelerate commercialization.

KEY LESSON

SOSV combines critical ingredients like vertical specialization, deep in-house expertise and global reach that more Canadian VCs and BAIs should strive to emulate. There is a tendency in Canada for BAIs to generalize because generalized BAIs can support a broader population of startups in a defined locale. To be fair, our comparatively small population, spread over a vast geography, can make specialization in sector and technology niches seem less feasible. Specialization may also clash with imperatives to promote inclusive regional economic development mandate. But for Canadian entities that aspire to compete internationally for the best startups, there is no other option but to pick a small number of domains where they can be world-class.

Entities like SOSV are proving that deep vertical expertise and connectivity is the key to providing startups with the right ammunition to succeed. [As O'Sullivan argues](#), "We get way better deal flow at the accelerator stage by concentrating on different verticals and various locales." The other aspect of SOSV's model that stands out is its "full-stack" venture acceleration approach that includes access to unique assets, maker spaces and lab infrastructure and an in-house team of accountants, designers, engineers and scientists who are available to work hand-in-hand with founder teams. In Canada, acceleration/venture models somewhat similar to SOSV include entities such as Chrysalix Ventures, Highline Beta, Holt Fintech AI Accelerator, Stanley Park Ventures and Tandem Launch. More entities that can bring industry, inventors, founders and investors together with world-class infrastructure would be a welcome addition to the landscape.



CHAPTER 2

DISNEY ACCELERATOR: MATURING THE CORPORATE INNOVATION MODEL



As a pioneer in the media and entertainment business, Walt Disney Co. is no stranger to innovation. The company has an unrivalled creative DNA and multiple departments dedicated to creating cool new gadgets and entertainment products. The company responsible for the world's first feature-length animated film and the first multi-plane camera has recently dabbled in smart paper that can react to gestures and robots that can walk up walls.

And yet, with the rapid acceleration of digital innovation, even Disney has recognized that it can no longer rely solely on in-house creations to stay ahead.

The Disney Accelerator, like most corporate accelerators, is a product of the need for incumbent companies to tap a more extensive and more diverse talent pool in the relentless pursuit of game-changing innovations. The evolution of its corporate accelerator provides a model for Canadian corporates seeking to harness external innovation.

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DISNEY ACCELERATOR

The Techstars experiment

The Disney Accelerator was among the first corporate accelerators launched in partnership with Techstars. From its inception in 2014, most companies exiting the accelerator have gone on to attract significant seed funding, get acquired or become profitable. Over the years, its track record of working with a steady stream of high-growth tech startups has earned the Disney Accelerator a reputation as one of the most successful and coveted corporate accelerators. The evolution of its intake model and Disney's approach to nurturing high-potential startups highlights several essential lessons for incumbent companies and startups alike.

In the initial incarnation of the accelerator, Walt Disney gave each cohort of 10 startup companies a chance at \$120,000 to develop their ideas and receive mentoring from top company executives. During a three-month mentorship and seed-stage investment program run by Techstars, participants got access to structured programming and various company resources, including iconic Disney characters and stories.

Startups accepted into the accelerator all had ideas or prototypes for innovative new services and technologies that Disney wanted, but that the company was not well-equipped to create itself. From virtual reality cameras to platforms for mobile marketing platforms and 3D printing, Disney leveraged its accelerator to invest in an array of early-stage companies creating products with the potential to contribute to the ongoing evolution and success of Disney's media properties.

"Disney has always been defined by innovation, leveraging the technology required to build the future of entertainment," said Kevin A. Mayer, Disney's executive vice president of corporate strategy and business development during the accelerator's first demo day. "Disney Accelerator offers a unique collaboration between some of the best creative minds in the entertainment industry and the modern-day visionaries who are starting businesses on the strength of exciting new ideas."





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Maturing the corporate acceleration model

After two years of running the program, Disney parted ways with Techstars and decided to leverage its acceleration framework to work increasingly with later-stage companies. The companies selected for the 2016 cohort, for example, were bigger and included startups that had already raised tens or hundreds of millions of dollars in venture capital. Disney also removed the cap on the amount of money it invests in each startup, which was necessary to attract later-stage companies to the program. And rather than incubating early-stage ideas, the program shifted focus to accelerating the commercialization of existing products by leveraging Disney's executive team to teach startups how to reach more markets in the media and entertainment fields.

Companies participating in the new iteration of the Disney Accelerator include LittleBits, creator of the Droid Inventor Kit, which was the #1 tech toy on Amazon during the holiday season in 2018 and the Toy Association's 2018 Creative Toy of the Year. Although it had already raised a \$44.2 million Series B round in 2015, the company saw the Disney Accelerator as a means to increase its international reach. Today, LittleBits sells its product in 130 countries and works with more than 3,500 schools around the world.

Another alumni company of the later-stage programming offered by Disney includes StatMuse, which created a natural language processing platform to help sports fans search for player stats. Upon finishing the program, the company closed a \$10 million Series A round and signed a deal with Walt Disney-owned ESPN to launch the first public version of its product in time for the 2016 NBA season. Today, its AI-powered voice app provides NBA, NFL, MLB, and NHL sports stats, schedules, and scores featuring the voices of ESPN SportsCenter's Scott Van Pelt and a roster of star athletes.

Leveraging executive mentors to drive product innovation

The ability to broker deals with subsidiaries like ESPN highlights the vital role of Disney's top executives and corporate assets in making the accelerator a success. Disney has a deep pool of executive talent across a broad range of media properties and a war chest of creative content and intellectual property. Collectively, this represents a tremendous asset for startup companies seeking to differentiate their offerings in a crowded digital marketplace.

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At the same time, companies like LittleBits and StatMuse bring clear benefits to Disney as it seeks to maintain a leadership position in an increasingly competitive media landscape. Top executives recognize that ambitious forays into new digital frontiers will require Disney to reach beyond the boundaries of its firm to harness new skills and capabilities. "When you run a big successful, somewhat traditional company, there's a way of thinking that comes with that," [said Disney CEO Bob Iger](#). "There's a deep DNA that exists here that isn't necessarily bad. But sometimes it's not as expansive as it needs to be, as facile as it needs to be. The ability to change with the times by being introduced to new ideas and new talent with a completely different perspective—that's a great thing."

A corporate accelerator not only expands the network of creative individuals that can participate in innovation, but it also exposes the company to new ways of thinking while providing startups companies with access to executive insights, resources and channel opportunities that they would struggle to develop independently. "The more touchpoints we can create with the new world order, with changes that are occurring in our market every day, that will have profound effects on our business long term—the better off we are," [said Iger](#).

KEY LESSON

Establishing synergies with startup companies without suffocating the innovative qualities that will allow them to prosper independently is an essential balancing act for corporate accelerators. Disney's Iger says while he expects the partnerships to be beneficial for the start-ups and Disney, he does not require his executives to strike deals, nor does he necessarily want Disney to buy any of the companies they help incubate. "We didn't want the obligation to skew the relationship in any way. We wanted them to feel free to take advantage of the vast resources of this company, the people, and otherwise, without the sense that they had to sell to us," [Iger said](#). "We thought that would be limiting in nature." In other words, smart companies recognize that attracting the best companies and maximizing their potential means being careful not to impose heavy-handed restrictions or expectations that could dampen the capacity of supported companies to succeed.

CHAPTER 2

GE VENTURES: THE QUINTESSENTIAL CORPORATE VENTURE CAPITAL INVESTOR



Founded in 2013 as the venture capital subsidiary of General Electric, GE Ventures invests up to \$200 million annually in companies across the world. Ranked as the 5th most active CVC globally, the venture firm has more than 164 companies in its portfolio, across a dozen countries. Check sizes are usually between \$1 million to \$15 million. With offices in Boston, Silicon Valley, Chicago, Houston and Israel, GE Ventures invests across a wide variety of sectors ranging from energy and health care to industrial software and advanced manufacturing. The venture firm doesn't take a majority equity stake in its companies and does not routinely acquire its portfolio companies.

"We try to keep ownership relatively low," said Steve Taub, senior investment director of GE Ventures' advanced manufacturing division. It's most common for GE Ventures to invest in companies at the Series B and C level stage, "beyond science and commercialization, and scale-up is what's typical," [Taub said](#).

GE Ventures exemplifies several principles that make it a model for large industrial companies seeking to use venture investments as a means to accelerate innovation and contribute to building an ecosystem.

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GE VENTURES

Returns-focused orientation

Like many of today's leading CVCs, GE Ventures focuses on maximizing financial returns. What's most important to the firm is the technology, the business model, how defensible it is, how much value it creates, and the people running the company. "Do they have the right skills, experiences and networks to take this promising technology and turn it into something successful?" said Taub.

With no potential for competing corporate interests, GE Ventures can tell a simple and easy-to-understand story to the entrepreneurial community: we are aligned with you to grow shareholder value. Upon investment, they have no incentive to pay the "strategic premium" or add off-market strategic terms, like a right of first offer. After investing, they have no reason to force a one-sided commercial deal with the corporate parent at the expense of their portfolio companies' limited time and energy. Aligned with other shareholders, returns-focused CVCs like GE Ventures can become preferred financing partners.

The benefits of a returns-orientation extend to GE as well, ensuring that the parent company can easily quantify results to its shareholders. As a profit-generator, GE Ventures is self-sustaining and thus insulated from the vagaries of annual budgeting.

Autonomy from the parent company

Corporate venture capital outfits navigate a tricky balance between operating in a space that is strategically relevant to the parent company while maintaining the maneuverability and independence required to make shrewd investments. Autonomy from the parent helps CVCs like GE Ventures make timely decisions and employ in-house investment professionals. At many of today's most active CVCs, such as GV (formerly Google Ventures), Intel Capital, Salesforce Ventures, and GE Ventures, decision-making power rests with a set of dedicated investment professionals, not those busy running the operating business units. With the speed and agility of a small, professional team, these CVCs can become more dependable decision-makers for the start-ups they evaluate and more trusted partners for their portfolio companies.



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Strategic relevance

GE Ventures tries to invest in technologies that it understands better than any other company – technologies where GE can obtain a “differentiated advantage.” That’s important because the more GE Ventures understands about its portfolio company, the better resources it’s able to bring to bear. As GE Ventures CEO, [Sue Seigel](#), put it: “GE Ventures was formed as part of Jeff Immelt’s mission to transform GE into a digital-industrial company. To that end, there has been a huge effort made to diversify GE’s portfolio toward digital versus capital market assets.”

Investing in areas core or adjacent to the corporate parent’s interests enhances stability and returns for the CVC. This relevance means that there is a relationship between the target sectors of the parent and the CVC, not a limited strategic scope. This distinction is vital because the disruptive forces upending traditional businesses may come from unexpected places. While GE’s M&A and business development teams focus on line-of-sight opportunities, GE Ventures can scan the broad landscape, evaluating a high volume of opportunities in adjacent sectors.

When executed well, strategic relevance facilitates a win-win-win between the CVC, entrepreneur and corporate parent. For the CVC, relevance tends to enhance returns due to proprietary sourcing, diligence and post-investment value-creation. The corporate parent also benefits from exposure to new partners, business models and talent. Indeed, a CVC introduces its parent company to talented entrepreneurs – relationships that would be difficult to foster without an investment tie.

For entrepreneurs, the CVC’s relationship with the core business increases the likelihood of gaining a lucrative contract, distribution channels and unique domain expertise. For example, GE Ventures is a significant investor in clean technology companies and, as previous DEEP Centre research has shown, cleantech entrepreneurs cite the ability to access the supply chains of anchor customers like GE as one of the most important vehicles for growing their firms. Having a “reference customer” is not just a source revenue; it’s often a prerequisite for expansion into international markets. Entrepreneurs have also referenced the value mentoring systems that connect new entrepreneurs to experienced business executives who can provide advice at key pivot points, shape product development and help mould vital management competencies.

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Leverage corporate assets to accelerate growth

As one of the conduits between start-ups and corporations, CVCs are well-positioned to think creatively about how to leverage the breadth of corporate assets to help propel a startup forward. In the case of GE Ventures, the firm bills itself as being able to provide "unrivalled access" to a global network of GE expertise and resources. GE itself is an innovation leader, with eight global research centers filing an average of 2,400 patents a year to add to its war chest of more than 50,000 patents.

GE Ventures works with the parent company to put underutilized IP to work in partnership with its portfolio companies. "GE Ventures is not just about equity investing," said [Sue Seigel](#). "One unique aspect is that we are taking ideas that are already developed within GE and licensing them to technology startups with the right expertise. In that way, we can build out an ecosystem that will help communities start building capacity."

Pat Patnode, president of GE Ventures' licensing operation, explains that sharing GE's inventions with creative entrepreneurs and partners around the world gets more people thinking about, and using, GE technology to solve significant problems, and ultimately introduces these technologies to new industries and new geographies. [Said Patnode](#):

"As we help other companies grow their business, our new partnerships are helping us leverage GE technology and unlock new opportunities. It is also a great way to accelerate the rollout of breakthrough technology that can transform industries and improve lives."

One recent example of this is GE's approach to hybrid distributed power (HDP), which melds solar, energy storage (batteries) and diesel power into a small, smart box that switches between the three sources, as needed to maximize solar power. While this technology was initially developed for and deployed in GE's wind and solar power installations, by adapting this technology, GE Ventures and its cleantech portfolio companies now hope to bring sustainable power to some of the 1.5 billion people who need it around the world.





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In the past, translating an invention from one industry, region or company to another happened mostly by chance. Now, [according to Patnode](#), it's by design.

"Every day, we think of new ways to benefit from our treasury of more than 50,000 active patents," said Patnode. "In working with startups and established companies, we can test hypotheses faster than ever before—moving innovative products to market faster or halting costly development at the earliest sign of failure."

Patient capital

Many CVCs like GE Ventures have an "evergreen" structure, in which capital is predictably available and has no end of fund life. This approach enables a more active, resilient and patient fund, with substantial, long-lived assets and predictable cash flow. This predictable commitment ensures the lights are always on, making the CVC a visible and dependable source of capital. A long-term investment orientation enhances credibility with the entrepreneurial community and allows CVCS to diversify deal sourcing over time.

Perhaps the great advantage of evergreen capital is its patience. While traditional VC fund lives are customarily ten years (and many will exit well before that), CVCs with an evergreen fund can invest in companies and sectors that need more time to mature. Entrepreneurial ventures in health care, clean technology and the industrial Internet – areas where GE Ventures specializes, have a longer pathway to commercialization. With evergreen capital, GE Ventures can support companies and sectors through the lifecycle. Without an end of fund life or impending fundraising, they are less likely to trigger a pre-mature sale or drip-fund to postpone an inevitable write-down. When investment horizons are aligned, so too are the interests of the entrepreneur and the CVC.

Patience can promote better returns as well. For example, the Japan-based SoftBank Ventures famously held its ~30% stake in Alibaba for 15+ years as it turned a ~\$200M aggregate investment into \$80B+. Where traditional VCs are often constrained by their customary 10-year fund lifetimes, corporate funds are often able to be patient for far longer.

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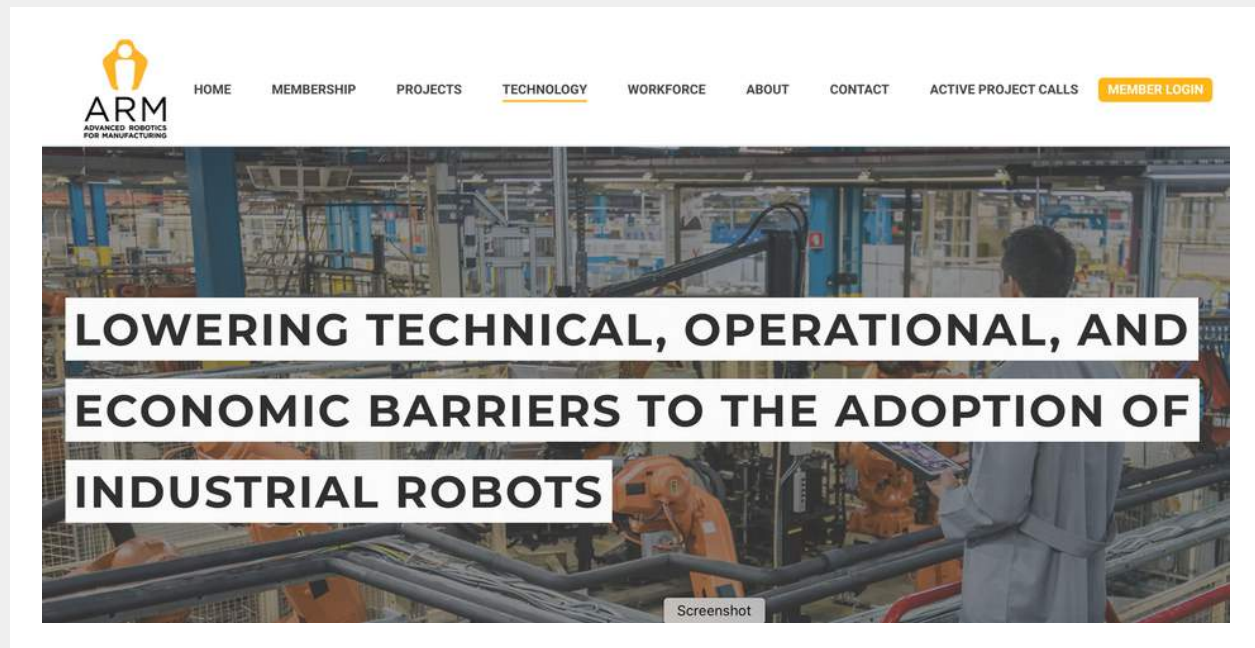
KEY LESSON

GE Ventures embodies the critical ingredients for success in corporate venture capital. While there is no single panacea to structuring successful CVCs, the feature set of a returns-focused, autonomous, strategically-relevant, evergreen fund that can leverage corporate assets will undoubtedly improve outcomes and longevity. If optimized with these features, CVCs will benefit from their advantages: patience, domain expertise, deep resources and commercial capabilities. When equipped with an efficient and experienced team of investment professionals, CVCs with these ingredients can become trusted partners of entrepreneurs and fellow shareholders, with whom they can collectively grow the start-up ecosystem.



CHAPTER 2

ADVANCED ROBOTICS FOR MANUFACTURING INSTITUTE: A MODEL FOR CORPORATE-SME COLLABORATION



Advanced Robotics for Manufacturing (ARM) Institute is America's leading collaborative network focused on robotics and workforce innovation. Structured as a public-private partnership, ARM accelerates the advancement of transformative robotic technologies and education to increase U.S. global manufacturing competitiveness. Headquartered in Pittsburgh's thriving robotics community, ARM is an integral part of Pittsburgh's strategy to define the future of the global manufacturing economy.

As a national membership-based consortium, ARM is neither an incubator nor an accelerator in the traditional sense. Nevertheless, it does represent a vital hub for applied research and innovation in robotics, and its success in creating growth and corporate engagement opportunities for SMEs provides valuable lessons and insights for BAIs seeking to develop similar opportunities for their clients.

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Consortia projects: A model for corporate-SME collaboration

A consortium is a group of companies that join together to accomplish a specific goal. Consortia members also frequently include government agencies, non-profit research institutions and major universities. In the technology industry, companies most frequently join consortia to collaborate on initiatives that will establish and grow a market for new products and services. Typical objectives include setting standards to enable the development of new infrastructures (e.g., for the Internet and telecommunications), products (e.g., high definition television and wireless peripheral devices), software (e.g., Linux for business users) and services (e.g., web services). Most consortia also market and promote these new technologies to educate potential customers and create demand.

In the pharmaceutical industry and other science-intensive fields, companies use consortia to scale and speed up their early-stage R&D activities. Common activities in the pharmaceutical industry include collaborating with scientific communities to conduct pre-competitive genomic research. In emerging technology domains, like AI and the industrial Internet, companies work with researchers and each other to test new technologies in a commercial setting before bringing them to market. Depending on the type of consortia, firms can identify and act on discoveries more quickly, focus on their area of competence, facilitate mutual learning, and spread the costs and risks of research.

Canada is home to a large number of such consortia. Indeed, many analysts have noted that Canada has a distinct collaborative spirit in establishing innovation clusters and accelerating business opportunities for small and medium-sized enterprises (SMEs) and startups. You can see this trend clearly in a growing number of collaborative R&D projects across the country that promote knowledge transfer between universities, business and government, and help Canadian SMEs rise to the next level of growth. Academic researchers not only partner with industry but also work side-by-side with multiple business partners – even competitors – to co-develop technologies. It is a model that favours SMEs by giving them affordable access to top research talent, and it solves problems by helping people and organizations in the same fields of research and innovation address them together.





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The presence of private sector participants is particularly vital for consortia seeking to achieve meaningful commercial outcomes and this is especially true when consortia match large anchor companies with a cohort of entrepreneurial startups and SMEs. While large companies sometimes worry about unleashing new competitors, experienced innovation executives increasingly realize that the mutual presence of large and small companies in a consortia project provides each with unique benefits. Instead of maintaining large R&D teams and internal innovation labs, engagement with university researchers and startups can expose large firms to breakthrough ideas and build a pipeline of innovation and growth opportunities that would otherwise be difficult to replicate internally. When done correctly, these relationships can increase brand awareness, encourage experimentation, and help mitigate investment risks as venture-funded startups establish new markets and are acquired when mature.

For startups, the presence of an engaged and invested corporate community in a consortia project provides better access to first-sale opportunities, channel relationships and global value chains. Partnerships with large firms also allow entrepreneurs to take advantage of other synergies that accelerate business growth, including access to financing and hands-on mentorship from the corporate partner's employees and executives.

Enabling leadership in robotics and advanced manufacturing

While robots have long been a part of manufacturing, the cost and competency of those robots continues to advance at a rapid pace. The establishment of robust theoretical frameworks, combined with the availability of data and processing power, has yielded remarkable successes in foundational tasks such as speech recognition, image classification, autonomous vehicles, machine translation, legged locomotion, and question-answering systems. Robots that were once consigned to carefully controlled tasks and segregated work environments can now work alongside people and perform many functions in unpredictable situations. From robotic surgery to autonomous vehicles and revolutionary biotech automation, the applications for increasingly smart machines will span healthcare, legal and financial services, transportation, construction, agriculture, manufacturing and much more.

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Thanks in part to the work of advanced robotics research networks like ARM, the adoption of industrial robotics is proceeding at a breakneck pace. [The International Federation of Robotics estimates](#) that a fleet of over 3 million industrial robots will be operating in factories around the world by 2020, with China accounting for nearly one-third of all industrial robots installed worldwide. One key indicator for gauging the current degree of automation within the international markets is robotic density: the ratio of robots to human employees. As of 2016, the average global robotic density in producing industries lies at 74 robot units per 10,000 employees. However, the density among leading countries is significantly higher. As the current global leader in industrial robotic automation, [South Korea's robotic density exceeds the global average](#) by a good seven-fold (631 units), followed by Singapore (488 units) and Germany (309 units).

Building a research and learning network

As the race to automate manufacturing heats up, a vital role for the ARM Institute is helping its member companies acquire the collective expertise and resources required to develop and experiment with new robotics technologies. According to ARM's CEO, Bryan Clayton:

"We have companies that have problems that need to be solved, but we need to present the business case. We need to understand more about their sectors. We need to attack real problems and deliver practical solutions. We need to see robots doing real work: welding an automotive part or working in a biopharmaceutical manufacturing assembly line. That takes a network with real know-how and deep expertise."

A key benefit for ARM's members is the opportunity to share the cost of testing new robotics technologies at scale before moving towards a full-scale industrial implementation. "The ARM Institute enables us to put new robotics technologies into a low volume production environment and test it," said one executive involved in the project. "Once it's commercially ready and we can move it into a real production environment. Once it's out there and working, we can license it or manufacture it."





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To ensure that new knowledge and technologies get shared across the network, the ARM Institute grants IP ownership to the companies that invest in and lead individual technology projects, but also insists that they grant royalty-free licenses to other consortia members who wish to evaluate the commercial or industrial new technologies developed through ARM projects. If a member subsequently chooses to deploy the technology commercially, it must negotiate a licensing agreement. This compromise limits free-riding by consortia members while promoting access to the network's full stock of technologies and solutions for research and evaluation purposes.

Brokering partnerships with startups

Startups and SMEs seeking corporate customers often struggle with access, visibility, and establishing the correct contacts within large and complex organizations. Having a consortia project or industry alliance help publicize innovation needs, broker the development of solutions and facilitate introductions to company executives can dramatically reduce complexity for startups and accelerate the growth of early adoption opportunities.

While such activities hold significant promise, consortia leaders like Clayton cite challenges related to scaling and the lack of a level playing field between small and large firms as impediments to engaging entrepreneurial ventures in the core business of their consortium. A common observation about the challenges of integrating startups into consortia projects is the mismatch between the timescales for startups and consortia projects.

"It can be challenging to bring the players together in a way that makes sense for startups," said Clayton. "Consortia projects often operate on a much longer timeline. Big companies will take three months to make a decision. Startups have to operate much more quickly."

Clayton also notes that the goals of the startup may determine the opportunities for engagement. "You need to understand the goals of the different players. Does the startup want to get acquired, or to secure a sale, or to demonstrate its technology? Depending on the purpose and the timeline, a consortia project like ours may or may not be a good fit."

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The ARM Institute seeks to overcome these challenges with a bespoke approach to brokering relationships between small and large firms in its network. Clayton says, "the small companies are looking for opportunities, and big guys want to know what is out there." The ARM Institute, for example, has built detailed profiles and an online platform for the most promising startups working in robotics at Carnegie Mellon University and MIT and plan to add more companies from leading technology hubs across the country. The secretariat also invites a select group of startups to attend its regional meetups and makes targeted introductions on the request of its corporate members. "The key is matchmaking and making sure the smaller companies are visible," says Clayton. "Everyone is well-intentioned, but occasionally the little guys can be pests. We need innovative ways to get them together, and we need to curate the connections carefully."

KEY LESSON

Well-curated communities can not only introduce corporate executives to new ideas, talent and technologies, they also provide SMEs with access to cutting edge research and a vital entry point into the R&D pipelines of global corporations. "They get to meet researchers from around the country who are world leaders in robotics," said Clayton. "We also have a lot of smaller companies in our orbit that are working on exciting technologies. These companies usually fly under the radar, but we help bring them to the surface." While hype inevitably accompanies any new technologies, consortia projects like the ARM Institute differentiate themselves by helping companies cut through the noise. "There is so much going on right now," said Clayton. "We can help vet the information and differentiate what is new, what's real, and what actually works."





CHAPTER 3

JURISDICTIONAL SCAN

Over the last two decades, the world has witnessed a rapid escalation of international efforts to produce more entrepreneurs and better support them. Indeed, the race for high-value innovation and entrepreneurship is driving a vast array of public policy initiatives aimed at facilitating entrepreneurial activity and business growth. In some cases, these policies complement or buttress private initiatives, while in others, they provide necessary alternatives for strengthening entrepreneurial ecosystems. The interventions range from efforts to increase the flow of private capital to early-stage companies to funding arms-length networks of startup support organizations that help direct entrepreneurs to the resources they need to start and grow a business.

Although all countries surveyed by the DEEP Centre feature a wide range of general and highly targeted business support programs, the remarkable increase in the number of BAIs suggests these entities have become the defining instrument of entrepreneur support policies in the early 21st Century. Public and private sector interest and investment in business accelerators and incubators (BAIs) – both in Canada and internationally – stems from their potential to play a catalytic role within innovation ecosystems and to ameliorate specific types of market failures that can impede firm survival and growth. Among other things, these market failures include a lack of access to seed capital and commercialization expertise.

Many incubators and accelerators, especially those catering to first-time entrepreneurs and early-stage ventures, serve as “classrooms for entrepreneurs” by providing resources to help entrepreneurs develop and commercialize new products and services. Increasingly common, however, are accelerators that endeavour to increase the growth and competitiveness of more established ventures by brokering connections to investors, customers and elite mentors. Australia, Canada, Sweden, the United Kingdom, the United States and many others have made substantial public investments in BAIs based on the view that these arms-length organizations provide the most effective means of channelling support services to startups.

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Despite the growing number of accelerators, a cloud of uncertainty hangs over the space with respect to how to assess the economic impact of the support services accelerators provide to early-stage companies. Are accelerators significantly increasing the number of viable growth companies and materially impacting the economic performance of the jurisdictions that host them? Or are they generating an ever-growing pool of "walking dead" startups with little hope of achieving growth and longevity? The evidence to date is mixed, with a broad spectrum of performance between the world's leading BAIs and the remainder.

Moreover, there is growing concern that the market is increasingly overcrowded, with some observers suggesting the emergence of an "accelerator bubble." The increasing competition to attract the best founding teams and most promising companies could make it difficult for many new and existing organizations to sustain themselves in the absence of generous public funding. Additionally, the uncertainty surrounding the economic ROI on public investments in BAIs has led to growing advocacy for more robust performance measurement systems, with Canada among the first jurisdictions to commit to building a national performance dashboard for BAIs.

ABOUT THE JURISDICTION SCAN

The DEEP Centre conducted the jurisdictional scan to understand how funding programs for BAIs have evolved since we last conducted similar research in 2015. In particular, we set out to illuminate the degree to which BAIs in other countries depend on public funding, the sources and methods for dispersing funds, and any measures taken to enhance the fiscal self-reliance of BAIs. Given the growing importance of partnership revenue for Canadian BAIs, we also looked for public policy initiatives that have proven successful in increasing the connectivity between BAIs, startups and the VC and corporate community. Our target list of countries for the initial scan included Australia, Finland, Israel, Sweden, Switzerland, the United Kingdom and the United States.

With a couple of exceptions, we found very little publicly available information to delineate the funding and revenue mix among BAIs in other countries. One exception is the United Kingdom, where NESTA has consistently produced detailed research on the evolution and performance of the country's BAIs.





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Another source of comparative analysis is the Global Accelerator Learning Initiative (GALI), an international research project designed to answer critical questions about enterprise acceleration. To date, GALI has gathered data on over 164 acceleration programs in both mature and emerging markets and assembled a database of venture-level data from a total sample of 8,000 entrepreneurs.

In its [2017 research on BAI funding models](#), GALI found that nearly 50% of respondents received corporate funding, and 21% relied on corporates for at least half of their operating budget. 40% of the accelerators reported taking funding from philanthropic sources, with 19% indicating that these funds constituted more than 50% of their funding. 37% of the accelerators in the sample receive funding from government, with 18% citing government as a significant source of funding. Less than 10% of accelerators generated revenue from equity returns or success fees charged to investors.

Despite the limited data on funding models and fiscal sustainability, our review did surface several government-led efforts to strengthen collaboration between BAIs and the VC and corporate community. For example, we found noteworthy corporate-startup matchmaking initiatives in Finland, Sweden, Switzerland and the United States. With additional research, we determined that Ignite Sweden and the National Renewable Energy Laboratory (NREL) provide the most robust basis for inter-jurisdictional learning and adoption.

Given the availability of data and the strength of the case study candidates, we selected Sweden, the UK and the US as comparators for the analysis. In addition to secondary research, we conducted qualitative interviews with executives leading the best practice initiatives (see Table 3 below). We structured the interviews with best practice leaders to gain an understanding of the ecosystem challenges the organization is addressing, the respective roles of key stakeholders in addressing these challenges, and the potential applicability of these models to Canada's startup ecosystem.

For each of the three jurisdictions selected for analysis, we provide a brief overview of the relevant entrepreneurial support programs and services. For the UK, we take a close look at what the data compiled by NESTA reveals about funding models and the broader fiscal sustainability of UK-based BAIs. In our analysis of Ignite Sweden and NREL, we provide detailed descriptions of their programs and services. We also identify critical success factors for each organization and a set of implications for Canada.

BEST PRACTICE INTERVIEWS CONDUCTED BY THE DEEP CENTRE

TABLE 3

NAME	TITLE	ORGANIZATION
Seppo Tossavainen	Senior Advisor Canada	Business Finland
Ian Philp	Trade Commissioner	Global Affairs, TCS
Stina Lantz	Program Lead	Ignite Sweden
Sandor Albrecht	VP, Innovation and Partnerships	Research Institutes of Sweden
J.A. Colantonio	Project Lead	National Renewable Energy Lab

CHAPTER 3

JURISDICTIONAL SCAN

CASE STUDY OVERVIEW

As noted above, our jurisdictional scan examines the evolution of BAI funding models in the UK and two organizations that connect BAIs and startups to investors and corporate partners. As described in the synopses below, each organization imparts unique lessons that can help inform efforts to strengthen the performance and fiscal sustainability of Canada's entrepreneur support system.

Sweden

The birthplace of tech giants like Spotify and Skype, Sweden is a global startup hub that punches well above its weight. In our review of Sweden's startup ecosystem, we focus on Ignite Sweden, a non-profit entity that brokers partnerships between startups and large corporates on behalf of a national network of business incubators and science parks. More specifically, Ignite Sweden helps startups identify potential customers for their solutions by verifying product requirements with the customer and running a pilot in the customer's environment. Since its launch in 2017, 132 large companies and more than 400 startups have participated in over 2,400 matchmaking meetings. To date, 42% of the matches performed by Ignite Sweden have produced at least one follow-on meeting, while 112 startups have struck commercial deals.

Ignite Sweden highlights the importance of having a structured process for identifying industry needs and finding suitable solution providers in the Swedish startup community. Among other success factors, the Ignite Sweden case also underscores why matchmaking programs need experienced business talent and why it's vital to build the capacity of startups and corporates to negotiate and operationalize innovation partnerships.

The United Kingdom

While the United Kingdom has pockets of entrepreneurialism across the North of the country, much of its startup ecosystem centres on the City of London. The region's deep pool of talent and venture capital have combined to create a world-class cluster of start-up firms, ranked 3rd in the world by the 2019 Startup Genome Compass report, behind only Silicon Valley and New York. While the UK trails the United States and China in annual venture capital investment, it is leagues ahead of its closest European competitors. In 2019, the UK received more investment than Germany and France combined, and about one-third of total investment in Europe.

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JURISDICTIONAL SCAN

In our review of the UK startup ecosystem, we focus on comparative analysis of funding models for BAIs in Canada and the UK. As in Canada, the UK has seen a decade of explosive growth in the number of business incubators and accelerators, with a significant concentration of BAIs in London. Research conducted by NESTA reveals that both incubators and accelerators in the UK rely heavily on public or university funding - although accelerators are, as a whole, less dependent than incubators on these sources. These sources of funding include local enterprise partnerships, Innovate UK, central government and Big Lottery Fund as well as from the European Regional Development Fund (ERDF), which funds at least 60 programs and facilities in the dataset collected by NESTA. The NESTA study shows that corporates provide financial support to 51 % of UK accelerators, while 41% receive public funding. Incubators, on the other hand, are more likely to receive funding from universities and government agencies.

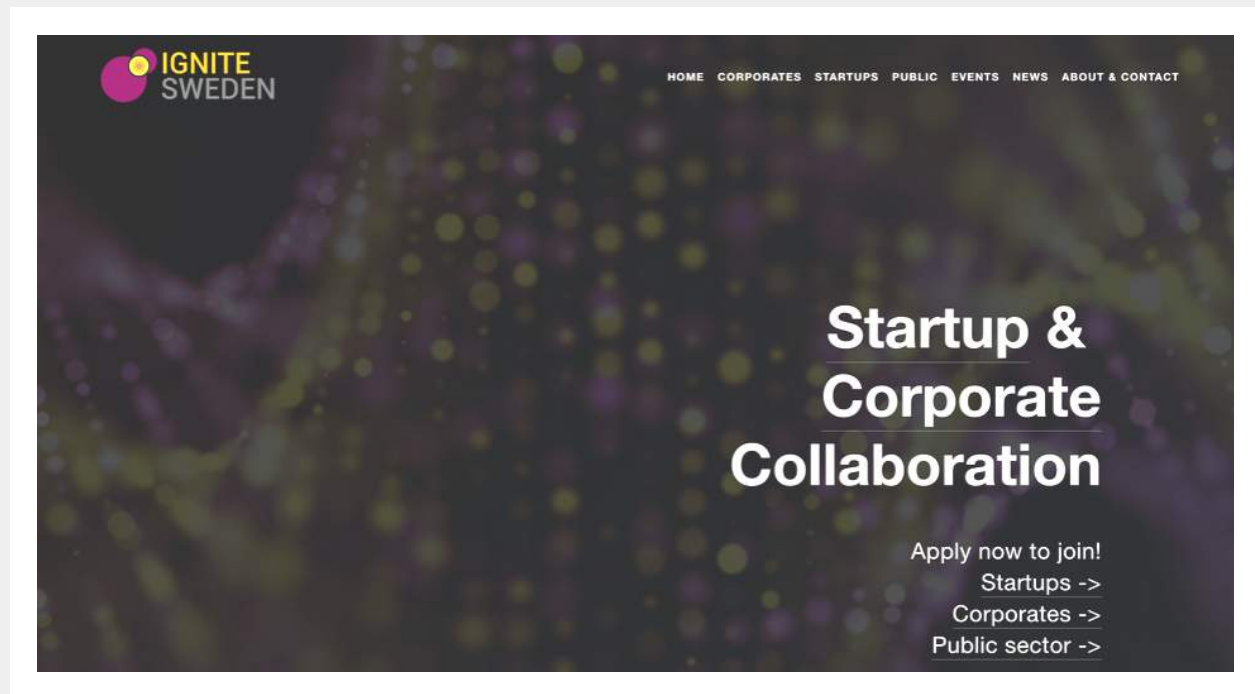
The United States

The United States has long held a competitive advantage in nurturing large technology firms that no other jurisdiction can match. Much of that success is due to spin-offs from deep investments in science and engineering led by national labs like the U.S. National Renewable Energy Laboratory (NREL). Over its 40-year history, NREL has established itself as a lynchpin in the US clean energy ecosystem, having led breakthrough research on energy efficiency, sustainable transportation, and renewable power technologies. In recent years, it has also demonstrated leadership in technology commercialization, forged a national network of cleantech BAIs and become a go-to source for investors and corporations seeking to validate the technical performance of cleantech solutions.

The case study explains how NREL's Industry Growth Forum and a suite of "technology-to-market" programs play a vital role in helping startups validate and optimize their technologies and connect to investment and adoption partners. Above all, NREL's success highlights the importance of its differentiated value proposition in promoting collaboration and commercialization in the cleantech ecosystem, and specifically the significant science and engineering capabilities that make NREL a valuable partner to startups, investors and corporates.

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IGNITE SWEDEN: A MATCHMAKER TO CONNECT STARTUPS WITH BIG CORPORATES



Sweden, and specifically Stockholm, is home to one of the world's most productive startup ecosystems. In 2019, it was ranked #11 in [Startup Genome's Global Startup Ecosystem Report](#). Its ranking is even more impressive on a per-capita basis. By that measure, Stockholm is the second most prolific tech hub globally, with 6.3 billion-dollar companies per million people compared to Silicon Valley with 6.9. One-fifth of its entire workforce works in the tech sector, which makes it the most tech-intensive city in Europe. In 2017, Sweden also ranked third in UNIDO's Global Cleantech Innovation Index based on strong scores for innovation inputs and outputs.

In contrast to countries like the UK and the US, where business incubators and accelerators congregate around major clusters, in Sweden, support organizations are more evenly dispersed throughout the country. This distribution is mainly due to the fact that publicly-funded bodies with strict regional catchment areas deliver most of the country's early stage support services. However, Sweden is home to a small number of private-sector accelerators, including the MobilityXLab backed by Ericsson and Volvo and venture-backed entities such as Chalmers Ventures and the Springfield Project.

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Successive Swedish governments have established robust national support systems for business incubators, including a generous public funding regime and a national performance management system. Launched initially in 2003, Sweden's National Incubator Program is currently the responsibility of VINNOVA, the country's innovation agency. As of March 2020, VINNOVA funds 24 incubators across the country. The funding is performance-based, and not all Swedish incubators receive VINNOVA funding. The national umbrella organization for incubators, Swedish Incubators and Science Parks (SISPs), has 63 members.

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As in other jurisdictions, innovation hungry companies from around the world have demonstrated considerable interest in tapping into Sweden's growing startup ecosystem. Jonas Almeling, who runs Ericsson ONE, the global electronics company's corporate accelerator, [put it this way](#): "We live in a world where technology that awed us this morning has already been commoditized by lunch. Innovation is the only life raft that large corporations can cling to." Like other global companies, Ericsson has tried and exhausted most of the traditional routes to expand its business—from lengthy internal R&D programs to mergers and acquisitions. "While it's incredibly important to have the internal mandate, funding and processes in place," [says Almeling](#), "it is equally, if not even more crucial to leverage the pace and creativity of the startup and innovation ecosystem. Innovation is not a private territory, but an open ecosystem that empowers and accelerates the ambitions of all those who meaningfully engage with it," he said.

Until recently, companies like Ericsson have lacked visibility into the technologies and startups that emerging across Sweden. Ignite Sweden was established in 2017 to solve this problem by creating a structured process and program to support ongoing collaboration between startups and corporates in Sweden. With support from Vinnova (the Swedish innovation agency) and the Swedish Energy Agency, Ignite Sweden set up an independent, non-profit entity that runs a matchmaking program that connects startups with big companies. "We are going around every major city and interviewing executives at the big companies to figure out their needs: do they need technology, suppliers or insights?" said Stina Lantz, program lead for Ignite Sweden. "Based on that needs analysis, we then try to match up the large companies with SMEs and startups."





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More specifically, the program offers corporates the opportunity to have Ignite Sweden perform a needs analysis, scout relevant SMEs and startups, facilitate matchmaking sessions, educate executives about how to work with startups, and host networking sessions with other large corporates facing similar challenges.

Ignite Sweden works hand-in-hand with the country's national network of business incubators and science parks. With sixty-three incubators and science parks in Sweden, large companies find it difficult to track the entire population of high-potential companies and emerging technology opportunities. Said Lantz:

We realized we needed a national approach, led by a team of very senior business developers who could help corporates parse the landscape."

The program is run by a full-time team of six, with additional staff support from a network of Sweden's leading incubators, including LEAD, Minc, Sting, THINGS and Uminova Innovation.

Ignite Sweden also works closely with the Research Institutes of Sweden (RISE), an independent, state-owned research institute, which offers unique expertise and over 100 testbeds and demonstration environments for future-proof technologies, products and services. Its mission is to increase the pace of innovation in Swedish society and bolster the international competitiveness of the Swedish business community. It does this by running a series of international collaboration programs in conjunction with industry, academia and the public sector.

Among its many strengths, RISE provides access to tremendous technical expertise and a research and experimentation infrastructure that would be too costly for individual companies to create from scratch. "We have many assets," said Sandor Albrecht, VP of Corporate Innovation at RISE. "These include full-scale data research facilities, testbeds for IoT applications, drones and AI-enabled logistics and operations centres. We have a lot of capacity that would be expensive for individual companies to replicate." In addition to running 60% of Sweden's total test and demonstration environments, RISE also has an in-house R&D team with over 800 PhDs to support co-innovation projects with companies.

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Today, some 30% of RISE's clients are startups and SMEs that are looking for opportunities to scale. For these companies, Ignite Sweden and RISE work together to identify potential customers for their solutions, verify final product requirements with the customer, and run a pilot in the customer's environment.

KEY SUCCESS FACTORS

Having launched in 2017, Ignite Sweden is off to a promising start. To date, 132 large companies and more than 400 startups have participated in over 2,400 matchmaking meetings. Lantz says there are 1,200 startups registered with the program, but they haven't been able to identify suitable matches for all of them. Of the 132 corporates that have participated in the program, there are recognizable Swedish names such as Ericsson, H&M, Skanska and Volvo. However, a growing proportion of global corporates are coming from outside of Sweden to tap into the country's vibrant startup scene. International players engaged by Ignite Sweden include ABB, GE, IBM, KLM, Pfizer, Siemens, Sony and Volkswagen.

Lantz reports that 40 of its corporate partners are coming back to Ignite Sweden regularly. "They have learned how to work with startups, and they are coming back for further engagement," she said. More importantly, Lantz points to 112 commercial deals that startups have struck with large corporate as evidence that the program is creating economic value. While commercial deals are the most important KPI, Lantz also tracks the number of follow-on meetings between SMEs and corporates after the initial matchmaking meeting. To date, 42% of the matches have produced at least one additional follow-on meeting.

The following are some of the critical factors that have contributed to Ignite Sweden's early success.

- **Tapping into a culture of collaboration.** According to Lantz, Sweden's innovation system has unique attributes that made it easy to get BAIs on board with a national corporate engagement program. Unlike Canada, where BAIs compete for clients and pursue bi-lateral partnerships with corporates, national cooperation is part and parcel of the Swedish model. Swedish incubators are wholly owned by universities and municipalities. Every incubator also has a clear regional mandate and territory.





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"They don't compete for clients," said Lantz. "They are not even allowed to work with startups in other regions." Moreover, because of the generous public funding in Sweden, incubators do not rely on income from larger corporates to sustain their operations.

- **Assessing corporate readiness.** Ignite Sweden only works with corporates that are both motivated and well-equipped to work with startups. Typically, that means companies with dedicated innovation departments and 500 employees or more. "We have a startup engagement readiness scale," said Lantz. "We can quickly determine where they are on the scale." She argues that the motives of the corporate are fundamental, arguing that companies "need a senior champion, and they need a budget for experiments or pilots." Lantz says it's also critical to ensure that procurement, legal and IT department on board. "Data governance and other regulatory issues can be showstoppers."
- **Building confidence and trust.** One of the first challenges was winning the confidence of large Swedish companies. "We promise them we will match them mature SMEs who have compatible solutions. And, then we have to deliver," said Lantz. "Confidentiality is also important. We strike NDAs with the large companies. In return, we get detailed information about their industrial needs." Lantz says much work went into crafting a methodology for discovering and organizing the information about innovation needs.
- **Hiring experienced talent.** Building credibility with large corporates also depends on having experienced professionals in place to broker innovation relationships. Lantz stresses the need to hire the right talent to engage with corporate decision-makers. "The people involved are very experienced," said Lantz. "They are typically in their 50s and have a couple of decades of experience in the private sector. These are not junior hires. You need the knowledge and experience to translate challenges into technological opportunities and innovation challenges."
- **Maintaining a pipeline of qualified startups.** Maintaining high-quality deal flow is another success factor for the program. 70% of the startups Ignite Sweden works with are from the national incubators. 30% are from outside the system. Lantz says many of the companies are built on university-based research and have proven their ability to commercialize their IP quickly. To qualify for matchmaking, startups must have a team of at least three people and have been in business for a minimum of two years.

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- **Building capacity.** Underpinning the work done by Ignite Sweden is a recognition that both small and large firms must be equipped with the skills and knowledge to initiate, negotiate and maintain innovation partnerships successfully. For large companies, this includes educating corporate executives about the merits of corporate innovation partnerships and sharing best practices at meetups organized by Ignite Sweden. Lantz says startups need coaching to ensure they talk the same language as corporate executives. “They also need a compelling business case for investment, and they need to demonstrate that the solution they are offering can work at scale and meet the complex needs of a large international company,” said Lantz. Other needs include support for intellectual property management and advice on structuring commercial agreements.

IMPLICATIONS FOR CANADA

Ignite Sweden offers a unique model for matching startups and corporates using a structured process for identifying industry needs and finding suitable solution providers in the Swedish startup community. Although Ignite Sweden charges corporate partners for its services, Lantz concedes that the initiative will not necessarily strengthen the fiscal sustainability of Sweden's incubators. At this point, Ignite Sweden sinks all revenues generated from corporates back into its operations. Lantz says that Swedish incubators already receive generous public funding, and most are not seeking new revenue streams. The big beneficiaries are the startups that have been able to strike new commercial deals. And, as Lantz points out, it reflects well on the BAIs when their startups are successful.

If Canada were to replicate this function, where and how should it get started? “Corporate engagement is critical,” said Lantz. “You need some powerful examples you can point to at the very start. You also need the startups to have a good experience, because if the startups love it, so too will the incubators.”

Lantz says it's best to start small with some willing clients that will help create compelling use cases. “We started with a small network of corporates and two incubators. They were engaged and felt some ownership over it,” she said. Funding from the government also helps to attract private sector investment in building prototypes or running costly pilot projects.





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Second, to generate early wins, Canada would need a strategy for building the capacity of small and large companies to work together effectively. As Sandor Albrecht put it:

“You need to have a strategy for big companies. Big companies don't always understand what to do with small firms, and they don't always know what they want. Startups will die if the big companies are not focused on getting something done quickly in 12 months.”

Small companies need education as well. Startups don't always understand the problem that needs solving for industry. What is the added value? What are the pain points that you are addressing? They need to understand the business context, the industrial processes, the liability issues, the strategies of the companies and their approach to certain business segments.”

Lantz explains that while Ignite Sweden educates corporates about the opportunities to engage with startups and SMEs, it cannot offer corporates consulting support throughout the process of building a commercial relationship. “The corporates sometimes need external consultants to build up their capacity to collaborate with SMEs,” said Lantz. “We stay on the side of the startups and help them with IP, commercial agreements and other needs.”

Finally, Lantz argues that you not only need experienced private sector executives to broker connections with industry, but you also need the right talent running the operation.

“We are entrepreneurs. We are used to working hard and making it happen. We are not from the government. You need stamina and grit to build it. You can't take short cuts.”

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KEY LESSON

A national matchmaking service for startups and corporates could accelerate the development of new partnerships in Canada's startup ecosystem. The bottom line is that well-structured collaborations that foster meaningful interactions between startup companies and large industrial partners do not often occur by happenstance. While many large companies understand the merits of working more closely with startups and SME's, few have developed the appropriate internal mechanics for doing so successfully. The same is true for entrepreneurs and startups who are often ill-equipped to enter into serious business relationships with large multinationals. Canada needs vehicles to build corporate innovation capacity and focus the attention of corporate leaders on the partnership and investment opportunities that exist across the country. Indeed, there is considerable support among those consulted for better education, training and support on how to engage with startups. And, rather than working bilaterally through individual BAIs, corporate executives would also like a streamlined model of engagement that could provide exposure to companies and opportunities across Canada.



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THE UNITED KINGDOM: COMPARING FUNDING MODELS FOR BUSINESS ACCELERATORS AND INCUBATORS



Much of the United Kingdom's entrepreneurship support ecosystem centres on the City of London, which is now [home to 81 business accelerators and 29 incubators](#). The lure of London's Tech City and the region's deep pool of available talent and venture capital have combined to create a world-class cluster of start-up firms, ranked 3rd in the world, according to the [2019 Startup Genome Compass report](#), behind only Silicon Valley and New York. The latest edition of the [Tech Nation report](#) estimates the number of digital companies in inner London grew by a full 92% between 2010 and 2019 and now ranges between 4,600 and 5,300 startups.

Venture capital funding for UK tech firms also [grew over this period](#), expanding from £1.1bn in 2013 to £13.2 in 2019. While the UK trails the United States and China in annual venture capital investment, it is leagues ahead of its closest European competitors. In 2019, the UK received more investment than Germany and France combined, and about one-third of total investment in Europe.

The region's success in recent years has been accompanied by significant growth in the number of business accelerators operating in London, which hosts more of these organizations than all other regions in the country combined. The growth of business support organizations, however, is not limited to London alone.

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Since playing host to Europe's first accelerator – Seedcamp – in 2007, the country's overall population of accelerators has continued to expand, with an estimated 205 incubators and 163 accelerators as of the [most recent count in 2017](#). Over half of these organizations were founded in 2011 or later. Among this ever-expanding population, accelerators such as Seedcamp and Ignite have become particularly prominent, establishing a strong reputation and connections throughout Europe and North America.

Several trends are worth noting within the UK's business incubation and acceleration environment.

First, the country has seen an increase in the number of corporate-backed accelerators operating domestically. Among others, these include the Barclays Eagle Lab and Barclays Fintech Accelerator, BBC Worldwide Labs, Microsoft Scale-Up Ventures, Wayra (O2 Telefónica) and JLABs. Barclays Fintech Accelerator, for example, runs a 13-week acceleration program focused on machine learning, digital banking, cybersecurity and cryptocurrencies. BBC Worldwide Labs supports six innovative, up-and-coming digital media companies each year.

Second, the incubator and accelerator space in the UK is becoming increasingly specialized across sub-sectors, with the emergence of more focused organizations in areas such as fintech, cybersecurity, and clean technology. In 2019, for example, London produced four new fintech unicorns to bring its [total number of fintech unicorns to 18](#). OakNorth, a debt finance solution startup, raised £100 million and became a unicorn in October 2018. The company raised an additional £440 million early in 2019. Other fintech unicorns include Greensill, Rapyd, and checkout.com. The fact that London is the second-largest financial center in the world, employing more than 315,000 people, makes it particularly hospitable to scalable fintech innovations.

In 2015, the Financial Conduct Authority also launched a regulatory sandbox program that allows fintech startups to test innovative propositions in the market, with real consumers, while receiving regulatory guidance and support from the FCA. [Observers frequently applaud the program](#) for giving fintech firms the regulatory certainty they need to develop their innovations and deliver them at speed.





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Third, some accelerators – notably Seedcamp – are increasingly focused on supporting company growth and scaling. In 2014, Seedcamp [announced a new \\$30 million acceleration fund](#) focused on “the art of scale.” Noting that “European entrepreneurs’ ambitions have outgrown traditional forms of acceleration,” the new fund is intended to allow the group to “back start-ups from start to scale.” The new fund is backed by the European Investment Fund, established private funds, individual companies and angel investors.

PUBLIC INVESTMENT IN THE UK’S STARTUP ECOSYSTEM

Several high-profile government policy initiatives have also supported London's growing prominence as a centre for technology entrepreneurship. In 2010, the government launched Tech City UK, a not-for-profit publicly funded organization mandated to promote London's growth as a technology cluster and implement supportive programs that provide mentorship, entrepreneurship training and acceleration services. Its core programs include:

- **The Founder’s Network**, a peer-to-peer support network for entrepreneurs with ambitions to build and scale their business. [As of 2019](#), the network has attracted 933 members from across the UK.
- **Upscale**, a six-month mentoring program that deliver 60 hours of scale-up support to the most promising high-growth start-ups. To qualify, companies must have raised a series-A round and by growing (in headcount, revenue or users) by 20% month-over-month. [The program’s alumni have raised](#) over £216 million and have average revenues of £1.8 million.
- **Future Fifty Program**, a late-stage growth program that helps the country's most successful tech companies achieve their global ambitions. Selected from an open competition by an independent panel of experts, 50 growth-stage digital firms based in the UK receive up to 24 months of comprehensive, bespoke support designed to foster their continued growth. The program facilitates access to government support on immigration, taxation, or policy issues. It combines this with private sector advice and support on access to talent, finance and London's capital markets. [By the end of 2019](#), its 127 alumni companies had raised over £8 billion since starting the program. Nine Future-Fifty companies have gone to IPO, and 30 have been acquired

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- **Digital Business Academy**, a free online platform providing training on how to start, grow or join a digital business. The course content is offered in partnership with leading universities (including University College London and Cambridge University) and digital skills schools, covering a mix of entrepreneurship and digital skills relevant to businesses at all stages of growth. [The Academy has so far attracted 25,000 active users](#) since its launch and includes access to work and start-up opportunities.

In addition to Tech City, the UK government has introduced a variety of measures, such as the Enterprise Investment Scheme, the Entrepreneur Visa and the Higher Education Innovation Funding (HEIF), intended to encourage the continued growth of the domestic entrepreneurial ecosystem. The UK's Higher Education Innovation Funding (HEIF) program, for example, provides funding to support and develop a broad range of interactions between universities and industry aimed at achieving economic and social benefit to the UK. The program has been running since 2001, and [in 2019 the government increased the allocation to £250 million](#), of which around £25 million is specifically to support entrepreneurship training in universities. Universities in the UK have used HEIF funding for purposes such as hiring entrepreneurs-in-residence, running experiential education programs, work placements, business idea competitions and student startup incubators.

More broadly, over the last decade, the UK government has implemented a raft of policies and programs aimed explicitly at supporting high-growth, globally focused businesses. These policies include early-stage matching funds and tax incentives to stimulate angel investment, a loan scheme to provide seed capital and mentoring to early-stage companies, funding to support the creation of new venture capital funds, and support for entrepreneurship programs in schools and universities. Many of these initiatives are overseen by Innovate UK, the UK's innovation agency, which takes responsibility for innovation and economic development policy.

Finally, despite London's prominence as a hub for technology entrepreneurship, government and industry leaders in the UK are increasingly recognizing the importance and potential of emerging clusters outside the capital. [Tech City's 2017 Tech Nation report](#), for example, identifies 21 technology clusters across the UK and highlights that 68% of the country's technology firms reside outside of London.





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In this context, the government [recently announced the creation of the Tech North initiative](#), which serves as an extension of Tech City UK. Intended to capitalize on tech hubs in cities like Sheffield, Manchester and Leeds, the initiative leverages the Tech City model to "create a world-class tech cluster in the North" of the country.

FUNDING MODELS FOR UK BAIS

In 2017, Nesta (an innovation foundation in the UK) was commissioned by the UK Department of Business, Energy and Industrial Strategy (BEIS) to [conduct an analysis of the incubation and acceleration landscape in the UK](#). While the research focuses on the geographic and sector distribution of BAIs, Nesta also examines the sources of funding for BAIs in the UK. While Nesta's study does not track the proportion of funding received from different sources, this later aspect of the research makes Nesta's study somewhat comparable to the DEEP Centre's analysis of funding models and fiscal sustainability in Canada. We take a closer look at Nesta's findings below and draw out some implications for Canada.

Key findings for UK incubators

In its landscape analysis, Nesta identified 205 active incubators in the UK that support 3,450 new businesses a year. The UK's oldest incubator is St John's Innovation Centre in Cambridge, which launched in 1987. A handful of others launched in the 90s, and then the numbers increased rapidly after the turn of the millennium. While the growth rate has slowed in recent years, 111 of the 205 incubators in Nesta's database were founded in 2012 or later.

Nesta finds that a significant proportion of the UK's 205 incubators are essentially co-working spaces. Unlike accelerators, which are disproportionately located in London, incubators are more evenly distributed throughout the UK—often in universities or out-of-town science parks—and more focused on serving the population of local businesses. Just over half of the incubator population reported offering mentoring services or access to investors, and only 25% provided other forms of support such as seminars and workshops, laboratory space or funding advice.

With respect to funding models, the majority of UK-based incubators are at least partly self-funded through the membership fees and space rental fees they charge their residents. Of the 72% of incubators that reported charging fees, the average charge is around £250 per person per month.

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Nesta notes that these fees vary from £100 per month for a hot desk to £1860 for laboratory and office space. As in Canada, incubator fees are often subsidized by funding from government or universities. 77% of the incubators reported receiving funding from these sources. Philanthropic and corporate funding was much less common, with only 15% of incubators reporting funding from these sources. Only 8% of incubators take equity in return for investment, and those that do report taking an average 16% share.

Key findings for UK accelerators

Nesta's landscape analysis identified 163 accelerators across the UK that support an estimated 3,660 new businesses per year. Given that Seedcamp, the oldest UK accelerator, launched in 2007, the growth rate is rather dramatic. Of the 163 accelerators in its database, only a handful existed at the beginning of 2012. Unlike incubators, Nesta also finds that accelerator growth rate has not diminished, with 45 new accelerators created in 2016 alone. As noted earlier, the more recent creation of accelerators in Birmingham, Bristol, Cambridge and Manchester somewhat offsets the high concentration of accelerators in London.

While most incubators in the UK are generalists, accelerators are much more likely to specialize. In addition to digital sub-categories such as AI, big data, blockchain and IOT, prevalent sector specialties include agtech, cleantech, edtech and life sciences. Fintech is a particularly popular sector among UK accelerators with 12 specialist programs, including Barclays Fintech Accelerator, Octopus Labs, MasterCard's SmartPath program, and the Bank of England's Fintech Accelerator.

Compared to Canada, the UK more closely resembles the business acceleration model pioneered in the United States, where accelerators evolved to provide deal-flow and venture-style returns for seed funds. Some 46% of accelerators in the Nesta database take equity in the businesses they support, providing an average investment of £39,000 per startup and receiving an average equity stake of 7%. By comparison, only 20% of the BAIs in the DEEP Centre's sample take equity stakes.

Across the sample of 163 accelerators, the average cohort size is 16 companies, and the average duration of support is just over six months. In addition to seed funding, Nesta finds the most common forms of support include mentorship, seminars and workshops, and connections to customers and investors.





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While VC funds founded most of the early accelerators in the UK, Nesta's research shows that accelerators are now most commonly funded by corporates, including corporate VC units. Overall, 51% of the accelerators in Nesta's database receive some or all of their funding from corporates. Moreover, it seems that corporate support for accelerators is on the rise and can help explain the rapid growth of such programs in recent years. Some 65% of UK accelerators created since 2014 are funded in whole or in part by corporates, compared with only 29% of accelerators launched before 2014.

While corporates are the most common funding source, public funding was not far behind. 41% of accelerators in the UK reported receiving funding from government. Other sources of support include angel investors and seed funds (14% of accelerators), universities (13%) and service fees (12%) and philanthropy (8%). The Nesta data does not, unfortunately, delineate the proportion of overall funding coming from different sources.

IMPLICATIONS FOR CANADA

Nesta's study represents the most comprehensive study to date on the evolution of the UK's BAI landscape. For our purposes, it highlights several points of convergence and divergence between the UK and Canada concerning BAI funding models and fiscal sustainability. In our analysis of the implications for Canada, we highlight key findings on the degree of dependence on public funding, levels of corporate engagement, differences in BAI mandates, and how the reliance on public funding varies across sectors and geography.

- **Public funding.** The DEEP Centre's fiscal sustainability survey revealed that 96% of the BAIs in our sample receive some form of support from government. However, the share of public funding was very low for 20% of BAIs that are predominantly financed with private money. The situation is not dissimilar in the UK, where both 77% of incubators and 54% of accelerators rely heavily on funding from either government or public universities. As in Canada, UK BAIs source funding from a variety of public institutions. The primary public funding sources in the UK include local enterprise partnerships, Innovate UK, central government and Big Lottery Fund as well as the European Regional Development Fund (ERDF), which funds 60 programs and facilities in the Nesta dataset.

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- **Corporate engagement.** Like Canada, Nesta finds that accelerators are less dependent on public funding than incubators and innovation hubs due to the involvement of VCs and corporate partners. By comparison, we found that 88% of the Canadian BAIs received some funding from corporates, most commonly in the form of sponsorship dollars. However, 44% of the Canadian entities earned revenue by running corporate innovation programming, including consulting services, corporate outposts and acceleration programs. In contrast to the UK, the institutions that have been most successful in attracting significant corporate investment include a mix of specialized accelerators (e.g. Highline, L-Spark and Ryerson Futures) and larger innovation hubs (e.g., Communitech and MaRS).
- **BAI mandates.** Nesta also finds that the objectives of publicly funded incubators and accelerators often differ from those of VC-backed or corporately-funded entities. For example, public funding usually instills a local economic development mandate, while VC-backed entities focus on generating private financial returns. Corporate accelerators typically tackle specific innovation problems or seek to build an ecosystem around a core technology. Our interviews with Canadian BAIs reveal a very similar pattern with respect to the community economic development mandates of publicly-funded entities. Although VC and corporate-backed entities are fewer in number in Canada, their objectives and modus operandi parallels those in the UK.
- **Geographic differences.** As in Canada, Nesta's study finds that the reliance on public funding is more significant in some geographies and sectors than others. For example, all five incubators in the North East of England reported being entirely funded by public or university money. BAIs in Wales, Scotland, and the West Midlands are also highly reliant on public funding, with half of the accelerators and over 35% of incubators depending solely on public or university funding. The funding situation in these regions of the UK is broadly comparable not only to Atlantic Canada and the Prairies but also to towns and second-tier cities in British Columbia, Ontario and Quebec.
- **Sector differences.** On a sector basis, more than half of the incubators and accelerators that focus on space and satellite technology, as well as more than half of the incubators that focus on agtech and transport, are wholly reliant on public funding. Public funding was comparatively less common in sectors attracting high-levels of corporate and VC engagement, including most digital categories and verticals such as edtech, fintech and life sciences.



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THE UNITED KINGDOM

By comparison, we found that life sciences BAIs in Canada were almost wholly reliant on public funding. At the same time, Canadian BAIs focused on cleantech and digital technologies were more likely to have diversified revenue sources.

Finally, it is worth noting that Nesta flagged the need for further research concerning the funding of accelerators and incubators. While Nesta asked incubators and accelerators to report on funding sources, it did not identify the volume or proportion of revenue from these sources. Nesta suggests that additional work is needed to understand the role of public funding of incubators and accelerators in more depth, as well as the potential impact of the removal of European financing following Brexit.

KEY LESSON

BAIs funding models in the UK and Canada are broadly similar, but the critical mass and sophistication of London's startup ecosystem provides a definitive competitive advantage. Indeed, when compared against the whole of the startup landscape in the UK, Canadian BAIs do not seem to be far removed from their comparators in the UK. However, there are some distinguishing features. The UK, and especially London, boasts a richer funding environment and provides a greater depth and breadth of startup services across sectors and stages of firm development, with the private sector taking the lead on delivering scaling support. While not as robust as the US, the UK also features more mature corporate accelerators and innovation programming across a broad range of high-tech domains, ranging from fintech to legaltech to agtech and biotech.

The UK startup ecosystem also benefits from a national innovation strategy that seeks to address known obstacles and a national agency (Innovate UK) that provides coordinated high-level innovation leadership. Spun off from the Department of Business, Energy and Industrial Strategy in 2007, Innovate UK is an executive organization of around 500 staff, drawn mainly from business, with a mandate to drive growth by working with companies to de-risk, enable and support innovation. Innovate UK plays a leadership role in determining which science and technology developments will drive future economic growth, connecting innovators with the funding opportunities and partners, and helping innovators launch, build and grow successful businesses.

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THE UNITED STATES NATIONAL RENEWABLE ENERGY LABORATORY (NREL): POWERING CLEANTECH INNOVATION

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The National Renewable Energy Laboratory (NREL) is transforming energy through research, development, commercialization, and deployment of renewable energy and energy efficiency technologies.

The capacity of the United States to routinely churn out game-changing technology firms often makes it the envy of the world. This competitive advantage in developing large technology firms is deeply rooted. For example, the US has an abundance of world-class universities (e.g., Stanford University and the Massachusetts Institute for Technology) that excel in technology and regularly spin-off successful ventures. There are numerous clusters in urban centres such as Austin, Boston, New York, and San Francisco, which provide ready access to venture financing and high-quality business services.

There is also a robust public support system for entrepreneurship and innovation activity at the local, state and federal levels.

The US also hosts 9 of the top 10 global accelerators as measured by the total amount of funding raised by their supported ventures. Exceptional examples include Y Combinator, TechStars, Mass Challenge and 500 Startups. Y Combinator (launched in 2005) and Techstars (founded in 2006) alone have launched over 2,000 startups that have collectively raised more than \$16 billion in funding.

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In addition to top accelerators, US entrepreneurial universities— notably Stanford and MIT—play a crucial role in the country's innovation ecosystem. Over the past two decades, these institutions and others have focused heavily on generating and supporting entrepreneurship. Of the more than 1,200 incubators and co-working spaces for startups in the US, around one third are on university campuses.

The Martin Trust Center for MIT Entrepreneurship, for example, focuses on entrepreneurship education, support for student entrepreneurship and innovation, and commercialization. MIT's ongoing success in these areas is now well established. A recent study concluded that MIT alumni had established approximately 30,200 active companies, employing roughly 4.6 million people and generating roughly \$1.9 trillion in annual revenues. More broadly, studies of US entrepreneurial universities highlight their essential role in generating spin-off companies, providing highly trained graduates for both regional clusters and national labour markets, and developing, patenting, and licensing knowledge.

The US Government also has a broad range of policies aimed at supporting entrepreneurship and was the first in the world to finance the development of a national network of business incubators. Starting in the 1980s under the administration of President Ronald Reagan, incubator creation and development was actively promoted by the Small Business Administration as well as by state-level economic development agencies that perceived the need to fill a 'gap' within the broader innovation ecosystem.

The federal government remains actively involved in promoting incubator creation today, sponsoring new programs that encourage entrepreneurship and business creation in diverse sectors and communities. In 2014, the US Small Business Administration launched its Growth Accelerator Fund, which provided awards to 50 accelerators of \$50,000 to a group of competitively selected entities across 31 states. The 2019 Competition focused on accelerators that work with high tech companies led by women or by entrepreneurs from socially and economically disadvantaged communities. SBA also encouraged applications from BAIs located in states or territories that are underrepresented by SBIR/STTR awardees.

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Another well-regarded initiative includes the Small Business Administration's Small Business Innovation Research (SBIR) program, a funding initiative that encourages small businesses to conduct research and development in response to specific US government needs. The objectives of the SBIR program include stimulating technological innovation and encouraging participation in entrepreneurship. It allocates approximately \$3.5 billion per annum to high growth potential firms that could contribute to the US economy but have not yet reached a stage of development where they could attract venture capital investment. Each year, federal agencies with extramural benefits exceeding US\$100 million are required to allocate 2.8 percent of their R&D budget to this program. To date, the program has funded 112,500 projects totaling nearly US\$27 billion in research.

In addition to SBIR, the Small Business Technology Transfer (STTR) program facilitates the commercialization of theoretical research by funding collaborative industry research partnerships. Federal agencies with extramural R&D budgets over US\$1 billion are required to set aside 0.3 percent of their R&D budgets for STTR funding. The program facilitates the transfer of research between the two sectors and, in so doing, move technology development from the theoretical stage into the realm of practical application and commercialization. Five agencies are involved in this process, including the Department of Defense, the Department of Energy, and the National Science Foundation.

The impact of such funding programs is significant. For example, the Defense Advanced Research Projects Agency (DARPA), administered by the Department of Defense, receives over US\$2.8 billion in funding toward the development of new technologies, with an estimated 43 percent of the funds received being directed toward advanced technology development. DARPA research has contributed to the development of foundational technologies that have underpinned the success of US technology giants such as Microsoft, Google, and Apple. The commercialized products and services that DARPA transferred into private hands include Apple's Siri speech recognition application and the mapping applications now popularized by Google.

As our case study on the National Renewable Energy Laboratory (NREL) shows, federal innovation funding from the Department of Energy has also had a catalytic effect on the emergence of a robust clean technology ecosystem in the United States.



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U.S. NATIONAL RENEWABLE ENERGY LABORATORY

Often referred to as the crown jewel of energy R&D labs, The National Renewable Energy Laboratory (NREL) is a one-of-a-kind global energy resource in Golden, Colorado. It is the only U.S. federal laboratory dedicated to researching and developing renewable energy and commercializing related technologies. To transform energy through science and engineering, NREL links its world-renowned researchers, unique capabilities, and state-of-the-art facilities with community, academic and private sector partners throughout the United States.

The Innovation and Entrepreneurship Centre (IEC) at NREL is a vital component of the organization's engine for commercialization. NREL's IEC acts as a hub connecting both lab researchers and cleantech startups with members of the corporate and investment community. They do this through a suite of programs that support emerging cleantech businesses, including corporate accelerators, venture capital forums and industry mentorship opportunities. In doing so, NREL demonstrates how a publicly-funded research lab can leverage its influential role in the ecosystem to strengthen collaboration and connectivity between key players, boosting the performance of cleantech accelerators and providing startups and SMEs with better access to capital and corporate partners.

NREL's signature program is the annual Industry Growth Forum, the longest-running investor conference in the cleantech space and a critical source of deal flow for investors around the world. Additionally, NREL has developed partnerships with business accelerators, industry associations and corporate sponsors to create programs and opportunities for commercialization and early adoption of new technologies. These programs include Energy I-Corps, Shell GameChanger Powered by NREL (GCxN), the Wells Fargo Innovation Incubator (IN2) and the Incubatenergy Network. We take a brief look at each program below.

Industry Growth Forum

Each year, NREL hosts the Industry Growth Forum (IGF), a premier event that connects industry investors and experts with vetted cleantech startups. Both startups and investors derive much value from the face-to-face exchanges that the IGF permits, which explains why over 500 people regularly attend the annual conference.

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"Small businesses know that we understand technologies and what it takes to move the technology through a maturation process, and getting technologies to market," said [Bill Farris](#), NREL Associate Laboratory Director for Innovation, Partnering, and Outreach. "Investors know that we are constantly seeing new companies new, interesting technologies, and they're looking for investment opportunities. So, if we can pull those two communities together, great things happen."

The IGF creates space for emerging cleantech businesses to interact with leading cleantech investors, build relationships and increase the chance of identifying investment opportunities. The forum features a pitch competition where over 100 cleantech investors and industry experts take part in a rigorous vetting process that culminates in the selection of the top 40 emerging companies. "Since our 16th IGF in 2003, we've had almost 400 innovative cleantech companies take the stage, which have collectively raised \$6.4 billion in funding post-IGF. Of these almost 400 companies, 63% are still active today," said [IEC Director Richard Adams](#).

Year after year, investors return to the IGF for the chance to meet with high-quality startups, corporations and other investors. J.A. Colantonio, a project leader with the Innovation and Entrepreneurship Center, says that some investors come to scope out investment opportunities, while others judge presentations and moderate panel discussions. Most investors see the IGF as an opportunity to scratch beneath the surface of the typical pitch deck or business plan. "You come out of the event each year with four or five companies to follow up with that you might not have engaged in the same way if you were just looking at a submitted business plan," said [Tim Woodward](#), managing director of Prelude Ventures. "You get a little extra time to hear about what makes their business interesting and unique."

Over the years, the IGF has seen a growing contingent of Canadian companies, thanks in part to a partnership between NREL and the Canadian Technology Accelerators program run by the Trade Commissioner Service of Global Affairs Canada. "More and more Canadian companies are working with the consulates and participating in the US ecosystem," said Colantonio. He notes that MaRS has a strong presence at the forum and that Canadian SMEs typically represent 10% of the companies in the IGF pitch competition.





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Incubatenergy Network

Launched in 2014 under NREL's leadership, the Incubatenergy Network is a consortium of 25 cleantech incubators and accelerators located primarily in the U.S., with some international members, including MaRS in Toronto. Collectively, the network supports more than 500 startup companies focused on a wide variety of cleantech solutions.

NREL established the Incubatenergy Network to improve coordination and collaboration amongst incubators and accelerators in the cleantech sector, raise awareness of the resources that cleantech incubators provide and develop best practices to help improve incubator performance. The network curates a national resource map (including events and funding programs) for cleantech entrepreneurs and provides BAIs with a shared pool of industry experts and mentors. Finally, the network also offers a shared point of entry for large corporations that are seeking better visibility into emerging cleantech solutions across the country. Incubators in the network include Greentown Labs in Boston to Cyclotron Road in Berkeley and ProspectSV in Silicon Valley. The Incubatenergy Network continues to expand with incubators and accelerators in Europe and Asia joining the network.

According to Colantonio, NREL was instrumental in setting up Incubatenergy, but no longer has a hands-on role in the funding or administering the network. However, the network of incubators is still an essential source of deal flow for the annual Industry Growth Forum and the NREL business acceleration programs. "That's how we recruit the best and brightest companies from incubators across the country," said Colantonio.

Energy I-Corps

The US Department of Energy (DoE) invests millions of dollars a year in energy-related research with the expectation that federally funded projects will generate a significant economic return. Yet, without industry engagement and a business mindset, many projects will fail to connect with industry needs or translate into commercial ventures. Founded in 2015, Energy I-Corps fosters collaborations with industry to open up pathways for commercializing DoE research.

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Modelled after the National Science Foundation's I-Corps program, the program pairs DoE laboratory scientists and engineers with industry mentors who help researchers identify viable market opportunities for their energy technologies. Over the course of two months, DoE teams will conduct at least 75 customer discovery interviews to identify potential commercial applications and market pathways. The expectation is that DoE researchers will apply the training and market engagement experience to both commercialize existing research and to guide and inform their future research.

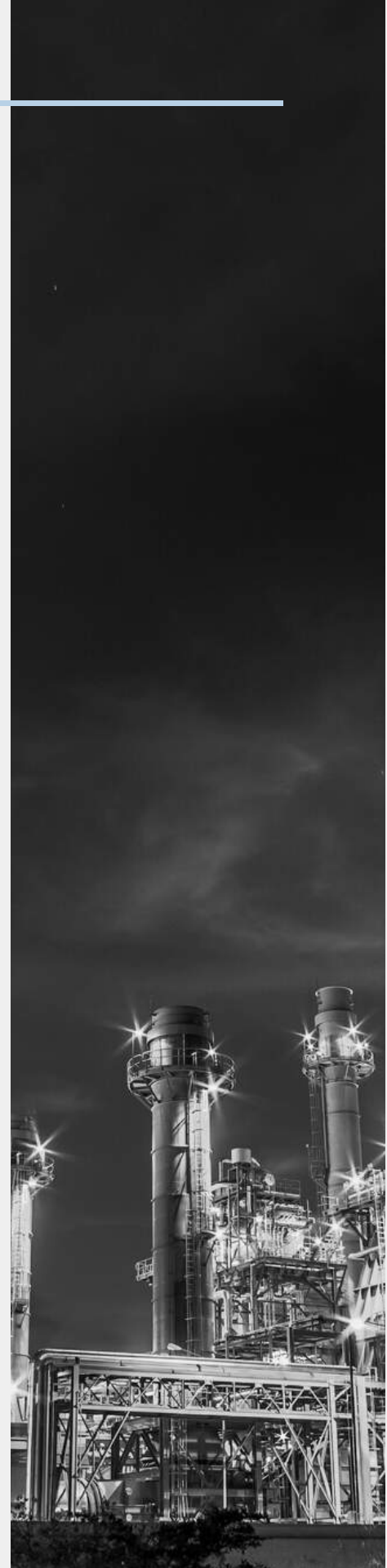
NREL manages the program in partnership with the Colorado Cleantech Industries Association (CCIA). NREL and CCIA are responsible for directing and developing the curriculum, delivering the program and recruiting instructors and industry mentors. As of January 2019, 89 teams have been through the program from 11 national labs and connected with over 90 industry mentors to identify potential commercial outlets for their technologies. Of these teams, 24 received follow-on funding to develop their solutions further, and seven have gone on to launch new businesses successfully.

Shell GameChanger Powered by NREL (GCxN)

Launched in 2018, GCxN is an accelerator program with a focus on connecting cleantech startups with financial resources, world-class facilities and industry experts to help bring emerging clean technologies to market. The invitation-only program identifies high potential startups with the potential to disrupt and influence the future of the energy system on a global scale.

Companies are referred to the program through NREL's channel partners, which include a network of cleantech incubators, accelerators and universities. Each year, three to five companies are selected by the GCxN advisory board and invited to be part of the annual cohort. The 2019 group focused on energy storage technologies and grid integration. The 2020 cohort will focus on battery charging technologies. The timeline for a cohort is approximately 24 months from invitation to the completion of a full proof of concept.

As part of the program, each company receives \$250,000 in non-dilutive funding and technical assistance from laboratory researchers. Colantonio says the leverage rate on the investment in technical support is 25x, with companies able to raise an additional \$25 in private capital for every dollar invested at the outset.



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Wells Fargo Innovation Incubator (IN2)

Launched in 2014 as a partnership between Wells Fargo and NREL, IN2 is a business acceleration program that support cleantech companies in two streams: food and agriculture and energy and the built environment. The initiative follows the same essential template as the GCxN program. NREL's channel partners refer cleantech startups to program, and each year 4-5 companies are invited to participate in the program. Each participant gets access to \$250,000 in non-dilutive grants to validate their technologies at NREL's laboratory. Companies that meet validation milestones in the lab may also benefit from opportunities to run a pilot or proof of concept with IN2's network of corporate partners. Among others, these include Lockheed Martin, Ingersoll Rand, Danfoss, Emerson Electric, Target, and Costco. To date, IN2 has supported 40 cleantech companies, which have gone on to raise over \$262 million in follow-on funding from external sources. IN2 claims that 20% of its portfolio companies have seen successful exits.

KEY SUCCESS FACTORS

Over its 40-year history, NREL has established itself as a lynchpin in the US clean energy ecosystem. It is a hub for advanced research and technical expertise in clean technologies, having led breakthrough research on energy efficiency, sustainable transportation, and renewable power technologies. In recent years, it has also demonstrated leadership in technology commercialization and become a go-to source for investors and corporations seeking to validate the technical performance of cleantech solutions. We attribute its overall track record to several success factors.

Connectivity to industry and investors

Connectivity to industry and investors is an integral aspect of how NREL ensures that its research remains relevant to industry needs and that it identifies viable pathways for commercialization. At the heart of this effort is NREL's Investor Advisory Board (IAB), which consists of more than 40 members from various financial backgrounds, including VCs, corporate investors, family offices and independent angel investors. The board meets four times per year, providing the laboratory with industry insights, while investors get an inside look at new developments in research and development. According to Colantonio, the IAB plays a vital role in the IGF by helping to select startup companies for the annual pitch competition.

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On the corporate side, NREL leverages its relationships with industry mentors and advisers to make sure its research is addressing needs in the industry. The Energy I-corps program has put a formal structure in place to facilitate interactions with industry mentors and equip researchers with the tools and connections required to identify commercial opportunities. NREL has also built early adoption opportunities into the incubation programs it runs in partnership with Shell and Wells Fargo. “We try to bridge the prototype valley of death,” said Colantonio. “There is still a big funding gap to demonstrate clean technologies at an industrial scale. Our corporate partnerships can help close the gap.”

Convening power

The Incubatenergy Network and the long-running success of NREL's Industry Growth Forum are testaments to NREL's convening power. Every year, more than 500 cleantech investors, entrepreneurs, and industry representatives set aside two days to attend the IGF. BAIs in the Incubatenergy Network all benefit from the ability to put their most promising companies forward as candidates for the pitch competition. As Colantonio explains, “Our success rests on a foundation of collaboration with incubators, investors and corporates, and the IGF is the bedrock of those relationships. All of our key programs have grown out of the relationships we established through the IGF.”

Colantonio argues that NREL's central convening presence gives the organization credibility, traction and an opportunity to provide ecosystem leadership. “We are trying to connect all of the dots and bring together the key players. We can help lessen duplication and forge powerful connections as well.”

Research and technology pedigree

NREL is home to roughly one thousand scientists and engineers doing cutting edge work in disciplines such as advanced manufacturing, bioenergy, energy storage, grid modernization and much more. This talent bench gives the national lab enormous technical depth and expertise, which, along with its advanced research facilities, makes it an indispensable resource for the cleantech ecosystem. “As a national lab, our currency is our credibility,” Colantonio explains. “One of the things that sets us apart is our ability to have a deep technical perspective on the quality of the companies and their solutions.”





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Venture capital investors and corporates value the relationship with NREL because they can rely on the lab's researchers to help de-risk their investments in clean technology. "One way to remove risk is to validate the performance of the technology," said Colantonio. "We have the people and the facilities to perform a detailed analysis and look at ways to optimize the technology's performance." The relationship can be valuable for cleantech startups and SMEs as well. Having their technology validated by NREL is rock solid seal of approval and often a significant step towards investment and commercialization.

Interdisciplinary talent

While engineers and scientists provide technical depth and research leadership, NREL's Innovation and Entrepreneurship Center brings the business and management skills required to fulfill NREL's mandate to ensure its federally funded research generates a significant economic return. Said Colantonio:

"We would not exist without the researchers at the lab. But our team also has people with business degrees and MBAs. We have marketing experts. We also recruit people that have been entrepreneurs and have intimate knowledge of how to set up and scale a business."

The business skills and mindset are vital to NREL's work on commercialization. Going forward, the IEC is looking to set up an Executives in Residence program that would bring more business people into the lab environment. Colantonio explains that one limitation on their success in launching more companies out of the Energy I-corps program is that many of the researchers don't want to leave their job at the lab. "It's a good position," he says, "and entrepreneurship is risky." With the EiR program, NREL hopes it can recruit entrepreneurs that are willing to take high-potential technologies to market.

IMPLICATIONS FOR CANADA

As in Canada, US-based cleantech startups face challenges in securing investment and early adoption partners. A study by the Brookings Institution, for example, found a series of worrying signs in what in the authors called a "serious crisis in cleantech innovation."

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As Devashree Saha and Mark Muro explain:

Not only has cleantech patenting slowed down, but there are indications that the early-stage financing system critical to helping innovative new energy companies grow is not working well either. A close look at one crucial source of growth finance for cleantech companies—venture capital (VC) investment—suggests that early-stage cleantech companies and entrepreneurs are facing increasing challenges in accessing investment and VC dollars.

The Brookings Institute analysis looks at VC investment data across 15 cleantech categories during the 2000s, with a focus on the years since 2011. The report documents a 30% decline in VC investment in cleantech since 2011, including fewer deals, smaller rounds and a declining percentage of overall VC investment. Brookings also finds that investments are concentrated in a few technology areas, in more mature firms, and just a few metropolitan areas, raising concerns about the narrow and spotty focus of cleantech VC.

In this challenging environment for cleantech commercialization, NREL's Industry Growth Forum and a suite of "technology-to-market" programs play a vital role in helping startups validate and optimize their technologies and connect to investment and adoption partners. The Incubatenergy Network complements these programs by providing a national funnel for identifying the sector's most promising startups.

Another noteworthy implication for Canada is the recognition that progress in bringing capital-intensive technologies to market requires new incubation and commercialization models that draw on the strengths and capabilities of diverse partners. As NREL's Richard Adams observes, "Long-standing methods for advancing clean energy technologies are best known for their relatively slow, linear progression [and for] well-known valleys of death in financing. The emergence of new strategic investors and partners in recent years has opened up innovative opportunities for cleantech entrepreneurs. Novel commercialization models are also emerging that involve new alliances among clean energy companies, national laboratories, business accelerators, investors and strategic customers."



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In other words, strengthening collaboration in Canada's startup ecosystem is the most viable path to fuelling the growth and competitiveness of Canada's next generation of cleantech companies.

KEY LESSON

NREL's technology leadership and expertise enhances its convening power and its connectivity to industry and venture capital. Few other organizations, if any, can lay claim to the deep science and engineering capabilities in renewable energy that exist within the national laboratory. These capabilities, in turn, equip NREL with a differentiated value proposition in promoting collaboration and commercialization in the cleantech ecosystem. More specifically, its programs provide the private sector with access to the technical resources and expertise residing in the national lab, along with the opportunity to validate the technical and commercial potential of the solutions that cleantech entrepreneurs are advancing.

These capabilities make NREL's services uniquely relevant and valuable to cleantech startups, investors, corporates and BAIs. NREL's role in ecosystem coordination raises a critical question for Canada. Are there sector leaders that could play a convening and coordination role in domains such as biotech, clean technology, industrial automation, smart mobility and other areas that complement the industrial mix here in Canada? Could these entities offer differentiated value propositions to sustain the engagement of the private sector? The answer to these questions could go a long way in framing a solution for keeping the venture capital and corporate community engaged with Canada's startup ecosystem.



ABOUT THE AUTHOR

Anthony Williams is founder and president of the DEEP Centre and an internationally recognized authority on the digital revolution, innovation and creativity in business and society. He is co-author (with Don Tapscott) of the groundbreaking bestseller *Wikinomics* and its follow-up *Macrowikinomics: New Solutions for a Connected Planet*. In addition to his work with the DEEP Centre, Anthony is a research director with the Blockchain Research Institute, an expert advisor to the Markle Foundation's Initiative for America's Economic Future, a senior fellow with the Lisbon Council in Brussels, and chief advisor to Brazil's Free Education Project, a national strategy to equip 2 million young Brazilians with the skills required for a 21st Century workforce.



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PARTNERS FOR INNOVATION AND PROSPERITY: TOWARDS FISCAL SUSTAINABILITY IN CANADA'S STARTUP ECOSYSTEM



With the *Partners for Prosperity and Innovation* project, the DEEP Centre led the first nation-wide effort to assess the viability of self-sustaining business models for business accelerators and incubators (BAIs) in Canada. Drawing on a national survey and a wide-ranging series of executive interviews, the study highlights critical strategies for growing private sector revenue streams and establishes a better understanding of the challenges startup support organizations are encountering in their pursuit of fiscal sustainability.

PART 1 provides a taxonomy of BAI revenue models and the findings from a national survey of business accelerators and incubators across Canada.

PART 2 highlights key insights and findings on fiscal sustainability from a series of executive interviews.

PART 3 includes an analysis of domestic and international best practices in business acceleration.

PART 4 provides a summary of the key conclusions and recommendations for executives and policymakers.

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Contact Us:

Anthony Williams
President and Founder
DEEP Centre Inc.

www.deepcentre.com

www.linkedin.com/in/anthonydwilliams/



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