



deepcentre

Centre for Digital Entrepreneurship  
+ Economic Performance

# **EVALUATING BUSINESS ACCELERATION AND INCUBATION IN CANADA:**

**Policy, Practice, and Impact**

O C T O B E R 2 0 1 5



## About the Project

The DEEP Centre's investigation of business accelerators and business incubators seeks to answer a series of questions related to the role, effectiveness, and outcomes associated with these publicly and privately funded intermediaries. The project will build a body of evidence around the economic impact of business accelerators and incubators, with an eye towards creating best practice guidelines and actionable recommendations for stakeholders. The key research questions for the project include, but are not limited to, the following:

- Do incubators and accelerators produce viable companies? Increase innovation? Create jobs? Produce windfalls for their founders and investors? Elicit greater private investment in start-ups?
- What objectives are appropriate for the Government of Canada's business incubation and acceleration activities in relation to enterprise growth, technology commercialization, internationalization, and global competitiveness?
- To what extent are business incubators and accelerators advancing these objectives, and what framework should be used to evaluate their activities?
- To what extent do incubators and accelerators effectively leverage other elements of the innovation and entrepreneur support ecosystem—both within Canada and abroad—and how could collaboration within the ecosystem be improved?
- To what degree should the incubation and acceleration system in Canada evolve to better facilitate the growth of high-potential small and medium-sized enterprises (SMEs), and how should incubators and accelerators structure such alumni support systems?

The following report represents the first in a series of five project deliverables. This first report presents an initial taxonomy of business accelerator and incubator programs in Canada, as well as a measurement framework for evaluating the quantitative and qualitative impact of their activities.

The project is supported by Industry Canada, the Business Development Bank of Canada, the Department of Foreign Affairs, Trade and Development, and the Government of Ontario's Ministry of Economic Development, Employment and Infrastructure. Additional project partners include the Canadian Association of Business Incubators and the National Research Council.

deepcentre

Centre for Digital Entrepreneurship  
+ Economic Performance



## The DEEP Centre

**The Centre for Digital Entrepreneurship and Economic Performance (DEEP Centre)** is a **Canadian economic** policy think-tank based in Waterloo, Ontario. Founded 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. The DEEP Centre provides objective research and advice on the changing drivers of success in the global economy and the critical interconnections between technology, entrepreneurship, and long-run economic performance. Our goal is to help policy-makers identify and implement powerful new policies, programs, and services to foster innovation, growth, and employment in their jurisdictions.



## Table of Contents

### Evaluating Business Acceleration and Incubation in Canada

<b>1. The Measurement Imperative: Assessing the Economic Impact of Start-Up Assistance Organizations</b> .....	<b>4</b>
<b>2. A Taxonomy of Start-Up Assistance Organizations in Canada</b> .....	<b>6</b>
Accelerators .....	6
Incubators.....	6
Hubs .....	6
Commercialization Organizations .....	6
General Characteristics of Start-Up Assistance Organizations .....	11
<b>3. Framework for Performance Measurement</b> .....	<b>13</b>
Identifying Key Outcomes and Measures of Success.....	14
Operationalizing the Measurement Framework Using a Staged Approach.....	15
Challenges and Limitations of Quantitative Measurement .....	17
Sample Bias.....	17
Double or Triple Counting Success .....	18
Successful Failure.....	19
Contributions to Skills Development and a Culture of Entrepreneurship .....	19
<b>4. Qualitative Research: Assessing the Intangibles</b> .....	<b>20</b>
Intangible Benefits.....	20
Ecosystem Challenges .....	21
Success Factors .....	21
<b>5. Conclusions and Recommendations</b> .....	<b>23</b>
<b>Appendix: Candidates for Evaluation</b> .....	<b>25</b>
<b>Works Cited</b> .....	<b>27</b>



## 1. The Measurement Imperative:

### Assessing the Economic Impact of Start-Up Assistance Organizations

Public and private sector interest and investment in business accelerators and business incubators (BABIs)—both in Canada and internationally—stem from their potential to play an important catalytic and supportive role within the broader innovation ecosystem and to ameliorate specific types of “market failures” that can impede firm survival and growth (CSES and EC Enterprise Directorate General 2002). At the broadest level, incubators and accelerators are organizations that provide a series of support services and facilities to entrepreneurs, early stage ventures, and small and medium-sized enterprises (SMEs). In particular, these institutions may serve as “classrooms for entrepreneurs” by providing resources that can increase the growth and competitiveness of new ventures (Government of Canada, n.d.).

Although significant variation exists within BABI models, these institutions are organized to address a series of common goals and have similar positive spillover effects within the broader economy. These include, but are not necessarily limited to: 1) facilitating firm growth and competitiveness, both nationally and internationally; 2) promoting entrepreneurship and supporting innovation; 3) generating employment; and 4) reducing search costs for angel funders and venture capitalists (VCs), while creating a pipeline of vetted technologies (Government of Canada 2015; Schwartz and Göthner 2009).

Despite these commonalities, significant differences exist both within and between the incubator and accelerator models. This report draws some useful distinctions and includes a taxonomy that identifies salient differences in program design features and organizational structures, including business models, mission orientation, and stakeholder participation. It also notes, however, that most incubators and accelerators exist in a state of flux. Although incubator and accelerator-like organizations have existed for decades, most BABIs in Canada are relatively recent creations. New BABIs are forming all the time, and, as their founders experiment with new formulas, we are seeing among other things considerable fluidity in organizational structures, governance arrangements, partnership models, and program design. This process of reinvention and fine-tuning will continue as BABIs adjust their approach in response to market conditions, including the needs of their clients, funders, and partners. Stakeholders in the broader entrepreneurial support ecosystem will need to regularly revisit their assumptions about the various functions and services these organizations provide.

In addition, more attention needs to be focused on assessing incubator and accelerator performance, both within and across subtypes. Do incubators and accelerators produce viable companies? Increase innovation? Create jobs? Produce windfalls for their founders and investors? Elicit greater private investment in start-ups?



Advances in digital technology have led to significant decreases in the costs of launching a business, and the corresponding increase in start-ups has led to rapid growth in the number of start-up assistance organizations (SAOs) that have emerged to support them. The explosion of BABIs has occurred despite a general paucity of data about their effectiveness in improving start-up performance. In fact, the limited empirical work performed outside of Canada to date has produced a mixed view of their impact on firm survival rates and growth.

Research by Alejandro S. Amezcua in 2010 compared 944 incubated firms to non-incubated ones with similar characteristics in the United States for the period between 1990 and 2008 (Amezcua 2010). Some of the findings were surprising. For example, he found that incubators actually decrease likelihood of survival by 10 percent and, while incubated firms grew faster and employed more people, they did not contribute to economic growth as a result of their higher failure rate. Michael Schwartz (2013, 302) similarly examined the impact in business incubators in Germany, using a dataset of 742 incubated and non-incubated firms to determine survival rates by location. In most cases, incubated firms did not have higher survival rates. Zouhaïer M'Chirgui (2012, 62) explored the impact of incubators in France between 2000 and 2009, concluding that the average number of jobs created by incubators is relatively low, with more than a third of the incubators having failed to create firms with over 20 employees. In the UK, studies by NESTA suggest that the majority of accelerated start-ups struggle to find follow-on funding (Miller and Bound 2011). And it is not just the accelerated companies that struggle—accelerator programs themselves are finding that inherent risks and uncertainty of supporting early stage companies make financial sustainability difficult for even the best-run organizations to achieve. Even Y Combinator, the most lucrative of commercial accelerators in the United States, only started to be profitable after five years of operation. 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 new organizations to sustain themselves.

As limited as it might be, international empirical work to date suggests that the economic impact of most incubators is modest at best. It is still early, however, and the lack of longitudinal data on incubated firms makes it hard to draw definitive conclusions. Studying the evolution and economic impact of the BABI ecosystem in Canada is therefore essential to evaluating whether BABIs merit the substantial investments that have been made in these organizations by various levels of government and other stakeholders. To that end, this report outlines a measurement framework for assessing the performance of BABIs, noting that measurement approach and particular metrics need to be calibrated to subtypes identified in the taxonomy.



## 2. A Taxonomy of Start-Up Assistance Organizations in Canada

The concept of providing business assistance services to early stage companies in shared facilities first emerged in the United States in the 1980s as a response to perceived limitations in the prevailing economic development strategies, which focused largely on industry attraction and large corporate expansions. As others recognized the potential economic value of investing in and supporting new businesses, communities around the world developed business incubation programs to support the growth of new ventures.

Accelerators are more recent incarnations, the origins of which can be traced to the creation of renowned entities such as Y Combinator and TechStars. While incubators were largely tied to universities and local economic development agencies, the early accelerators were founded by venture capitalists who took small equity stakes in high-potential firms and ran them through a structured, time-limited process that would quickly differentiate winning ideas and teams from the rest. Like incubators, accelerator models pioneered in Boulder, Colorado and Silicon Valley have been replicated just about everywhere.

Today, the ranks of BABIs have swelled around the world in accordance with the growing role of entrepreneurship in generating jobs and economic prosperity. Canada is no exception. Over the course of the past two decades, over 140 start-up assistance organizations have emerged to facilitate the development of high-growth companies in Canada.

Although accelerators and incubators are the most recognizable start-up assistance organizations, they do not adequately reflect the true diversity of support models that exists within Canada. In addition to these two broad categories, hubs and commercialization organizations round out a more comprehensive taxonomy of business support organizations in Canada. These four distinct types are defined as follows:

- **Accelerators** provide seed funding and time-limited support to start-up teams using structured programming and mentorship services designed to accelerate high-potential firms to success or failure.
- **Incubators** cater to early stage entrepreneurs, providing longer tenure for participating firms and a broader suite of services in terms of access to physical space and mentorship.
- **Hubs** offer a diverse array of entrepreneurial support activities, usually aggregating incubation, acceleration, investment, and co-working services into a regional hub.
- **Commercialization Organizations** provide a variety of advisory and matchmaking services designed to translate advanced research in strategic sectors into marketable technologies, products, and services.



These four organizations have much in common. They all provide a range of assistance and support services to early stage companies and start-ups. They generally prefer to work with firms that have high-growth, disruptive potential. They are all focused on coaching and developing these start-ups so they can secure follow-on funding opportunities and market their products and services successfully. Despite their seemingly similar activities, however, accelerators, incubators, hubs, and commercialization organizations also have some key differences, which are explored in detail below.

**Table 1: TAXONOMY OF START-UP ASSISTANCE ORGANIZATIONS IN CANADA**

Organization Types	Objective/Focus	Examples
<b>Incubators</b>	<ul style="list-style-type: none"> <li>• Longer-term incubation of early stage companies</li> <li>• Commercialization of university research and student entrepreneurship</li> </ul>	<ul style="list-style-type: none"> <li>• Ryerson Digital Media Zone</li> <li>• Velocity (University of Waterloo)</li> <li>• OneEleven</li> </ul>
<b>Accelerators</b>	<ul style="list-style-type: none"> <li>• Short-term acceleration/growth of early and mature stage companies</li> <li>• Profit from equity investments (in for-profit models only)</li> </ul>	<ul style="list-style-type: none"> <li>• Accel-RX</li> <li>• Communitech Rev</li> <li>• Execution Labs</li> <li>• FounderFuel</li> <li>• HIGHLINE</li> </ul>
<b>Hubs</b>	<ul style="list-style-type: none"> <li>• Diversified support services for entrepreneurs and start-ups</li> <li>• Local/regional economic development</li> </ul>	<ul style="list-style-type: none"> <li>• Communitech</li> <li>• Invest Ottawa</li> <li>• Innovate Calgary</li> <li>• MaRS Discovery District</li> <li>• Wavefront</li> </ul>
<b>Commercialization Organizations</b>	<ul style="list-style-type: none"> <li>• Commercialization of advanced research</li> <li>• Advisory services for start-ups and SMEs</li> <li>• Sector-based economic development</li> </ul>	<ul style="list-style-type: none"> <li>• Centre of Excellence in Energy Efficiency</li> <li>• Centre for Drug Research and Development</li> <li>• Centre d'Entreprises d'Innovation de Montréal</li> </ul>





## Accelerators

Accelerators are typically for-profit organizations that run structured programs designed to accelerate high-potential firms to success or failure. In the United States, most accelerators are owned and operated by venture capital investors who intend to generate returns from equity-based investments in their client firms. In Canada, the picture is mixed, with some VC-backed accelerators and a large number of non-profit accelerators attached to business incubators and broader regional innovation hubs.

Accelerators provide a range of services to early stage firms, including financial support, business advice, office and development space, and complementary services offered by partner organizations. Accelerators are often the precursors to venture capital funds, which are the logical funding entities for accelerator graduates.

Most accelerators follow a similar operating model:

- They target local, national, and even international start-ups.
- Small, initial equity funding: generally \$20,000–\$50,000.
- Short, formalized programs in a shared workspace: generally 3–6 months.
- Cohort basis: generally two per year, 5–10 companies each, with a competitive application/selection process.
- Highly competitive application process.
- A focus on recruiting start-up teams rather than individual founders.
- Usually conclude with a capstone event or “demo day.”
- Post-program mentorship/support (usually on an “alumni” basis).

The limited duration of accelerator programs and their investment-driven focus are arguably their most important defining features. The short time frame is partly linked to the decreasing length of time it takes to launch a web start-up, but it’s also about creating a short period of intense interaction that will drive rapid progress and help distinguish the teams that prove most resilient in a high-pressure environment. In addition to the “tough love” benefits that a short, intense, focused time frame offers start-ups, the limited duration is essential to controlling costs and increasing the number of start-ups in the accelerator’s alumni portfolio. This, in turn, increases the expected profit of the accelerator by increasing the probability of one or more high-value exits into the marketplace.



## Incubators

Incubators are typically not-for-profit organizations that offer similar services as accelerators, but that tend to provide longer tenure for participating firms and a broader suite of services in terms of physical space and mentorship. Incubators are often sponsored by and situated within universities, colleges, or economic development corporations, and most also follow a similar operating model:

- They target early stage start-ups and university-based ventures.
- They do not invest in participating firms.
- Less structured programs and longer tenure, averaging 1–3 years.
- Programs are generally not structured around cohorts.
- Firm population size varies according to capacity.
- They provide office space at reasonable rates for the start-ups they support.

A non-profit mandate and co-location within universities make incubators an invaluable component of Canada’s entrepreneurial ecosystem. The best incubators are dynamic environments where young founders and early stage companies can germinate and refine their ideas in the company of a supportive network of peers and with guidance from experienced mentors and faculty members. When incubators are disciplined about ensuring their start-ups meet critical milestones—and pushing teams out when its time to leave—they contribute to building the pipeline of high-potential companies in a way that none of the other types of SAOs can.

## Hubs

Hubs offer a diverse array of entrepreneurial support activities, usually aggregating incubation, acceleration, investment, and co-working services into a regional hub that caters to companies at all stages of growth and across a variety of sectors. Although hubs across Canada vary somewhat in their focus and orientation, these “one-stop shops” for entrepreneurs share a number of core characteristics:

- They target firms across a wide spectrum of maturity, ranging from early stage start-ups to mature SMEs.
- They offer support to firms in a variety of sectors such as ICT, health care, and clean technology (cleantech).
- Their diverse programming streams cater to the diversity of firms they support, often with the intention of generating a natural flow-through of firms from early to later stage support programs.



- Firm population sizes are generally large, often in the hundreds of firms.
- They provide office and co-working space to a subset of the start-ups and SMEs they support.
- They often house or attract participation from other key stakeholders, including anchor firms and venture capital investors.

While there is a growing trend towards life-stage and sector specialization among many SAOs, there are a number of advantages to providing “end-to-end” support services through a comprehensive hub, particularly in certain regional contexts. One advantage of co-locating parallel incubation and accelerator programs in a hub is financial. Organizations that do so can justify placing an intense focus on the incubation of early stage companies if they know there is a chance of capturing a return on their investment when the most promising of those companies enters the acceleration phase where significant growth in revenue, investment, and jobs is more likely.

Another benefit to co-location is the opportunity for greater co-mingling and mentorship opportunities across a large pool of companies at different stages of growth. Early stage companies, in particular, benefit from closer proximity to more mature firms and founding teams and the ability to “soak-up” insights that such proximity allows. More mature firms, on the other hand, stand to benefit from the ability to identify and absorb high-quality talent from early stage ventures that fail in the incubation stages.

Finally, large, vibrant hubs create a necessary critical mass and a visible statement of intent to key stakeholders in Canada and abroad. In particular, they offer a convenient point of access for domestic and international investors and anchor firms that are seeking exposure to Canada’s best entrepreneurial talent.

## Commercialization Organizations

Commercialization organizations are mandated to advance the commercialization of new technologies and advanced research with the goal of ensuring that publicly funded research activities within Canada contribute to economic prosperity and job creation. The services provided by commercialization organization are focused on matching clusters of research expertise with entrepreneurs and investors in a variety of strategic sectors, including agriculture and oceanography, medicine and pharmaceuticals, and energy and renewables. In the course of doing so, these publicly funded organizations often provide advisory services to start-ups and SMEs. These services range from guidance around intellectual property rights, to advice on product development and marketing, to support in raising capital.



In facilitating the growth of early stage firms and SMEs, commercialization organizations share a common purpose with accelerators, incubators, and hubs. However, in most other respects they are the least like the other three types of SAOs. For example:

- They do not offer structured programs or work with firms in batches or cohorts.
- Their support services are typically customized to individual client firms.
- The length of engagement with firms varies widely from a few weeks to a few years.
- They generally do not provide seed funding or take equity in the firms they support, although they do provide assistance in accessing private sources of funding.
- They often charge fees for the services they provide to private sector clients, although the fees are usually subsidized by public funding.
- They generally do not provide office or co-working space to the firms they support.

Despite these differences, commercialization organizations occupy a valuable niche in the ecosystem of SAOs in Canada, particularly given their role in not only identifying commercial applications for advanced research, but also providing a diverse set of support services to help entrepreneurs bring these applications to market successfully.

## **General Characteristics of Start-Up Assistance Organizations**

As noted earlier, the various models for start-up assistance in Canada are in flux, as both new and mature entities experiment with new approaches and services. Hybrid organizations and hubs that blend business incubation and acceleration are becoming more common, for example. Many incubators, which have typically operated as non-profits, are exploring fee-for-service models and the potential to run for-profit arms to boost their financial viability. Across incubators and accelerators we are seeing the rise of highly focused, sector-specific entities focused on emerging opportunities such as 3D printing, artificial intelligence, and big data.



The table below highlights the extent to which there is considerable variation in the structure and services of entrepreneurial support programs and organizations across Canada.

**Table 2: GENERAL CHARACTERISTICS OF START-UP ASSISTANCE ORGANIZATIONS IN CANADA**

Organization Types	Seed Funding	Equity Stake	Cohort Based	Structured Program	Cowork Space	Mentors/ Advisers	Support Services	Average Tenure	Alumni Support
<b>Incubators</b>	No	No	No	No	Yes	Yes	Yes	1–3 years	Varies
<b>Accelerators</b>	Varies	Varies	Yes	Yes	Varies	Yes	Yes	3–12 months	Varies
<b>Hubs</b>	Varies	Varies	Varies	Varies	Yes	Yes	Yes	Varies	Varies
<b>Commercialization Organizations</b>	No	No	No	No	No	Yes	Yes	1–3 years	Varies



### 3. Framework for Performance Measurement

What qualifies as success for SAOs? And how should one measure this success? Most participants in the entrepreneurial support ecosystem would likely agree that the essential measures of success for start-up assistance programs are linked to the growth and competitiveness of incubated/accelerated firms. If incubators and accelerators are successful in selecting and nurturing promising business ideas, incubated firms, on average, should enjoy higher survival rates, grow faster, employ more people, and attract more capital than a comparable cohort of non-incubated firms.

However, as explored further at the end of this section on the limitations of quantitative measurement, incubators and accelerators produce a variety of less tangible and easily measurable outcomes that are not captured in conventional firm performance metrics, including potentially valuable spillover effects and instances of what we call “successful failure.” For example, the mere existence of a high-tech incubator in an economically challenged region of Canada may raise eyebrows at first glance. Assume, however, that it helps convene key stakeholders around new economic opportunities, attracts new talent and investment to the region, and creates an environment in which young people can explore entrepreneurship as a viable career option. Perhaps the incubator generates less-than-stellar firm growth rates and very few high-value exits, as compared with a VC-backed accelerator in a large, prosperous urban centre. But a few modest successes help catalyze renewed economic energy and confidence about the future where very little optimism previously existed. Can qualitative research adequately capture outcomes such as these? And are these intangibles sufficiently valuable to merit the investment of taxpayer dollars? Recommendations for capturing these and other less tangible outcomes are summarized in Section 4 on qualitative approaches to performance measurement.

In designing the measurement framework, it is also worth noting that the various stakeholders that participate in and contribute to the entrepreneurial support ecosystem have differing objectives and will therefore prioritize different outcomes and measures of these outcomes. Investors, for example, are principally interested in deal flow and high-value exits. Successful accelerators are accordingly those where a significant proportion of firms obtain follow-on investments and/or become attractive acquisition targets upon graduation. Government funding bodies are largely concerned with broader economic impacts, such as investment attraction and job creation. Successful accelerators, by these measures, are those whose graduates not only attract private sector investment, but also reinvest in R&D and generate sustainable, high-quality jobs in their jurisdictions. BABIs themselves are naturally invested in the success of their clients, but also value operational goals such as the competitiveness of their selection process, the quality of their programming, and their long-term financial viability. Successful BABIs must therefore attract a large number of high-potential applicants, offer high-quality programming to their participants, build a roster of top mentors, and generate sufficient revenues to cover their costs.



## Identifying Key Outcomes and Measures of Success

Taken together, these diverse outcomes provide a comprehensive definition of success. Most of these measures are in alignment, although not always. There is a potential tension, for example, between the desire of investors for a quick exit, which usually means an acquisition, and the desire of elected officials and policy-makers to retain high-growth companies within their jurisdictions and drive long-term job creation. There is no methodological reason, however, why these diverse outcomes cannot be incorporated into a coherent measurement framework.

The proposed measurement process focuses on three broad categories of performance:

- **Program Quality, Efficiency, and Sustainability.** The first category for performance measurement relates to the efficacy, efficiency, and financial viability of the programming that incubators and accelerators provide to start-ups. Key questions include: Is the incubator and accelerator attracting a pipeline of high-quality candidates? What percentage of applicants is selected for inclusion? How do participants perform in regards to key milestones, such as the creation of a minimum viable product, validation of market demand, and the identification of qualified customers or investors? Has the incubator or accelerator been able to maintain a stable roster of high-quality mentors? How much do the programming and services cost to deliver? Is the incubator or accelerator dependent on public or institutional funding, or can it generate revenues sufficient to cover its costs (e.g., fees for service or exits into the market)?
- **Economic Impact.** The second category for performance measurement tracks the impact of the incubation or acceleration experience and programming on firm performance upon graduation and beyond. The key factors for measurements relate to the growth of incubated/accelerated firms over x years after graduation, including growth in revenues, jobs, exports, and profitability. Key questions for consideration include: To what degree is the growth in customers, revenues, jobs, exports, and profitability attributable to the activities of the incubator or accelerator? And to what extent does the performance of accelerated firms on these dimensions outstrip the performance of firms in the general population?
- **Investment Impact.** The third category for performance measurement assesses the impact of incubators and accelerators on investment outcomes over x years after graduation. While return on investment is less of an issue for incubators, which typically don't take equity stakes, the investment outcomes are essential to the business models of accelerators and their investment partners. Successful accelerators in the US have become profitable by feeding many of their best graduates into an active acquisitions market. Is this level of acquisitions activity replicable in Canada? Do accelerator graduates attract follow-on investments? How much investment do they attract and from whom? What percentage of graduates generates a successful exit for accelerators and early stage investors? Are these exits driven by acquisitions, follow-on investment, or management equity buybacks? From all of the above, what can we infer about the economic viability of accelerators in Canada?



The focus of evaluation in each category should be on collecting reliable firm-level data over a period of five to seven years following graduation from an incubation or acceleration program. Where data are not readily attainable, surveys and interviews with ecosystem participants can be used to supplement the quantitative assessment of the value that accelerator and incubator organizations are creating.

## Operationalizing the Measurement Framework Using a Staged Approach

A useful way to evaluate performance against these performance categories is to arrange them into a measurement framework that applies different metrics to the various stages of a typical incubation or acceleration program:

- **Intake:** The focus of measurement at the intake stage is the demand for the incubators' or accelerators' services. How large is the pipeline? How competitive is the selection process? How large are the cohorts and how many cohorts go through each year? Evaluators should also endeavour to collect information about the firm demographics, including the age and growth stage of participating firms and, where possible, demographic information about the firm founders, including their age, gender, nationality, and ethnicity.
- **Programming:** At the programming stage, evaluators should gather data about programming offered at incubators and accelerators selected for assessment, including the level of seed funding offered, equity stakes taken, the specific types of programming, mentorship, and services provided to participants, and the average duration of incubation or acceleration. Evaluators should also assess the degree to which participating firms are meeting agreed-upon milestones with regard to production/service creation, business development, and investment attraction. A focus on measuring the attainment of milestones is particularly relevant in assessing the performance of programming geared to early stage firms that are in the process of bringing a product to market, but have yet to generate revenues.
- **Graduation:** At graduation, evaluators should gather data about the immediate impacts of the acceleration or incubation period on firm performance. Graduation is assumed to include the incubation or acceleration period plus 12 months. The measurement focus should be on tracking the operational status of the graduating firms, their success in attracting follow-on investment, any increase in customers and revenues, and the creation of new jobs.
- **Post-Graduation Alumni Performance:** In the post-grad alumni stage, evaluators should collect longitudinal data on the performance of graduates over time, ideally on an annual basis for five to seven years after graduation. The data collection should focus on firm survival rates and the relevant measures of growth for annual revenues, employment, investment, exports, and profitability.





Naturally, not all SAOs in Canada can or should be measured against the full set of indicators listed above. Evaluators will need to define success differently for organizations that cater to different stages of company growth. Entities or programs that focus on later stage companies, for example, should be evaluated according to the key company growth metrics identified above, including revenue, investment, and job growth. Entities and programs that deliver support services for early stage companies, on the other hand, should focus on various activity metrics and, more importantly, on measurable progress towards specific milestones agreed to by funders and program participants. Among other things, these milestones can include progress towards developing a minimal viable product, the number of meetings with qualified customers and interested investors, and the development of mentor-vetted strategies for sales, marketing, and internationalization. As such, the tables below outline a comprehensive “wish list” from which evaluators can draw at their own discretion.

**Table 3: PROGRAMMING PERFORMANCE METRICS**

Stage	Measure	Metrics
<b>Intake</b>	Selection Process	Number of applicants Percentage of applicants accepted
	Cohort Size	Number of participants per cohort Number of cohorts per year
	Participant Demographics	Age of participating firms Growth stage of participating firms Founder demographics (age, gender, nationality, ethnicity)
<b>Program Structure and Characteristics</b>	Seed Funding	Average size of seed investment
	Equity Stake	Average percentage equity stake
	Tenure/Engagement	Average length of engagement with supported firms
	Mentorship Resources	Number of mentors/firm
	Program Efficiency	Cost of programming per firm
	Program/Service Quality	As qualitatively assessed by graduates
<b>Program Milestones</b>	Product/Service Creation	Number of firms completing of a minimum viable product
	Market Research	Number of firms completing a vetted market research plan
	Internationalization	Number of firms completing a vetted export strategy
	Demand Validation	Average number of meetings with qualified customers/firm
	Investment Attraction	Average number of meetings with qualified investors/firm



**Table 4: ECONOMIC AND INVESTMENT PERFORMANCE METRICS**

Stage	Measure	Metrics
<b>Graduation (plus 12 months)</b>	Operational Status	<ul style="list-style-type: none"> <li>Percentage operating, closed, or acquired</li> </ul>
	Investment Attraction	<ul style="list-style-type: none"> <li>Percentage receiving next-stage funding</li> <li>Average size of follow-on investments</li> <li>Sources of funding: VC, angel, government, other</li> </ul>
	Sales/Revenue Generation	<ul style="list-style-type: none"> <li>Average increase in number of customers</li> <li>Average increase in revenues</li> </ul>
	Job Creation	<ul style="list-style-type: none"> <li>Total jobs generated/year</li> <li>Average number of jobs generated per firm</li> </ul>
<b>Post-Graduation Firm Performance (firm-level data, 1–5 years after graduation)</b>	Firm Survival Rates	<ul style="list-style-type: none"> <li>Survival rates at years 1–5</li> </ul>
	Sales/Revenue Growth	<ul style="list-style-type: none"> <li>Annual growth in number of customers</li> <li>Annual revenue growth</li> </ul>
	Employment Growth	<ul style="list-style-type: none"> <li>Net jobs created at years 1–5</li> </ul>
	Investment Growth	<ul style="list-style-type: none"> <li>Total capital raised</li> <li>Number of investors</li> </ul>
	Export Growth	<ul style="list-style-type: none"> <li>Percentage goods/services exported</li> <li>Annual growth of international revenues</li> </ul>
	Firm Profitability	<ul style="list-style-type: none"> <li>Annual growth of net profits</li> </ul>

## Challenges and Limitations of Quantitative Measurement

Across each of the stages and measurement categories discussed above, the acquisition of consistent and reliable data on the performance of incubator and accelerator graduates represents the most significant quantitative measurement challenge. However, even if perfect data were available, other methodological limitations and challenges must be factored into the overall analysis of accelerators and incubators.

### Sample Bias

A key measurement challenge pertains to the attribution of success. To what extent can we directly attribute the success or failure of a given firm to its experience in an incubator or accelerator? The fact that accelerators, and some incubators, are quite selective about the start-ups they accept into their programs raises a potential selection bias in assessing their performance. Would these high-potential teams have performed equally well without the support of an incubator or accelerator? What about the firms that are not selected? Do these firms go on to perform equally well, worse, or even better?



Qualitative research can help shed light on the attribution question to the extent firm founders can subjectively assess the degree to which an accelerator experience was or was not pivotal in their firm's development; however, such an approach is hard to scale. Indeed, the only way to more definitively quantify the impact on firm success would be to analyze a comparable control group of early stage companies that have never gone through a BABI. Such research presents significant methodological challenges, but, if conducted in partnership with Industry Canada and Statistics Canada, a comparative quantitative analysis of this nature would yield the most authoritative conclusions about the impact of incubation and acceleration services on firm performance.

### **Double or Triple Counting Success**

Another attribution issue occurs when firms interact with more than one SAO over a short time period. Consider the following scenario. A team of entrepreneurial students prototypes its first product in a university-based incubator and receives some validation from an in-house mentor. Twelve months later, the team incorporates and gets accepted to a prestigious accelerator program. Following an intense six-month program, the firm graduates and completes a successful round of financing. The initial product rollout is a success and after doubling its team in Canada, it calls on the services of the Department of Foreign Affairs, Trade and Development Trade Commissioners to expand its international footprint. Three years after first entering the incubator, the firm has achieved annual revenues of \$3 million, employs 25 people, does business across North America, and now has investors lining up to get in on the next round of financing.

Each of these organizations may have had a hand in the firm's success, and each may be entitled to claim some of the associated economic benefits. However, the overall economic impact of these organizations would be inflated if they each placed 100% of the jobs, revenue growth, and investment the firm experienced over that time period on their own economic impact statements. In the absence of reliable firm-level data, it is difficult to know when such instances of double or triple accounting have occurred, or to assess how prevalent the problem of double counting is in the data collected by incubator and accelerator organizations.

As noted above, one way to rectify this problem is to source authoritative firm-level data from Stats Canada and carefully cross-reference it against the data reported by incubators and accelerators. By drawing data about revenue and job growth directly from Stats Canada, evaluators could ensure that jobs and revenue growth are only counted once. However, it would not alleviate evaluators of the need to exercise judgment in apportioning some of the credit for these economic benefits to the SAOs involved.

### **Successful Failure**

A further noteworthy shortcoming of the measurement framework, and quantitative evaluations in general, is that they are not able to account for the scenario of a "successful failure." A start-up may not last more than a few months; however, if its experience in an accelerator quickly demonstrates that its idea was not viable, it conserves resources for other ventures. This phenomenon is not captured in the current metrics, but the accelerator



and the start-up may consider such a scenario to be a valuable outcome. From the accelerator's perspective, it helped the start-up and investors avoid going down an unprofitable path, and the accelerator could devote resources to helping the start-up redesign the venture or develop a new venture that would be more successful. From the start-up's perspective, the accelerator helped identify areas of weakness that could have resulted in a failed enterprise with potentially severe financial consequences.

### **Contributions to Skills Development and a Culture of Entrepreneurship**

Accelerator and incubator organizations play a role in building skills, establishing new clusters of economic activity, and inculcating a broader culture of entrepreneurship—outcomes that are no doubt valuable but not easily quantifiable. Accelerators and incubators act as hubs around which entrepreneurial networks form—networks that attract diverse, but complementary, stakeholders that can catalyze outcomes together that are more powerful than they could if acting alone. The formation of clusters that ignite new entrepreneurial possibilities could serve as an economic lifeline for regions within Canada that are seeing their traditional economic base deteriorate. An agricultural community, for example, could invest in a food services incubator in order to generate new opportunities for value-added growth. Not only could the incubator spin off new enterprises, creating jobs and wealth, but the culture of innovation and entrepreneurship that it instills in the broader community might help convince young people to remain in the region and resist the gravitational pull to large urban centres.

Accelerators and incubators also create success stories that help convince more people to start businesses. In other words, they contribute to creating a “culture of entrepreneurship” that investors and governments so covet in a region. In an economy where more young people will be required to create their own jobs, fostering the courage and aptitude for entrepreneurship is a necessary, albeit insufficient, ingredient for economic success.

As classrooms for entrepreneurs, frequent direct contact with experienced founders, investors, and other relevant professionals is a core aspect of most incubator and accelerator programs. In addition, most accelerators and many incubators also provide structured programming that covers everything from tax and legal advice, to practicing the art of the perfect business pitch. NESTA's review of European accelerators found that such experiences typically leave “a positive impact on founders, helping them learn rapidly, create powerful networks and become better entrepreneurs” (Miller and Bound 2011). Even if graduates of a BABI program ultimately fail as entrepreneurs, they may go on to deploy their newly honed skills and personal networks in other valuable ways to society. Leading a successful skunk works program at a large company or becoming a valuable employee in someone else's start-up are not necessarily bad outcomes for an accelerator graduate, especially for the individual in question. However, they are not the outcomes for which incubators and accelerators are typically measured or rewarded. Nor are they the preferred outcomes for VC-backers looking for a return on their equity investment.



## 4. Qualitative Research: Assessing the Intangibles

While reliable data is vital to performance measurement, data alone never tell the whole story. For example, it cannot adequately capture the intangible benefits that incubators and accelerators generate. Nor does it reveal much about the factors that drive successful performance, or the challenges that inhibit success. To capture these important dimensions of performance, evaluators are encouraged to include qualitative interviews with policy leaders, investors, accelerator management teams, and firms as part of their measurement process. Indeed, in the DEEP Centre's experience with program evaluation, one-to-one interviews have routinely yielded vital insights that not only supplement and help make sense of the data, but also point to opportunities, challenges, and trends that would be impossible to uncover using quantitative approaches alone.

### Intangible Benefits

By their very nature, the intangible contributions of incubators and accelerators to economic performance are hard to capture with data, but they can be adequately assessed using qualitative approaches such as survey research, focus groups, and one-on-interviews.

The assessment of the broader economic benefits of incubators and accelerators should focus on some of the key questions discussed earlier, including:

- **Skills Development:** Are incubators and accelerators contributing to the development of valuable skills that are not adequately addressed within conventional post-secondary institutions? How and where are graduates deploying the skills they gain?
- **Cluster Formation:** Are incubators and accelerators contributing to the development of nascent clusters within Canada that could serve as a magnet for the talent and capital required to accelerate progress in strategic sectors or to help rejuvenate regions that are struggling? What is the appropriate timeline to assess the development of such clusters?
- **Network Enrichment and Density:** Are incubators and accelerators helping establish richer and denser interpersonal networks among entrepreneurs, investors, and other relevant professionals that lead to serendipitous outcomes that otherwise wouldn't have materialized (e.g., ad hoc validation of a new product idea, a casual introduction that leads to a new customer or investor, etc.)? Can researchers place an economic value on the informal connections that incubators and accelerators build by virtue of their role as a meeting place for like-minded individuals?
- **Entrepreneurial Culture:** Are incubators and accelerators contributing to the creation of a more entrepreneurial culture within Canada by providing a safe space for young people to explore their entrepreneurial potential? On the other hand, could the proliferation of mediocre start-ups, along with the incubation spaces to house them, possibly be draining talent away from firms with genuine growth potential?



Definitive answers on any of these questions will be hard to reach, but the qualitative process will certainly help shed light on the contributions that accelerators and incubators are making in these areas. The qualitative analysis, in turn, will help paint a more encompassing picture of the overall economic value these organizations create.

## Ecosystem Challenges

In addition to better understanding the intangible contributions of incubators and accelerators, interviews with policy leaders, investors, accelerator management teams, and firms can reveal underlying challenges that are inhibiting the performance of the entrepreneurial support system, as well as potential solutions.

Suggested areas for focus include:

- **Institutional challenges:** Factors inhibiting the ability of incubators and accelerators to meet their key performance indicators. Evaluators could ask about the availability of experienced mentors or the existence of relationships/partnerships with venture capital organizations.
- **Firm growth impediments:** Factors preventing a larger share of accelerator participants in Canada from achieving a rapid upward growth trajectory. For example, evaluators could probe for issues concerning the availability of capital, management talent, and anchor customers.
- **Performance improvement and ecosystem evolution:** Program design changes and broader ecosystem-wide improvements that could boost accelerator performance or address capacity gaps identified during the research. In this instance, evaluators should seek input from stakeholders on the specific actions that would most likely lead to improved economic outcomes.

## Success Factors

Finally, as innovative, high-potential models continue to evolve (often with hybrid models and/or a more specialized niche sector focus), it is important to seek a deeper understanding of the factors that distinguish leading SAOs from the laggards. As part of the performance measurement analysis, evaluators should seek to determine whether there are common characteristics or design choices that positively influence success, and/or characteristics or design choices that are correlated with poor performance. While not an exact science, qualitative interviews with a broad range of stakeholders can generate valuable insights about key success factors and therefore the structures and best practices that ought to be replicated across the ecosystem.



Success factors will differ between accelerators and incubators, but likely include the following 10 elements:

1. **Ethos and Culture:** results-oriented mandate, structure, and culture.
2. **Selection Process:** intense and highly competitive, able to attract top talent.
3. **Program Structure:** well-established curriculum, with appropriate levels of customization to match the maturity of the firms.
4. **Mentors:** active roster of experienced mentors that are focused on “building the entrepreneur.”
5. **Support Services:** well-managed roster of commercialization resources and other support services focused on tax, legal, HR, regulation, and internationalization.
6. **Community/Cluster:** embedded in a vibrant tech community, including co-location with major universities, research institutions, and anchor firms.
7. **Funding:** strong private sector backing, along with a diverse array of funding options available to entrepreneurs (equity, repayable loans, government grants).
8. **Partnerships:** presence of industry, angel, and institutional investor partnerships with a capacity for follow-on investment.
9. **Alumni Network:** active community of alumni firms that contribute to programming and mentorship activities.
10. **Attractive Workspace:** suitable ambiance and desirable location, with adequate amenities, facilities, and capacity.



## 5. Conclusions and Recommendations

Performance measurement is a vital part of building a robust and successful entrepreneurial ecosystem in Canada. For too long, SAOs, and the public bodies that help fund them, have operated in the absence of sufficient data about the economic impact of business incubation and acceleration activities. Indeed, there are deficiencies on several levels, including a lack of consistent metrics, inadequate tools for compiling and analyzing the data that is collected, and very little commitment to publicly reporting results. These deficiencies, in turn, inhibit the ability to accurately assess the economic benefits that BABIs create, and result in lost opportunities to foster improvements in the performance of Canada's entrepreneurial support system.

A Canada-wide system for performance measurement would yield many benefits. It would help program leaders and policy-makers better understand the factors that drive success. It would enhance the ability to identify and implement improvements in programming, to share best practices across institutions and jurisdictions, and to systematically generate better outcomes. It would help firms make better decisions about where and how to access support. And a commitment to openly reporting the results would build public confidence in the economic benefits these organizations create for Canada.

To realize these benefits, policy-makers, investors, and program leaders should come together to build a common system for measuring the performance of Canadian SAOs. As they do so, the following key principles and actions will be key:

- 1. Create Standardized Metrics, Measurement Tools, and Platforms.** Standardized definitions for job creation, firm survival rates, and other activity and outcome metrics are required to enable data aggregation and comparison across the ecosystem. The creation of a single, shared platform for publicly reporting outcomes would further ease the reporting burden on SAOs and vastly improve the ability of policy-makers, researchers, investors, firms, and other stakeholders to access and interpret the data
- 2. Build Data Reporting and Publishing Obligations into Contracts for Funding and Support.** Adding data sharing requirements into service contracts between accelerators and supported firms is necessary to improve the ability to collect longitudinal data across the various metrics identified in the measurement framework. Likewise, Canadian funding agencies should include granular reporting and public disclosure requirements in their contracts with BABIs, and these requirements should adhere to national standards as described above.
- 3. Calibrate Performance Measures to the Various Stages of Firm Maturity.** Entities or programs that focus on later stage companies should be evaluated according to the key company growth metrics identified above, including revenue, investment, and job growth. Entities and programs that deliver support services for early stage companies, on the other hand, should focus on various activity metrics and, more importantly, on measurable progress towards specific milestones agreed to by funders and program participants.





4. **Bolster the Rigor of Performance Measurement with Authoritative Statistical Data.** First and foremost, greater rigor can be achieved by sourcing authoritative firm-level data on employment, revenue growth, and profitability from Stats Canada. Doing so will not only boost reliability, but also help avoid the problem of double or triple counting. In addition, creating a control group of non-incubated firms would enable evaluators to more definitively estimate the differential in economic performance between firms that receive support and those that don't.
5. **Recognize that Different Types of SAOs do Different Jobs.** As the taxonomy makes clear, there is considerable diversity in the structures and approaches used to support start-ups and SMEs in Canada. Moreover, the diverse economic realities present within different sectors and regions means that it is only fair to judge outcomes against targets that can be reasonably achieved in a given context. Policy-makers and evaluators must take this diversity into account when benchmarking performance and when formulating the targets against which BABIs will be judged. The more systematic the collection of data across this diverse pool of organizations, the better informed the expectations for success are likely to be in different sectors and regions, and for the various organizational types within the taxonomy.
6. **Include Qualitative Research as Part of the Measurement Process.** While quantitative approaches are best for assessing the impact of BABIs on jobs, investment, and growth, qualitative research provides a necessary subtlety to the analysis of performance that can shed light on key trends, opportunities, and challenges. Surveys, focus groups, and one-to-one interviews will not only help evaluators make better sense of the data, they are essential tools for identifying intangible contributions to economic performance and for formulating recommendations for strengthening Canada's entrepreneurial ecosystem.



## Appendix:

### Candidates for Evaluation

As part of the DEEP Centre's analysis of the start-up assistance ecosystem in Canada, a detailed evaluation of 25 entities was undertaken. The key findings from this evaluation are available in a companion report, *Accelerating Canada's Start-Up Ecosystem: A Review of Canadian Business Accelerators and Business Incubators*.

The full list of incubator and accelerator organizations selected for evaluation was compiled with the assistance of a project steering committee to reflect diversity across geography, sectors, and operating models. In addition to identifying candidates to represent the various start-up assistance types represented in the taxonomy, key parameters for sample selection included:

- **Track Record:** entities operating long enough to have produced meaningful results.
- **Business Model Innovation:** entities that demonstrate innovation in funding models, programming, partnerships, or strategic focus.
- **Geography:** entities operating across a range of Canadian provinces and territories, as well as a mix of urban, rural, and peri-urban areas of Canada.
- **Sector Focus:** entities operating in a variety of sectors, including: technology/digital media, cleantech, food services, advanced manufacturing, and life sciences/biotech.



**Table 5: START-UP ASSISTANCE ORGANIZATIONS EVALUATED BY THE DEEP CENTRE**

Candidates for Evaluation	Sector	Location
Accel-RX	LS	Vancouver
Bioenterprise Corporation	LS	Guelph
Centre d'entreprises et d'innovation de Montréal	Diversified	Montreal
Centre of Excellence in Energy Efficiency	CT	Shawinigan
Communitech Rev (formerly Hyperdrive)	IT	Kitchener-Waterloo
Corporation Inno-Centre du Québec	Diversified	Montreal
Creative Destruction Labs	Other	Toronto
Execution Labs	IT	Montreal
Foresight Cleantech Accelerator	CT	Burnaby
FounderFuel	IT	Montreal
HIGHLINE	IT	Toronto, Vancouver
Incubes	IT	Toronto
Innovacorp	Diversified	Halifax
Innovate Calgary	IT	Calgary
Jolt @ MaRS	Diversified	Toronto
L-Spark	IT	Ottawa
Manitoba Technology Accelerator	Diversified	Manitoba
NORCAT	IT/Mining	Sudbury
Prince Edward Island BioAlliance Inc.	LS	Charlottetown
Propel ICT	IT	Moncton
Ryerson Digital Media Zone/Ryerson Futures	IT	Toronto
TEC Edmonton	IT	Edmonton
Velocity (University of Waterloo)	IT	Kitchener-Waterloo
Waterloo Accelerator Centre	IT	Kitchener-Waterloo
Wavefront Wireless Commercialization Centre	IT	Vancouver

Note: LS stands for life sciences, CT for cleantech, and IT for information technologies.



## Works Cited

Amezcuca, Alejandro S. 2010. "Boon or Boondoggle? Business Incubation as Entrepreneurship Policy: A Report from the National Census of Business Incubators and their Tenants." Whitman School of Management.

CSES and EC Enterprise Directorate General. 2002. Final Report: Benchmarking of Business Incubators. Centre for Strategy & Evaluation Services and European Commission Enterprise Directorate General. February. [www.cses.co.uk/upl/File/Benchmarking-Business-Incubators-main-report-Part-1.pdf](http://www.cses.co.uk/upl/File/Benchmarking-Business-Incubators-main-report-Part-1.pdf)

Government of Canada. n.d. "Innovation Hubs That Foster Entrepreneurial Talent and Ideas." Economic Actions Plan 2013. <http://actionplan.gc.ca/en/initiative/innovation-hubs-foster-entrepreneurial-talent-and>

———. 2015. Canada Accelerator and Incubator Program (CAIP). Modified March 25, 2015. [www.nrc-cnrc.gc.ca/eng/irap/caip/index.html](http://www.nrc-cnrc.gc.ca/eng/irap/caip/index.html)

M'Chirgui, Zouhaïer. 2012. "Assessing the Performance of Business Incubators: Recent France Evidence." *Business & Management Research* 1(1): 62–76.

Miller, Paul and Kirsten Bound. "The Startup Factories: The rise of accelerator programmes to support new technology ventures." NESTA Discussion paper: June. [www.nesta.org.uk/sites/default/files/the\\_startup\\_factories\\_0.pdf](http://www.nesta.org.uk/sites/default/files/the_startup_factories_0.pdf)

Schwartz, Michael. 2013. "A control group study of incubators' impact to promote firm survival." *The Journal of Technology Transfer* 38(3): 302–31. <https://ideas.repec.org/a/kap/jtecht/v38y2013i3p302-331.html>

Schwartz, Michael and Maximilian Göthner. 2009. "A multidimensional evaluation of the effectiveness of business incubators: an application of the PROMETHEE outranking method." *Environmental and Planning C: Government and Policy* 27(6): 1072–87. [www.envplan.com/abstract.cgi?id=c0897b](http://www.envplan.com/abstract.cgi?id=c0897b)