Scaling Success: Tackling the Management Gap in Canada's Technology Sector

WILFRID LAURIER UNIVERSITY

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LAZARIDIS INSTITUTE
For the Management of Technology Enterprises

ABOUT THE LAZARIDIS INSTITUTE

The Lazaridis Institute for the Management of Technology Enterprises (Lazaridis Institute) at Wilfrid Laurier University in Waterloo is the product of a $20 million investment from Mike Lazaridis and $15 million in support from the Province of Ontario. The Lazaridis Institute is designed to be a global leader in providing management education and research to support the growth of the technology industry across Canada. Leading academics and practitioners will come together at the Lazaridis Institute to examine the challenges that Canadian technology companies face as they grow, and to provide appropriate support as these companies attempt to become globally competitive.

The Lazaridis Institute will support the development of the management skills of the current generation of technology executives and prepare the next generation of business students for industry leadership. The Institute will draw top talent nationally and internationally, build partnerships with leading global organizations, and create networks with leading business schools in technology hubs across Canada and around the world.

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EXECUTIVE SUMMARY

Building a prosperous Canadian knowledge-economy depends in no small part on the creation of a next generation of high-growth, globally competitive Canadian technology companies. These high-growth companies contribute disproportionately to the creation of employment and economic growth. However, compared to other mature economies, Canada has so far underperformed on the creation of these firms.

As part of the development of the Lazaridis Institute at Wilfrid Laurier University, this white paper is designed to shed light on the relative scarcity of high-growth Canadian technology firms. We began by asking 125 of Canada's most well-informed and best-placed industry stakeholders—in particular the founders of, and investors in, high-growth technology firms—to talk about the major impediments facing these firms. Their comments indicated a significant knowledge gap related to the role management and executive skills play among these growth challenges. Their feedback also demonstrated a shared understanding that scaling a technology company in today's global marketplace is radically different than in previous eras.

The analysis of this data reveals the following key findings:

- **While science, technology, engineering and mathematics-related (STEM) talent is abundant, the talent pool in general lacks business and management knowledge.**
- **Shortages of experienced management and/or executive talent are the primary inhibitors to scaling up.**
- **Canadian technology firms lack key management competencies in specific areas including sales, marketing, organizational design and product management.**
- **The talent shortage is linked to the lack of existing and/or exited growth firms in Canada's technology sector.**

These findings underscore the importance of building a well-rounded cadre of managers and executives in Canada's technology sector. Doing so must take into consideration the fact that today's technology markets are distinguished by far shorter time-to-market and product life cycles, as well as a generally more complex global operating environment.

This white paper presents an in-depth review of the challenges facing Canadian high-tech firms and develops a strong evidence base upon which to build future initiatives designed to address them. The work represents an important first step by the Lazaridis Institute to help a next generation of Canadian technology companies scale into global leaders.

Context and purpose

The Lazaridis Institute has been established to help address a perceived shortage of high-level management talent in Canada's technology sector. While there is broad anecdotal consensus across industry, academic and government stakeholders as to the existence of a management-talent gap, the Lazaridis Institute has begun to collect and analyze evidence as to the impediments facing Canadian technology firms, and in particular, high-growth firms.

This paper builds on existing academic and professional research but also, critically, begins to amass a unique data set of the constraints facing Canadian technology enterprises as they move beyond the start-up phase. The Lazaridis Institute will continue its national and international consulting to enrich this data set, develop its research agenda and design programming to support high-growth, globally competitive Canadian technology firms.

Methodology

To properly develop our understanding of the contemporary challenges facing Canada's high-growth-potential firms, interviews were conducted with 125 technology stakeholders across Canada. A full list of interview participants is provided in Appendix 1.

This sample of stakeholders was selected to provide a representative understanding of the challenges facing Canadian high-growth technology companies. Four core stakeholder groups were identified:

1. Firm founders and/or executives of Canadian technology companies experiencing rapid growth;
2. Canadian and international venture capital (VC) investors;
3. Leaders from Canadian and select international start-up assistance organizations; and
4. Appropriate domestic policy leaders.

For each group, regional diversity was sought to provide breadth, capturing issues facing various regional clusters across Canada.

This primarily domestically-focused interview sample was supplemented by two dozen interviews with technology stakeholders in Silicon Valley, the United Kingdom (UK), Berlin, Munich and Singapore. These international interviews provided a comparative lens on the issues facing technology ecosystems in similarly mature economies.

Across these interviews, the focus of inquiry was on two particular questions related to the growth and scaling challenges facing high-growth Canadian technology companies. Addressed through a

semi-structured process, and adapted with minor variations depending on the role of the stakeholder being interviewed, these questions included:

- **Key growth challenge:** What is/was the biggest impediment to the growth of your technology firm? Do you see this challenge existing broadly across your ecosystem?
- **Management talent:** Does management talent constitute a key challenge? What are the key management competencies that you struggle to recruit/develop?

To test the results of the interviews, a complementary survey process was established in partnership with the Canadian Advanced Technology Alliance (CATA). This survey, administered online and advertised on *The Globe and Mail* website at the time of the launch of the Lazaridis School of Business & Economics (September 8–10, 2015), attracted 100 participants. The results of this survey are described in Appendix 2.

Sections I and II of this white paper summarize the results of this research process, with a focus on developing an understanding of the key growth challenges facing high-growth Canadian technology firms and the role of management talent among them.

Definitions

It is important to note that the purpose of this white paper is not to ascertain the challenges facing "Canadian technology companies" writ large, nor to determine those facing startup firms in general. The work seeks, rather, to understand the challenges facing high-growth Canadian technology firms. In so doing, we follow the definition of a high-growth firm given by the Organisation for Economic Co-operation and Development (OECD):

> **"High-growth enterprises, as measured by employment (or by turnover), are enterprises with average annualized growth in employees (or in turnover) greater than 20% per year, over a three-year period, and with ten or more employees at the beginning of the observation period.**

The firms interviewed for this project fit broadly within this definition. Where exceptions exist, they are justified on the basis of exponential short-term revenue and/or employee growth. More generally, the focus of this paper is on Canadian technology firms that have achieved product-market fit, sustained revenue growth, and raised, at minimum, a Series A round of investment.

SCALING SUCCESS

After more than a decade of public and private investment into Canada's entrepreneurial ecosystems, the number of firm founders is impressive and the innovation "funnel" is overflowing with more, and more robust, ideas than ever. From Waterloo to Ottawa, Halifax to Vancouver, Canada boasts one of the most successful entrepreneurial ecosystems in the world. The Global Entrepreneurship Monitor's *2014 Global Report*, for example, found that Canada is second only to the United States (US) in the share of the working age population either engaged as an entrepreneur or working directly for one.[1]

This activity, however, has not resulted in the creation of successful and globally competitive technology firms. The 2014 report, *Canada's Billion Dollar Firms: Contributions, Challenges, and Opportunities*, by the Waterloo-based Centre for Digital Entrepreneurship and Economic Performance (DEEP Centre Inc.) concludes that between 2003 and 2012, Canada's technology sector saw no growth in its four-member cohort of billion-dollar revenue firms.[2] While relative newcomers such as Shopify, Desire2Learn and Hootsuite represent a more recent group of potential billion-dollar firms, they have long runways ahead before they reach that revenue level.

Moreover, Canada's population of professional, scientific and technical firms—where the majority of technology-related startups are categorized—has experienced consistently negative rates of business creation over the 2001–2012 period.[3] Finally, across the economy, Canada continues to underperform its peers in the creation of high-growth firms. These firms—defined as those who grew by over 20% per year for a minimum of three years in a row—account for less than 5% of all firms but nearly 50% of all employment growth in Canada.[4] For Canada's future prosperity, the creation of this type of high-growth firm is critical.

The mission of the Lazaridis Institute at Wilfrid Laurier University is to address the underlying causes of this underperformance. Among the many factors associated with the growth and competitiveness of Canadian technology enterprises, a growing body of evidence has pointed to a "management gap" as particularly significant.

Work by Roger Martin and James Millway in 2012 concluded that inattention to the issue of management talent in Canada risks the country's overall prosperity.[5] They note, "It is short-sighted, if not dangerous, for Canada's firms to compete globally with management skills that are not as strong as they can be." Furthermore, a 2014 Conference Board of Canada survey of 169 Canadian companies found that building the leadership pipeline was identified as a major challenge facing Canadian firms.[6]

These research reports, while helpful, do not focus on the state of management among high-growth Canadian technology firms. These firms face particular challenges owing to the speed of product development, and to the finance and customer acquisition necessary to succeed. As an initial step in its development, the Lazaridis Institute has begun to address this knowledge gap by conducting a qualitative analysis of the major challenges facing high-growth Canadian technology firms.

This research analyzed responses to the following questions:

- **Key growth challenge:** What is the biggest impediment to the growth of Canadian technology firms? Do these challenges exist broadly across the Canadian ecosystem?
- **Management talent:** Does management talent constitute a key challenge? What are the key management competencies that firms struggle to recruit/develop?

The answers to these questions frame the research presented in Sections I and II of the white paper. The next section reviews the existing literature on this topic before moving onto the key growth challenges and management-related issues raised by our interviewees.

Extant literature

Across sectors, the focus on executive talent as a key enabler, or potential dampener, of corporate performance is not novel. In 1999, Stuart Crainer and Des Dearlove identified the lack of executive talent in the US as the "single most critical issue that will plague business...for at least the next five decades."[7] However, over the subsequent decade, this broadly defined problem received little analytical scrutiny. In particular, while scholarly attention has been directed towards growth-related challenges in the technology sector, research on management and executive talent issues in this sector is lacking. This gap is exceptionally pronounced as it relates to Canadian technology firms.

In the existing academic work on factors that impact the success of both technology and non-technology startups, the following areas in particular receive significant attention: access to capital,[8] internationalization,[9] marketing,[10] product innovation,[11] and the impact of partnership and collaboration.[12] Other relevant work analyzes the relationship between performance and success, including, among others: learning and market orientation,[13] innovation,[14] human capital investments and outcomes,[15] customer and supplier involvement in the design process,[16] organizational structure;[17] a firm's structural inertia, environmental hostility and international strategic alliances;[18] and entrepreneurial orientation.[19]

While each area of inquiry is relevant to the broader issue of start-up growth, the lack of a specific focus on management competencies and their impact on growth in the technology sector represents

a significant knowledge gap. Michael Song, Ksenia Podoynitsyna, Hans van der Bij and Johannes I.M. Halma conducted a meta-analysis in 2008 to determine the factors that impact the success of new technology ventures in the US.[20] These factors included variations of management talent—such as founders' experience with research and development, and founders' experience with startups—but the paper's overall focus on management competencies was limited.

This white paper seeks to supplement the extant research and address the competencies knowledge gap by focusing on three specific factors: stage of growth (mature start-up/high-growth), geography (Canada) and growth challenge (management and executive talent). The focus on high-growth firms is important insofar as the challenges these firms face may be distinct from those relevant to earlier stage startups. This research highlights these high-growth, scale-up challenges with a particular focus on if and how the supply of management and executive talent impacts their progress.

Industry research comes closer to addressing the scale-up knowledge gap. Three categories in particular receive attention as primary barriers to growth for Canadian and US SMEs (small and medium enterprises) and/or start-ups. Chief among these challenges is a perceived lack of skilled talent, including management skills.[21] According to a 2015 report by KPMG and the Ivey School of Business, 28% of Canadian business leaders identify talent attraction as their primary strategic challenge, with a further 14% highlighting a lack of skilled/capable management as the key factor impeding business growth.[22] Among Canadian startups, a 2015 PriceWaterhouseCoopers' report determined that 14% of Canadian technology-focused startups identify recruiting an experienced management team as a key issue.[23]

More broadly across all sectors, a 2014 Business Development Bank of Canada (BDC) report highlights management capabilities as the key perceived driver to underperformance among mid-size firms. The BDC report highlights the following key skill sets as being in short supply: optimizing operations, developing and executing sales plans, setting overall strategy, and ensuring human resources capacity for growth.[24] These findings are echoed by a 2011 CATA report, which identifies a lack of management commercialization expertise and business management acumen as a key reason for Canada's commercialization gap.[25]

This Canadian research is complemented by research from the US and UK that highlights similar management challenges. For example, a 2013 report by KPMG highlighted that 12% of US technology executives consider an inability to find visionary leadership to be the largest threat to their business model.[26] In the UK, 87% of scale-up companies surveyed for the UK *Scale-Up Report* indicated they would grow faster if it were easier to develop and recruit executive and management talent.[27] Other key barriers reported within this private-sector research include a focus on financial considerations—such as underinvestment in technology and research and

development,[28] and insufficient access to capital[29]—as well as a lack of incentives to pursue growth and international expansion.[30]

While helpful, this research provides only a cursory understanding of the immediate relevance of these challenges to technology firms. Moreover, where management is referenced, the research largely fails to provide a sufficiently granular understanding of exactly which core competencies are missing, and the context for their importance.

We begin to address this knowledge gap through an extensive interview process and qualitative analysis. The next two sections develop a detailed understanding of:

1. The key growth challenges facing high-growth technology firms in Canada, and
2. The importance of management and executive talent among those challenges.

SECTION I: DEFINING THE IMPEDIMENTS TO SCALING UP

What is holding back the next generation of high-growth, globally competitive Canadian technology companies? We asked over 100 of Canada's most well-informed and best-placed industry stakeholders to provide a contemporary view of this issue. As explained above, two specific questions were of particular interest:

1. What is the biggest impediment to growth facing high-growth-potential Canadian technology firms?
2. Is the development and/or attraction of management/executive talent a challenge? If so, what are the key management competencies that are in short supply?

The analysis of interview data indicates the following key findings:

1. The primary inhibitor to scaling up is the shortage of experienced management and/or executive talent, as identified by 53% of those interviewed. These findings are consistent across stakeholder groups with nearly 60% of founders and executives rating this challenge as the highest priority.
2. The second and third most often noted challenges are access to capital, and ecosystem dynamics related to culture and risk tolerance, each identified by between 16 and 20% of interviewees.
3. Sales, marketing, organizational design and product management are identified as key management competencies lacking in the ecosystem. In each case, the specific shortage is described as a lack of seasoned talent: senior managers who have experience leading a technology company through a phase of rapid, significant growth.
4. While STEM-related talent is viewed as abundantly available, the talent pool in general is seen as lacking the requisite business and management acumen to mature to high-level leadership.
5. The shortage of experienced managerial talent is seen as caused by a shortage of growth firms and/or of exited growth firms in Canada's technology sector.
6. This scarcity of growth firms constitutes a lack of cluster depth, which is seen to impede the ability of Canadian firms to recruit experienced talent from abroad.
7. A lack of cluster depth is seen as a "non-Silicon Valley" challenge, rather than a strictly Canadian challenge, insofar as this talent gap is reported across multiple ecosystems around the globe.

Table 1: Executive and stakeholder responses to "What are the primary impediments to scaling up for Canadian technology firms?"

Insufficient executive and managerial talent	53%
Insufficient access to capital	16%
Ecosystem dynamics*	20%
Lack of international market engagement	4%
Inability to scale sales	3%
Weak advisory board structure and governance	2%
Inability to acquire lead/anchor customer	1%
Challenges concerning intellectual property	1%

**Note: This category aggregates responses related to founder ambition, risk tolerance and business culture.*

The following section details the three primary growth challenges facing high-growth-potential Canadian technology firms as reported through this process.

Key context: Lack of large technology firm density

Canada has so far under-performed in the creation of large technology firms and successful scale-ups. As noted in the 2015 Startup Compass (formerly Startup Genome) report, Canadian start-up ecosystems lag their international peers by significant margins in terms of output as measured by both VC activity and exit valuations.[31] The broader national result is an immature ecosystem, one that lacks "density": this can be described as an ecosystem that has yet to develop a sufficient number of large and/or growing technology firms required to effectively circulate talent, capital and competitive forces.

As one senior industry stakeholder noted, "The notion of density is so important because it's only through the development of sufficient density that you get the deep pool of capabilities necessary for companies to thrive. And, just as importantly, density drives competition and that competitive process drives capabilities upwards."

This notion of density, and specifically the negative impact of a lack of density on the circulation of talent and domestic capability, was raised by a majority of the stakeholders interviewed for this project. The lack of billion-dollar-revenue technology firms, coupled with the modest pipeline of high-growth technology firms moving toward the billion-dollar benchmark, limits the market for anchor customers and the market of potential Canadian acquirers. As noted by the Branham Group, of 164 transactions involving Canadian technology firms between April 2004 and February 2012, *just one* saw a Canadian firm as the acquirer.[32] The subsequent net decline in domestic talent and

intellectual property resulting from foreign acquisitions similarly depletes the density of the national system. And while international technology firms are increasingly establishing bases in Canada, the focus of such efforts is predominantly on research and development functions and not the outbound sales and marketing functions that are key to high growth.

The immaturity of Canada's technology ecosystem renders the recruitment of international talent even more difficult. Defined colloquially as "stranded risk," the lack of density in the Canadian technology ecosystem leaves potential recruits wondering if, in the event that they are ready to move on, they will become "stranded" due to the scarcity of follow-on professional opportunities. Technology talent with scaling experience is thus difficult to attract and, as a result of the lack of anchor firms, insufficiently developed within Canada.

The result is an ecosystem that excels at the creation of entrepreneurial ventures but fails to support their evolution into high-growth firms—firms responsible for the majority of net new job growth.

The following three growth challenges were identified by interviewees as inextricably tied to this lack of cluster density.

Challenge I: Lack of experienced management and executive talent

The most significant inhibitor to scaling up and maintaining growth was identified as a lack of experienced management talent. Over 53% of the total sample identified this as the primary challenge based on experiences with their own companies or on their perspectives on other firms. Sixty percent of firm founders considered the lack of management talent as the top constraint to growth.

The definition of this talent gap was nuanced. Across interviews, the gap was focused on the limited availability of repeat entrepreneurs and experienced executives who had seen companies scale, managed growth on an international level and could provide scale-ups much-needed management depth by putting that experience to work. Experience having scaled a technology firm was the crucial element: multiple interviewees stressed the critical difference between those who understood the theory of building a business and those who had actual first-hand experience.

As the CEO of one high-growth Canadian technology company noted, "It's about finding talent who has seen this show before. Canada has very few of these people as we simply don't have the companies that have gone through high-growth phases. We need a deeper market of people who understand exceptional growth paths and exceptionally dynamic technology markets."

This gap in experienced management talent is supported by a similar study commissioned for Industry Canada's Information and Communications Technology (ICT) branch that interviewed 13

stakeholders and surveyed Canadian ICT companies. This study identified access to talent in general, as well as access to C-suite talent, as two key talent-related challenges facing Canadian technology companies.[33] A report by the Information Technology Association of Canada (ITAC) also identified access to "C-suite talent with experience taking a company from a start-up to a $100M global enterprise" as a key obstacle preventing the growth of Canadian technology companies to the size needed to anchor a technology cluster.[34]

This executive talent gap also extends to advisors and board members. The limited number of successful high-growth companies and high-value exits leaves a limited domestic pool of adequately experienced advisors and board members. Moreover, several interviewees noted a significant lack of knowledge—their own and among their advisors—as to how to properly structure and exploit the strengths of a board, and how to refresh board membership at various stages of growth.

Across the interview sample, the need for executive talent—notably in sales, marketing and organizational design—was contrasted with a wealth of technology- and engineering-related talent. The latter strength, while necessary as a base for the development of technology, is widely considered insufficient on its own to meet the needs of companies whose growth trajectories require experienced sales, marketing, product management and organizational design talent. The development of a cadre of technology executives who possess both technological and operational expertise thus becomes imperative to the development of an effective high-growth ecosystem. Here, even aside from the shortage of experienced executives, the Canadian talent pool is perceived as missing a key element. In particular, across interviewee-types, a strong narrative emerged that while Canadian companies develop transformational technologies, their technology-focused founding teams lack, more often than not, the business acumen necessary to navigate growth challenges.

As an interviewee explained, "We don't lack companies that know how to build a great product and how to find product-market fit. What they're not good at is scaling the business because they've never had to do it before and usually have a weak grasp of the marketing and public relations necessary to do it." For technology-centric founders, knowing what they don't know thus becomes key to the acquisition of complementary talent. Moreover, as one venture capital interviewee noted, "Founders need to constantly be growing and firing themselves from their jobs." This finding is also echoed in industry reports, such as the 2012 document released by Canada's Science, Technology and Innovation Council, which highlights the disconnect between technology and business as a result of the two being largely taught in isolation.[35]

These talent needs are identified explicitly and are of immediate concern, but there is reason for optimism. The rise of Shopify, Desire2Learn, HootSuite, PointClickCare and BuildDirect highlights a small pool of high-growth firms that are reaching heavyweight status. As these firms follow Shopify's

path to IPO (initial public offering), some of their executives will inevitably execute valuable stock options and choose to move on. In so doing, they'll begin a process that catalyzes a natural recycling of experienced managers through the Canadian ecosystem. However, to compete with larger and more established technology ecosystems, the breadth and depth of this experienced talent base will require significant short-term recruitment from abroad. Beyond the financial issues associated with recruiting from abroad, changes to the Temporary Foreign Worker Program and general difficulties obtaining work visas are noted by interviewees as ongoing challenges to the recruitment of executive international talent.

Section II will further explore this experience gap by detailing the key managerial competencies described as lacking in the Canadian technology ecosystem.

Challenge II: Access to capital

Although the Canadian VC environment is significantly underfunded compared to its international peers, access to finance is noted by only 16% of interview subjects as a primary impediment to scaling and high growth.[36] Response rates for this challenge are highest amongst public policy and other third-party stakeholders, and lowest amongst founders and executives. This pattern of responses is all the more surprising given a more than 30% decrease in fundraising totals by Canadian VC funds over the 2012–2014 period.[37]

Among high-growth and high-growth-potential firms, however, access to international sources of capital is more robust. Tencent's 2015 investment of USD$50 million in Waterloo-based Kik, Mohr Davidow's 2014 investment in BuildDirect and Spectrum Equity's 2015 USD$45 million stake in Ethoca Solutions are significant examples of this cross-border flow of dollars to high-growth Canadian firms. In 2014, US investors accounted for 38% of funds raised by Canadian technology companies.

When capital was identified by interviewees as a significant challenge, it was most often noted in terms of its relationship to the acquisition and retention of top management talent. As one experienced founder noted, "The lack of growth capital available in Canada forces you to *homegrow* talent from people who might not be the right fit to move the company into the next phase that it needs to go to." Another said, "When the CEO spends all of his or her time raising money instead of running the business, you've got a problem. You can't focus on scaling and hiring the right people if you're focused solely on raising money."

A distinction was also made between domestic and American sources of capital. In particular, among both firm founders and other industry stakeholders, a general consensus emerged on the continued conservatism of Canadian VC and other sources of investment, and their reluctance to fund riskier

ventures. As one Canadian investor noted, "Whereas Silicon Valley funds billion-dollar ideas, the Canadian ecosystem looks for traction and proven revenue." The best early-stage Canadian companies thus flock to Silicon Valley in search of investment. Silicon Valley offers far more than just higher valuations. American sources of VC not only have deep pockets and strong track records of high-growth success, they also provide portfolio companies with deep networks of potential channel partners and customers.

Ultimately, a broad consensus emerged from the interview sample that the highest-growth and highest-growth-potential technology companies in Canada are able to relatively easily access the capital they require. As one policy stakeholder noted, "Despite gaps in our VC system, if good companies deserve capital, it showers down upon them." Further to this point, one serial entrepreneur noted, "A great company can raise anywhere in the world, while a good company can only raise in its local region."

Challenge III: Ecosystem dynamics

Far more amorphous than the previous two impediments is the role played by personal ambition and drive in the evolution of high-growth Canadian technology firms. Across interviews and interviewee-types, references were made to a low risk tolerance and lack of ambition among both entrepreneurs and investors. This response was more common, however, among investors and less common among founders and executives.

Here, the lack of previous success was seen as a major inhibitor to the development of a Silicon Valley-like approach to ambition and risk. As one US-based investor noted in relation to the limited number of Canadian companies with transformational products and services, "If you haven't been exposed to the leading edge of what's possible, then you're unlikely to reach further." And as the founder and CEO of a high-growth company in Toronto noted, "If you think too small, you end up setting the DNA of the company to be a small company. It's very hard to break out of that."

Recent moves to increase the exposure of high-growth-potential Canadian firms to the dynamic and hyper-competitive Silicon Valley market were noted by many interviewees as positive first steps in raising risk tolerance and ambition. These include initiatives led by the C100 and the Canadian Technology Accelerator program administered by Global Affairs Canada (formerly the Department of Foreign Affairs, Trade and Development). Such programs were also seen as helpful in "right-sizing" potential overestimations of technology and/or business strength among companies with limited international experience. But the recent success of homegrown companies such as Shopify, Desire2Learn and others was described as having the greatest impact. These success stories were

consistently mentioned throughout the interview series as key to the development of a new narrative around what is possible for a Canadian technology company. This new narrative augurs well for the scaling up of founder ambition across the Canadian technology ecosystem.

Finally, while the stereotype of the "risk-averse Canadian" is well known, multiple founders and Canadian investors argued that the stereotype is inaccurate. They noted that a significant degree of risk tolerance has led to billions of dollars of investment into Canada's resource sector, and that there is no reason this adventurousness should not ultimately extend to Canada's technology sector.

A focus on management talent: Looking beyond Canada

Overall, our research highlights the predominance of a key growth challenge: a lack of management and executive talent with experience scaling high-growth technology companies. As noted at the outset, underlying this challenge is the scarcity of established technology company success in Canada. With few precedents to emulate, and from whom to poach talent, the Canadian technology ecosystem suffers as a result. It is worthwhile noting that this challenge is not unique to Canada.

The research questions addressed by this project, in particular as they relate to the focus on management and executive talent, were initially designed to examine the distinctly Canadian issue of the underperformance of domestic technology companies. As a result of a series of interviews conducted with international stakeholders in Silicon Valley, London, Berlin and Singapore, however, it became clear that the management- and density-related challenges that afflict the Canadian technology ecosystem are quite common. The depth of Silicon Valley's asset base, with respect to executive talent and capital, is unmatched. What emerges from the conversations conducted for this project appears to be a binary Silicon Valley–not-Silicon Valley dynamic. All ecosystems in the latter group face significant challenges for talent, capital and growth as they compete against the gravitational forces of Silicon Valley.

This binary dynamic is evidenced by a 2006 report released by Heidrick & Struggles examining management talent gaps in China's technology sector. Through a series of interviews with more than 100 top executives in China's knowledge-intensive industries—a process similar to that used for this report—two urgent "people-related challenges" were identified: a need to develop necessary key leadership competencies and the current shortage of senior- and mid-level executive talent.[38] At a senior executive level, the key experience and skill gap identified was managing growth over USD$50 million in revenues.[39]

Our interview research in the UK and Germany highlighted similar issues. In the UK, interviews with VC and public policy stakeholders indicated that a dearth of experienced high-growth technology

talent, in particular in sales and marketing, is a key constraint on the ecosystem for scaling technology firms. In Germany, management talent—including experienced sales and organizational design talent—was raised as a significant issue; however, access to capital, in particular growth capital, remains a higher priority. Other challenges raised in the German context included a stronger focus on internationalization and more generalized market density and maturity challenges.

Despite these shared challenges, Canada possesses significant competitive advantages among non-Silicon Valley jurisdictions. Both in terms of physical proximity and the relocation of an estimated 300,000 Canadians to California, the corridor between several Canadian innovation hubs and the world's most reputed innovation ecosystem is potentially far more robust than what is feasible for other regions. And while this corridor currently leads a flow of talent out of Canada, many informants noted that greater success rates for high-growth firms in Canada might bring back home some of those 300,000 Canadians who have left and accumulated valuable, high-growth experience in the US. Ramping up engagement with these Canadian stakeholders is an important element of buttressing the Canadian high-growth ecosystem.

Such external efforts, however, must be matched by the development of programs structured to help facilitate the development in Canada of the key competencies lacking in the Canadian ecosystem. Section II of the white paper explores the key management and executive competencies identified by interviewees as the greatest challenges to scaling up and maintaining global competitiveness.

The Canadian Management Brain Drain

"To build a high-growth firm, you're looking for the 0.1% of the managerial population who is able to navigate the complexity and nuance of a high-growth path. Unfortunately for Canadian technology companies, these very rare individuals are more often than not poached by companies in the United States or leave to found their companies there. And thus, while Canada is not losing a huge overall percentage of talent, the talent that is lost is crucial and highly productive. These 0.1% are smart and single-minded in their vision – skills which are innate and can't be trained. We need to find a way to keep these people at home."

Mike Silagadze, founder and CEO Top Hat

SECTION II: DEFINING THE MANAGEMENT CHALLENGE

The interview research conducted for this project makes clear that one of the primary challenges facing high-growth and high-growth-potential firms in Canada is a lack of experienced management and executive talent. To be actionable, this insight requires a deeper understanding of precisely which management and executive competencies are in short supply.

The second line of inquiry for this project thus focused on defining those competencies and building a detailed understanding of the specific executive talent gaps inhibiting the ongoing growth of Canadian technology firms. Across conversations with founders, executives, investors and other stakeholders, we asked, "What are the key management and executive competencies that you are challenged to obtain?"

The results, as highlighted in aggregate below, focus on five key functional areas.

Table 2: Executive and stakeholder responses to "What are the key management and executive competencies that you struggle to obtain?"*

Sales and marketing	68%
Organizational design and execution	30%
Product management	17%
Operational finance	15%
Internationalization	10%

**Note: Multiple responses permitted*

Across the interview series, a consistent refrain was that Canada's biggest asset is its technical talent. The country's biggest weakness, however, was seen to be a lack of talent experienced in managing growth. Interviewees described this experience gap as having an impact on multiple levels, given that experience in dynamic, hyper-growth technology verticals provides managers and executives with an ability to recognize patterns and reduce the time necessary to move on to new opportunities.

As one executive noted, "When you learn something for the first time, you go at a certain pace. When you know 'the language,' you move faster." Given the global competition underway for leadership in technology markets, there is no alternative but to learn and/or acquire those "language" skills. And here, interviewees insisted on the distinctiveness of technology markets as compared to other, more traditional markets by virtue of far shorter time to market and shorter product life cycles. This need for speed was seen as prompting in large part the criticality of the skill sets noted below.

Two main competencies were identified by stakeholders, in particular by founders and executives, as being in short supply across the management and executive ranks of Canada's technology ecosystem: high-growth sales and marketing, and organizational design and execution. These competencies are the subject of detailed review below. Three other competencies—product management, operational finance and internationalization—were also noted as key talent gaps, but of a lesser intensity. These experience gaps were described by interviewees as major dampeners on the speed at which high-growth Canadian firms can scale and push into global markets.

If the goal is to build globally competitive technology companies in Canada, addressing these gaps is a critical next step. In the following sections, we provide an in-depth description of how our interviewees portrayed the missing competencies and their impact on ongoing growth and scaling up.

Sales and marketing experience and expertise

The most explicit executive and managerial talent gap facing high-growth-potential companies in Canada was identified as a lack of experience in high-growth sales and marketing. Sixty-eight percent of interviewees who identified talent acquisition as a growth issue voiced this opinion. This sales and marketing experience gap was described in contrast to the foundational role sales plays in technology growth companies. As several interviewees noted, the best technology available won't scale-up without sales. Several also noted that while Canadian founders might believe success entails building the best product with little need for marketing, the key to success is in understanding how to sell a business rather than a product, and how to correctly identify and sell a value proposition to a particular client. Again, the accelerated speed at which products must hit the market, and at which they mature, were seen to make the transfer of knowledge and experience from slower-paced industry sectors far less successful.

There was consistent recognition across interviews that a strong sales organization makes all other business operations easier, making sales the "big issue" for Canadian technology company growth. As the founder and CEO of one Ontario-based technology company noted, "There is a severe lack of individuals who have successfully sold modern cloud-based technologies at high volume and rapid pace." According to interviewees, traditionally technology-centric founding teams must look outside of the organization for sales expertise, and in particular, expertise that understands access to American and international sales channels. However, limited domestic experience with proven, high-growth technology sales skill sets means those searches are at best expensive and at worst fruitless.

Sales experience, however, was not the only issue. Rather, it was clear across interviews that the lack of a sales and marketing skill set across Canada also related to the difficulty developing effective

sales organizations. This organizational development function was viewed as especially relevant for business-to-business and software service companies who cannot rely on third-party platforms as sales channels.

Moreover, building a robust sales organization requires a pipeline of talent that has not only the acumen but also the desire to pursue a sales-related career. There was broad consensus that sales has been overlooked as a career path among Canadian post-secondary graduates, despite higher than average compensation packages and the transformation of the technology sales model away from the outdated "door-to-door salesperson" stereotype. Interview subjects repeatedly raised the fact that no Canadian university operates a program focusing specifically on sales, let alone on technology sales. And thus, despite market demand for technology sales professionals, students are perceived to be graduating from post-secondary programs without the necessary complement of tactical and analytical skill sets required to hit the ground running.

> **"Selling is holistically misunderstood. People generally think sales is magic, whereas in reality, it's much more like engineering – it is data driven and analytical."**
>
> **Loren Padelford, Chief Sales Scientist, Shopify**

The same is true in marketing domains. Across interviews, a belief emerged that the approach to marketing taught in Canadian universities is still largely built around the pillar of "marcom," teaching promotion through advertising, brand language, packaging, publicity, and public and corporate relations, in a traditional consumer-packaged goods orientation. In contrast, interviewees suggested that the best post-secondary programs in the US emphasize predictive and analytical marketing techniques that speak to the needs of today's cohort of high-growth technology companies.

> **"Many people think the product will sell itself, the less naïve think marketing will, but it actually takes sales acumen, brute force and hustle."**
>
> **Steve Cody, founder and CEO, The Better Software Company**

As one Canadian-based angel capital investor noted, "One of Silicon Valley's greatest differentiators is that they have succeeded at strategic planning around quantitative, predictive marketing metrics, while this whole chain of approach eludes Canadian companies." The key skill sets identified with sales and marketing in the interview series included: advanced customer segmentation, the use of big data, automated customer acquisition, search engine optimization, analytics, A/B testing, content marketing and digital marketing. Equally critical was the ability to complement these technical skill sets with an understanding of international markets, both in terms of their regulation and their cultures.

Again, the causes of the sales and marketing gap were described as multifaceted and self-reinforcing. The scarcity of experienced talent reflects the lack of large technology firm density. This lack of scale indicates an absence of robust and sustained revenue generation among incumbent Canadian technology firms. The availability of experienced, recycled sales and marketing talent is subsequently at a premium. While foreign technology multinationals have a strong presence across Canada, these are more often than not research and development divisions. Sales and marketing functions are rarely stationed in Canada. When a multinational's sales team is located in Canada, such as Salesforce's operations in Toronto, the focus is generally on regional rather than international sales. Little in the way of global sales expertise is developed as a result.

The continued lack of a domestic stock of experienced technology sales executives not only risks a continued dampening of the growth paths of Canadian technology companies, but may also force the expansion of growth outside Canada, at the expense of domestic employment. Across our interviews with firm founders and executives, a common approach to mitigating the sales gap was to establish a US sales operation. While this may make strategic sense for the firms involved, it does nothing to alleviate the expertise gap and slows employment growth in Canada.

This gap can be alleviated in part in the short and medium term through recruitment of international sales executives. However, to sustainably address this expertise gap, and to build a sufficient stock of domestic talent with the sales-related skill sets to help high-growth companies scale, sales-related programming must be developed that targets current executives and directors, as well as a next generation of students and entrepreneurs.

Organizational design and execution

Building a successful startup brings one set of challenges. Evolving that startup into a scale-up, at a significantly higher level of growth, brings a whole new set of challenges. While the Canadian innovation ecosystem provides a wealth of support for early-stage ventures through, among other initiatives, a network of over 140 start-up assistance organizations, there is little in the way of support for the more mature, higher-growth-potential firms that are the subject of this research.

As pointed out in the recent report of the 2015 Waterloo Innovation Summit, in order to promote the growth and sustainability of Canada's innovation and technology ecosystem, an expansion of programs supporting scale-ups is necessary. The report notes, "Recognizing the significant contribution that high-growth companies make to employment and economic prosperity, jurisdictions around the world are focusing increasing attention on the art of scale. Canada, a clear underachiever, must concentrate resources, mentorship and programming in this area as a necessary

next step in the evolution of its innovation ecosystem."[40]

The need for scale-up programming is readily apparent from the interviews conducted for this project. Founders, investors and policy-makers alike noted the lack of support available to firms who have graduated from accelerators or whose maturity outstrips the services provided therein. The needs of these firms facing the next level of growth are significant and differ substantially from those of startups. Of particular concern to the firms engaged for this project was the issue of organizational design.

> **"There is no road map for how to scale a high-growth organization in a dynamic and quickly changing technology market."**
>
> **Chris Arsenault, Partner, iNovia**

As noted across the interviews, firms experiencing rapid growth are often deeply uncertain as to how to develop an organizational structure that will effectively enable continuous growth, clarify authority and responsibility, and support communication on a larger scale, while simultaneously sustaining the capacity for innovation that made them a successful startup.

While expanding from a small team of co-founders or technology-centric teammates to an organization of 15 to 20 people was seen as an organic process, the founders we spoke with identified scaling beyond 15 employees as a challenge that few were prepared for. As one founder noted, "Building a startup was easy; there are literally books on this. To build a real company, however, left me without much to turn to."

Several interviewees from both Canadian and international VC groups noted the need to help founders become better executors of strategy, with particular focus on execution during periods of exceptional growth. Founders, too, talked about not knowing how to navigate the various inflection points of growth or how to organize management and hierarchy at the critical 15–50 employee stage. Given their own lack of experience, founders have no choice but to learn through trial and error, repeating mistakes that have already been made by others.

Experienced founders noted such difficulties as balancing immediate short-term goals with the need to articulate a clear vision for a growing team: building a supporting structure, with clear lines of authority, that at the same time enabled them to remain nimble. As several founders noted, "You simply don't know what you don't know." Many observed that high-growth firms fail to thrive in part due to their inability to navigate the execution and organizational design challenges that arrive at this later stage.

Obviously, successful growth firms find a way to navigate these periods of uncertainty. They do so, where possible, through the recruitment of experienced talent, executive coaching for homegrown talent and, in some cases, through experimentation. Kitchener-based Miovision provides an interesting example of experimentation in organizational design. Founder and CEO Kurtis McBride developed an organizational structure based on teams that emerge from and evolve around specific projects. Miovision's approach was modelled in part on the concept of holacracy pioneered by Zappos, and was developed through studying how the company's employees self-organized on particular projects. McBride cautions that there is no guarantee the model will scale as the company grows from its current 100 employees to the 500 he hopes to reach.

Such experimentation may in itself be beneficial, but it nonetheless reflects the lack of experience available in the ecosystem for the organizational challenges faced by high-growth companies like Miovision. A lack of precedent success means founders struggle to find experienced management talent to support them in scaling the organization and executing on strategy and growth plans in an expanding corporate structure. The lack of such talent is felt not only in difficulty hiring, but in the absence of networks, formal or informal, in which design concerns are discussed. While organizational design talent is available—for hire or in the form of mentorship—from successful firms in other industries, large-firm experience is not always a cultural match with the pace and uncertainty of a high-growth technology firm.

Finally, difficulty in structuring growth is intertwined with the issue of access to capital. As noted by several venture and angel capital investors, CEOs overly focused on raising money have less capacity for the important task of building a sustainable and yet nimble growth organization. As noted by founders, advisors and investors don't themselves always have sufficient experience to help them address the design challenges of rapid growth.

Three additional competencies can be viewed as tier II gaps and are worthy of ongoing attention.

Product management

As with sales and marketing, and organizational design, several interviewees noted that the scarcity of successful end-to-end and high-growth product development in Canada has led to a lack of sufficiently experienced product managers. "Finding product managers is legendarily difficult," noted the CEO of one mid-sized Canadian technology firm. During this company's growth phase, experienced product management talent was recruited aggressively from US competitors. The shortage of experienced talent with this skill set is again viewed as a result of insufficient high-growth firm density in Canada. Silicon Valley's far more dense, high-growth environment means

greater access to talent that understands both the engineering- and business-related demands central to successful end-to-end product management.

Strategic finance

Across the interview series, a consistent refrain emerged as to the importance of complementing the usual technology skill sets of founding teams with more in-depth financial skills. Knowledge related to strategic finance, and in particular how to finance high-growth and work with investors, were noted as weaknesses among the current cohorts of founders and founding teams. Education in two specific areas was seen as in short supply: alternatives to traditional financing and balancing company growth against investor incentives. As one interviewee noted, "We're teaching this concept that the goal is to get funded as a Series A. That is not a goal. You should be avoiding a Series A like a plague. Your goal is to build a company, not to build a funding round." Further down the growth path, a shortage of CFOs with experience taking technology companies public is considered a significant gap in the Canadian ecosystem.

International market exposure and experience

While high-growth Canadian technology companies are equally at home in Canada and the US, broader international market penetration is still relatively rare. One policy stakeholder noted that this gap is part and parcel of a lack of board and advisory diversity: "How can you expect a CEO to want to target the African market if she has no one who has an ability to help advise her on this market?" The homogeneity of founder and advisor experience means looking beyond the US is the exception rather than the norm. A majority of those interviewed noted that a truly international strategy goes well beyond US market penetration. To formulate and act upon such a strategy, interviewees noted, executives must have far better grounding in market-specific regulatory issues, political economy and the basics of government relations and advocacy.

Together, these five competencies represent areas for immediate action. Programming, both academic and non-academic, that addresses these management and executive deficiencies is key to the success of high-growth Canadian technology firms. Developing these programs is the mandate of the Lazaridis Institute.

CONCLUSION: MOVING FORWARD WITH SOLUTIONS

This white paper has sought to bring to light the challenges facing today's cohort of high-growth Canadian technology firms. More than 100 technology leaders across Canada and beyond were engaged in a structured qualitative process to gain an in-depth understanding of these challenges and, in particular, of the deficits of core managerial competencies that underlie the challenges.

The results are clear. The low density of established technology firms in Canada leaves the technology ecosystem woefully under-resourced with respect to experienced executive talent. Access to capital, while a driving issue for early-stage companies, ceases to be a significant challenge for next-stage firms with high-growth-potential. Rather, across the interview series, a clear consensus emerges that because relatively few Canadian managers and executives have experience scaling technology firms to IPO, or to globally competitive revenue status, current and future generations of potential high-growth technology companies risk being left underdeveloped. This managerial talent gap is most pronounced in two areas: sales and marketing, and organizational design and execution. Three further skill sets are also viewed as lacking: product management, strategic finance and internationalization.

While a lack of precedent success and the subsequent low density of technology firms is at the heart of this management gap, Canadian post-secondary institutions are not adequately addressing the problem of technology and management. Too often, management and technology are taught in isolation. Technology graduates understand early-stage entrepreneurship, but have little appreciation of the skills or strategies needed for follow-on growth. Business school graduates bring a laser-like focus to cost and operational efficiencies, but don't necessarily understand the demands of high-growth technology markets. Marrying management and technology across undergraduate, graduate and executive programming is necessary to bring the right mix of skills to the pipeline of future employees for Canada's technology ecosystem.

In the absence of changes to executive and formative education, the focus will remain on the recruitment of talent to Canada from abroad, in particular from the US. This talent channel, however, is limited. The depth of opportunity in Silicon Valley, as compared to relatively few comparable opportunities in Canadian ecosystems, plays a significant role in dampening the northward flow of talent. "Stranded risk," defined as the risk of being left with no local follow-on professional opportunity, is consistently raised by interviewees on both sides of the border as a major impediment to talent relocation to Canada. And while some companies will seek out experienced sales and execution experience in the US and allow them to work remotely or commute in, these strategies will do little to help improve the quality of more junior Canadian talent over the long term.

Developing solutions to the key managerial and executive talent challenges surfaced in this white paper is crucial to helping a next generation of Canadian technology firms scale into globally competitive companies. While the development of high-growth, globally competitive technology firms will not be enabled by any one organization alone, there is an important mandate here for the Lazaridis Institute. Given the key deficiencies in managerial talent that are perceived to be holding back the progress of high-growth-potential firms in Canada, the creation of appropriate programming, beginning at the level of executive education, will make a tangible and meaningful impact on the evolution of today's top Canadian technology companies. Extending the lessons learned into undergraduate and graduate programming will create even greater opportunities for generations of Canadians to come.

APPENDIX 1: LIST OF INTERVIEWEES

Chris Arsenault, Managing Partner, iNovia, Montreal, Canada

Simon Backer, Industrial Technology Advisor, National Research Council, Vancouver, Canada

John Baker, President and CEO, Desire2Learn, Kitchener, Canada

Janet Bannister, General Partner, Real Ventures, Toronto, Canada

Katherine Barr, General Partner, Mohr Davidow Ventures, Silicon Valley, United States

Trish Barrow, Innovation Advisor, National Research Council, Toronto, Canada

Paul Barter, Former VP of Research and Strategy, T4G, Toronto, Canada

Nigel Beck, Vice President, Corporate Development, Business Development, Strategy, IBM, Silicon Valley, United States

Paul Bien, Director of Insights, Manager — Future of Canada Centre, Deloitte, Toronto, Canada

Jeff Booth, President and CEO, BuildDirect, Vancouver, Canada

Nicola Breugst, Professor, Technical University Munich, Munich, Germany

Sean Brownlee, Partner, Rho Ventures, Montreal, Canada

Oliver Buecken, Head of Entrepreneurship Education, Unternehmertum, Munich, Germany

Dave Caputo, Co-Founder, President and CEO, Sandvine, Waterloo, Canada

Matt Celuszak, Co-Founder and CEO, CrowdEmotion, London, United Kingdom

David Ceolin, Managing Partner, Innovation Grade Ventures, Toronto, Canada

Virginia Cha, Entrepreneur in Residence, Institute of Innovation and Entrepreneurship, Singapore Management University; Adjunct Professor Entrepreneurship at INSEAD, Singapore

Amiee Chan, President and CEO, Norsat International Inc., Vancouver, Canada

Simon Chong, Managing Partner, Georgian Partners, Toronto, Canada

Steve Cody, CEO, The Better Software Company, Ottawa, Canada

Bob Crow, Executive in Residence, Institute for Quantum Computing, University of Waterloo, Waterloo, Canada

Marcus Daniels, Founder and CEO, HIGHLINE/Extreme, Toronto, Canada

Daniel Debow, SVP, Salesforce, Toronto, Canada

Troy DeFrank, Trade Commissioner, Consulate General of Canada, Seattle, United States

April Dunford, Founder, RocketWatcher, Toronto, Canada

Eli Fathi, CEO, Fluidware, Ottawa, Canada

Geoffrey Fawkes, Industrial Technology Advisor, National Research Council, Vancouver, Canada

Jason Flick, Co-Founder and President, Flick Software, Ottawa, Canada

Craig Follett, Co-Founder and CEO, Universe, Toronto, Canada

David Fransen, Executive Director, Institute for Quantum Computing, University of Waterloo, Waterloo, Canada

Jeff Gadway, Director, Product Marketing, Vidyard, Kitchener, Canada

JF Gauthier, CFO and Head of Business Development, Compass, Silicon Valley, United States

Shannon Glenn, Director General, Policy Branch, Science and Innovation Sector, Industry Canada, Ottawa, Canada

Mark Gregory, CEO and President, eBet Online Inc., Toronto, Canada

Marc Gruber, Professor, EPFL Lausanne, University, Lausanne, Switzerland

Robert Grueter, Private Investor, Munich, Germany

Karna Gupta, President and CEO, Information Technology Association of Canada, Toronto, Canada

Daryl Hatton, Founder and CEO, FundRazr, Vancouver, Canada

Bernard Herscovici, CEO, Art2Wave, Ottawa, Canada

Uwe Horstmann, Co-Founder, Project A Ventures, Berlin, Germany

Randall Howard, General Partner, Verdexus, Waterloo, Canada

Andrew Jackson, VP, Client Services, Accelerator Centre, Waterloo, Canada

Tim Jackson, EVP Corporate and Community Development, MaRS, Toronto, Canada

Arif Janmohamed, Partner, Lightspeed Venture Partners, Silicon Valley, United States

Cedric Jeannot, Founder and CEO, APrivacy, Waterloo, Canada

Robin Jones, CMO, Payfirma, Vancouver, Canada

Sheema Khan, Patent Agent, Shapiro Cohen, Ottawa, Canada

Mike Kirkup, Director, Velocity, University of Waterloo, Waterloo, Canada

Iain Klugman, CEO, Communitech, Kitchener, Canada

Jan Kratzer, Professor, Technical University Berlin, Berlin, Germany

Dan Latendre, CEO, Igloo Software, Kitchener, Canada

Tim Lavell, Head of Carrier Partnerships, Canada, Microsoft, Toronto, Canada

Leo Lax, Managing Director, L-Spark, Ottawa, Canada

Bruce Lazenby, President and CEO, Invest Ottawa, Ottawa, Canada

Carol Leaman, President and CEO, Axonify, Waterloo, Canada

Anthony Lee, Managing Director, Altos Ventures, Silicon Valley, United States

Andreas Liebl, PhD candidate at the Chair of Entrepreneurship, UnternehmerTUM, Munich, Germany

Michael Litt, Co-Founder and CEO, Vidyard, Kitchener, Canada

Peter Luong, Co-Founder, Caskadia Technology Labs, Vancouver, Canada

Sean Lynch, Product Manager, Dropbox, Silicon Valley, United States

Mark MacLeod, Founder, SurePath Capital Partners, Toronto, Canada

Darrell MacMullin, Managing Director and Founder, BitGold Inc., Toronto, Canada

Michael Mahon, Director, Strategic Investments and Partnerships, BDC Capital, Kitchener, Canada

Sacha Mann, Partner, Inventages Venture Capital, London, United Kingdom

Bill Mantel, Assistant Deputy Minister, Ministry of Research and Innovation, Toronto, Canada

Karl Martin, CEO, Nymi, Toronto, Canada

Alireza Masrour, Managing Partner, Plug and Play, Silicon Valley, United States

Kurtis McBride, CEO, Miovision Technologies, Kitchener, Canada

Mike McDerment, Co-Founder and CEO, Freshbooks, Toronto, Canada

Robert McGarry, Innovation Advisor, Concierge, Industrial Research Assistance Program, National Research Council, Vancouver, Canada

James McGourlay, SVP, Global Technical Services, OpenText, Waterloo, Canada

Rehka Mehr, Director, MassChallenge UK, London, United Kingdom

Craig Miller, CMO, Shopify, Toronto, Canada

Jim Moss, CEO, Plasticity Labs, Waterloo, Canada

Jack Newton, Founder and CEO, Clio, Vancouver, Canada

Alex Norman, Former CEO, HomeSav, Toronto, Canada

Mark Organ, Founder and CEO, Influitive, Toronto, Canada

Loren Padelford, Chief Sales Scientist, Shopify, Kitchener, Canada

Holger Patzelt, Professor, Technical University Munich, Munich, Germany

Olga Pawluczyk, President and CEO, P&P Optica, Waterloo, Canada

Michael Pley, CEO, COM DEV International, Cambridge, Canada

Sanjay Purohit, Trade Commissioner, Global Affairs Canada, London, United Kingdom

Johann Reich, Investment Director, Rheingau Founders, Berlin, Germany

Andrew Reid, Founder and President, Corporate Innovation, Vision Critical, Vancouver, Canada

Gerry Remers, President and COO, Christie Digital Systems Canada, Kitchener, Canada

Alyssa Richard, Founder, ratehub, Toronto, Canada

Paul Rivett, Director of Client Services, ventureLAB, Toronto, Canada

Andrew Robertson, Manager, Research Project, Communitech, Ottawa, Canada

Charles Armstrong, Founder and CEO, Trampoline, London, United Kingdom

Benjamin Rohé, Founder and CEO, MAS Angel Fund, London, United Kingdom

Stuart Ross, CEO, Pacific Insight Electronics Corporation, Vancouver, Canada

John Ruffolo, CEO, OMERS Ventures, Toronto, Canada

Claire Ruskin, CEO, Cambridge Network, Cambridge, United Kingdom

Jad Saliba, Founder and CTO, Magnet Forensics, Waterloo, Canada

Paul Salvini, CEO, Accelerator Centre, Waterloo, Canada

Dina Santos, Consul and Trade Commissioner (Investment), Consulate General of Canada, Silicon Valley, United States

Alec Saunders, Principal Technical Evangelist, Microsoft, Kitchener, Canada

Helmut Schonenberger, Co-Founder, UnternehmerTUM, Munich, Germany

Alex Senson, Analyst, RIC Centre, Toronto, Canada

Michael Serbinis, Founder and CEO, LEAGUE Inc., Toronto, Canada

John Shannon, Industrial Technology Advisor, National Research Council, Ottawa, Canada

Yona Shtern, Founder and CEO, Beyond the Rack, Montreal, Canada

Michael Silagadze, Founder and CEO, Top Hat, Toronto, Canada

Robert Simon, Senior Managing Partner, BDC Capital, Silicon Valley, United States

Kirk Simpson, Co-Founder and CEO, Wave HQ, Toronto, Canada

Judy Sims, Founder, Shopcaster, Toronto, Canada

David Stewart, Former Academic and Political Officer, Consulate General of Canada, Silicon Valley, United States

Terry Stuart, Chief Innovation Officer, Deloitte Innovation, Toronto, Canada

Matt Switzer, VP Partnerships and Corporate Development, Hootsuite, Vancouver, Canada

Kevin Talbot, Co-Founder and Managing Partner, Relay Ventures, Silicon Valley, United States

Bill Tam, BC Technology Industry Association, CEO, Vancouver, Canada

Evgeny Tchebotarev, Co-Founder and Chief Photography Officer, 500px, Toronto, Canada

Stephen Thompson, Consul and Senior Economic Officer, Ontario International Marketing Centre, Government of Ontario, Silicon Valley, United States

Emma Titmus, Product Development Associate, London Stock Exchange, London, United Kingdom

Joerg Traub, Managing Director, SurgicEye, Munich, Germany

Michael Turner, VP, System Strategies, Wesley Clover, Ottawa, Canada

Thierry Weissenburger, Consul and Senior Trade Commissioner, Consulate General of Canada, Boston, United States

Boris Wertz, Founder and General Partner, Version One Ventures, Vancouver, Canada

Mike Wessinger, Co-Founder and CEO, PointClickCare, Toronto, Canada

Stian Westlake, Executive Director, Policy and Research, NESTA UK, London, United Kingdom

Patrick White, Director of Business Operations, L-Spark, Ottawa, Canada

Steve Woods, Senior Engineering Director, Google, Kitchener, Canada

Dave Yach, Co-Founder and CTO, Auvik Networks Inc., Waterloo, Canada

Michelle Zatlyn, Co-Founder, Head of User Experience, CloudFlare, Inc., Silicon Valley, United States

John Zimmerman, Consul and Senior Trade Commissioner (Investment), Consulate General of Canada, Silicon Valley, United States

APPENDIX 2: LAZARIDIS INSTITUTE AND CATA SURVEY

In partnership with the Canadian Advanced Technology Alliance (CATA), the Lazaridis Institute developed and launched a public survey on September 8, 2015. As of September 30, 2015, 100 responses were submitted to this survey. The results are listed below:

- 100 responses; 67% from technology company leadership
- Access to qualified executive talent is among leading challenges to ongoing growth. Top responses are:
  - 32% — Access to qualified management/executive talent
  - 23% — Access to capital
  - 16% — Access to qualified talent/skills (at all levels)
- Shortage in management talent caused by:
  - Lack of local supply
  - Ability to offer total compensation
- Core competencies that are lacking:
  - International awareness
  - Sales and marketing expertise
  - Technical and financial literacy

About CATA: The Canadian Advanced Technology Alliance (CATA*Alliance*) is the largest high-tech association in Canada.

ABOUT THE AUTHORS

Dan Herman is co-founder and executive director of the Centre for Digital Entrepreneurship and Economic Performance (DEEP Centre Inc.) and a senior advisor on the development of the Lazaridis Institute. A Lazaridis School of Business & Economics alumnus, Dan has spent over a decade working with Canadian executives and policy-makers to better understand the shifting nature of competitiveness and the strategic responses available to both public and private stakeholders. Dan has served as a senior policy advisor in the Government of Ontario's Ministry of Economic Development and Innovation and was previously the program director of nGenera Insight's Government 2.0 research program. Dan holds an MSc in Development Studies from the London School of Economics, a BBA from Wilfrid Laurier University and is a PhD candidate in political economy at the Balsillie School of International Affairs.

Sarah Marion is a senior researcher at the Lazaridis Institute for the Management of Technology Enterprises. Sarah recently held a Graduate Fellowship at the Centre for International Governance Innovation (CIGI), and previously worked at Target Canada. She holds a Master of International Public Policy from the Balsillie School of International Affairs and a Bachelor of Commerce from Queen's University.

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