Understanding the Talent Gap:

Lessons + Opportunities for Canada

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A Discussion Paper

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INTRODUCTION

There is considerable debate among employers, policymakers and education institutions about whether an imbalance exists between labour supply and demand. This is commonly referred to as the "skills mismatch." Concerns about skills mismatches are intensifying as policymakers, educators and employers are attempting to anticipate which skills will be required in a rapidly changing, technology-driven economy.

A key challenge in anticipating skill needs is the lack of a system for gathering adequate and appropriately granular labour market data. Shifts in the economic landscape and antiquated methodologies for data collection results in mechanisms that are inadequate for industry to communicate their talent needs (also known as labour market signals). In order for educators and training providers to create the most relevant training programs, they must have clear, reliable and real-time understanding of skill demand by employers.

This can be challenging in any context but it is particularly challenging in a country like Canada where the economy is dominated by small and medium-sized businesses: approximately 97.9 percent of all firms in Canada are considered small businesses, defined as firms with one to 99 employees.[1] Those small companies send out weak labour market signals individually. Contrast that to large companies, which put out strong labour market signals. For example, if one company announces they are hiring 500 sales people, it is easy to identify that there is labour market demand for sales people and respond accordingly. However, if 50 companies individually announce they are each hiring 10 sales people, it sends out 50 weak labour market signals instead of one strong one, even though the net talent demand is the same.

Weak signals, combined with the sheer volume of noise in the labour market, make it difficult for training organizations to understand labour market needs at a granular, competency-based level. There is also the added complexity of how quickly these signals shift and skill demands from employers change, something that becomes more frequent in an innovation-based economy.

The inability to understand skills needs arising from demand and respond appropriately will only become more acute as the rate of automation continues to increase. Recognizing this challenge, policymakers are being forced to take a hard look at the existing education, training and employment infrastructure in the country and explore actions that can be taken to address the current economic reality. There is growing recognition that new approaches are needed to provide continuous learning and skilling opportunities so that Canadians can benefit from the changing labour market. The Advisory Council on Economic Growth has called for a new "third pillar" to our workforce training infrastructure, noting "at a time of rapid labour market change, our system does not sufficiently enable working adults to continually upgrade their skills."[2]

There are a number of attributes for this third pillar that will influence its design. It must be industry-driven to shorten the path from labour market signal to talent production. Programming must be nimble and responsive, given the pace that talent needs are shifting. And it must be scalable yet responsive to the needs of smaller players. This will require systems that are capable of capturing, aggregating and amplifying labour market signals in real time at a granular level.

A first step in developing this new third pillar is to better understand the talent and skill needs that employers are struggling to fill. This paper captures insights gathered over an eight-week period through multiple employer roundtables held with 50 tech-focused companies in the Greater Toronto Area and Kitchener-Waterloo region. The goal was to better understand their talent needs and the challenges they face in identifying, recruiting and retaining talent.

CONTEXT

The Brookfield Institute for Innovation + Entrepreneurship has been extensively studying the looming impacts of automation on both the economy and society to identify the extent and impact of this disruption to the labour market. Our report *The Talented Mr. Robot* found that over the next two decades, automation could impact 42 percent of the workforce by eliminating some jobs and radically reshaping the skills required for others.[3]

At the same time, the report was not all doom and gloom. Historically, as technological revolutions change industries and sweep through the economy, the net result is that for the many jobs that may be lost, new (and, at times, unanticipated) jobs are created. For example, according to the Information and Communications Technology Council (ICTC), the Canadian information and communications technology (ICT) sector is projected to have 216,000 unfilled technology-oriented jobs by 2021.[4] They also acknowledge that the existing education system is not keeping up with demand. In 2015, only 29,000 graduates came from an ICT field, while existing demand calls for at least 43,000 ICT graduates per year.[5] Technology changes opportunities, and it is incumbent on government to ensure we have the right tools and training infrastructure in place to capitalize on it.

METHODOLOGY

This report synthesizes findings from literature on workforce and talent development as it pertains to transitioning people from training programs into employment. The Brookfield Institute for Innovation + Entrepreneurship hosted a series of five roundtables that included many of Canada's most promising startups and scale-ups. The vast majority of these employers are technology companies, many of them software-as-a-service (SaaS) companies. The rationale for selecting these companies is that they are rapidly growing and knowledge-intensive. We asked them about their talent needs and how they go about meeting those needs. The thrust of this report synthesizes the insights from these employer-based roundtables. A full list of the firms can be found in Appendix 1.

This report aims to make a valuable contribution to policy discussions focused on talent development. However, it is important to note a number of important characteristics related to the scope, methodology and the data availability, including:

- Participating employers for this report are all small to medium-sized enterprises (SMEs), as defined by Statistics Canada.
- Employer and training provider-based insights were drawn heavily from startups and scale-ups that are software-as-a-service (SaaS) companies.
- Regional representation of firms is limited to the Greater Toronto Area and Kitchener-Waterloo region.

KEY FINDINGS

The key findings are based on conversations from our roundtables and are focused on understanding the talent needs of rapidly scaling small and medium-sized technology-focused enterprises.

In our roundtable conversations, we wanted to focus particularly on identifying and understanding the appetite of these firms to meet their talent needs through engaging mid-career professionals and, specifically, the perceived opportunities and challenges of targeting mid-career professionals for recruitment.

From the perspective of employers, we have synthesized our insights around four broad stages that employers undergo when recruiting talent and the different questions, challenges and opportunities they identify within each stage.

IDENTIFYING TALENT NEEDS

This stage refers to employers identifying the skills, experiences and qualifications they desire in prospective employees.

Growth Mindset

Employers state they require employees to possess a growth mindset – that is, employees that are highly adaptable, able to solve a wide variety of problems, and take initiative in a startup environment. As one employer stated, "The people we have are constantly reskilling. We present the problem because of where the market is headed, and they're teaching themselves new technologies [to solve it]."[6] Survey evidence from Stack Overflow suggests self-driven learning is prevalent and expected among software developers.[7]

Startups and scale-ups typically speak of requiring prospective employees to demonstrate "culture fit". While this term is both ambiguous and loaded, a critical aspect of culture fit that emerged in discussions is the propensity of prospective employees to demonstrate a growth mindset. And yet, character traits associated with having a growth mindset seemed difficult to quantify. As one participant noted, "You have to separate the things you can train into somebody from the raw personality and cultural traits that will make them a successful employee in a startup environment."[8]

Employers perceived that mid-career professionals could lack this cultural fit because of their own perceptions that employees from highly structured environments would not have experienced an environment that encouraged a growth mindset. And yet, one employer noted that, "We would need to create some training to create a sense of urgency to work on projects that are quickly pivoting. We need to retool their brain."[9] This suggests that some employers are open to fostering a growth mindset through training and placement into the right environment.

Specialized Technical Talent

Employers identified the need for specific technical requirements for their teams and that they seek experience and very specialized skill sets. Employers recognize that demand for specialized technical skill sets changes rapidly and that skills can quickly be obsolete. As one employer noted, "Software development in the workplace is always evolving."[10] Employers specifically noted the need for back-end developers and/or full-stack developers with applied experience and foundational knowledge so they are immediately productive. As one recruiter puts it, "'Temployees'.... We do not have time to train junior developers. They need to be able to hit the ground running."[11] Related to the need for specialized technical talent, we saw there is little appetite for more general junior development talent that lacked applied experience. The sense was that there was a strong pipeline of junior developer talent available, but that finding more senior talent, especially those willing to lead teams, was the real struggle.

People Management Skills

Employers stated that they sought leadership skills from prospective employees to be able to help manage teams. Leadership skills become increasingly important as employees advance in their careers. This insight is consistent with reports from large employers who identify leadership as an important skill set for evaluating mid-career employees. A 2016 Business Council of Canada employer-based survey finds that leadership skills are one of the most important skills for evaluating mid-career candidates.[12]

Interestingly, this seemed to be one of the more difficult roles to fill in a startup/scale-up environment. One employer stated, "Finding people with a bit of people management while still being technically proficient to become a team lead is difficult to fill for. Should we take someone with people management then pick up technical skills

or groom up technical people to get that people management? That is the question."[13] Another employer echoed this sentiment, saying "You need people who understand technical skills and people skills [to grow] a team, which is hard to find."[14] This sentiment, that there is a need to for skills development for both specialized and soft skills, that leadership is critical and management experience is lacking is consistent with other findings. The OECD reports that leadership skills to manage others in jobs tend to be lacking not just in Canada but in other jurisdictions.[15] Alternatively, mid-career professionals are perceived to have some leadership skills and bring maturity that would be valuable for the employers with whom we spoke. Recent graduates were perceived as not intrinsically possessing such leadership skills, as was understood that such skills are best developed through experience.

Regional Needs

The demand and supply for skills differed regionally, even in two regions that are physically quite close. Toronto and Kitchener-Waterloo are about 100 km apart and are municipal regions where the technology sector comprises a large and growing share of employment. Toronto employs 286,100 workers in the technology sector whereas Kitchener-Waterloo-Cambridge employs 23,200 technology sector workers.[16] Accordingly, startups/scale-ups recognize "every region has a different industrial profile, which requires industry-specific knowledge from the labour pool."[17] Employers in the Kitchener-Waterloo region noted a high demand for technical sales and design expertise.[18] Employers in Toronto also expressed a high demand for technical sales expertise and industry-specific specialized technical talent, however noted that finding design expertise was relatively easy. Regional differences and their resulting talent nuances often don't get captured in high-level reports on labour market needs, but only come through granular analysis.

SOURCING TALENT

This stage refers to the pipelines employers use to source the skills, experience and qualifications they desire in prospective employees.

Referral Networks

Employers consistently reported that they rely heavily on informal peer-to-peer referral networks to identify and recruit talent. Startups/scale-ups frequently speak to one another about their talent needs and at times will refer prospective employees to one another, hence playing a critical role in brokering talent across the ecosystem. Given the personal relationships involved in sourcing talent from individual networks, senior executives are often involved in the recruitment and hiring process. As one employer noted, "[When] you do not have expertise in-house…you dread the search. The CEO takes initiative and puts the recruiter hat on."[19] It was also common to hear the sentiment, "If I find candidates that are great that do not have a job, I will refer them to another company."[20]

At the same time, we heard that networks tend to overlap with those of other employers, including competitors. As such, employers speak about drawing from a shrinking pool of talent that is not keeping pace with demand. We heard from some employers that they have created informal "no-poach" understandings with one another.[21] Furthermore, as companies begin to rapidly scale, they realize that referral networks are not a scalable model for recruitment and relying just on these means too many missed opportunities to recruit top-notch prospective talent. A recent MaRS report found that many employers tend to rely on in-person recruiting and referrals whereas job seekers are more likely to look for work through online job ads.[22]

Co-Op Programs

Co-op programs were continually identified as a key form of work-integrated learning offered by universities and colleges. Work-integrated learning is a broad term that encompasses various learning opportunities centered on the integration of academic learning and practical application in chosen work environments. Co-op programs are defined as "guided professional and employability skill development through alternating full-time study and full-time employment across an academic program."[23] They are often discussed as a talent pipeline for recent graduates of post-secondary institutions. On this front, Canada is fortunate to have world-class co-op programs that are well-suited to startup/scale-ups.

Employers noted that these programs serve as key pipelines, but have mixed experiences relying on co-op as a source of talent. On one hand, they are ideal to test potential longer-term employees to determine fit. One employer described co-op as a "...vetting process. Once they are in the door and feel the culture. We retain about 40 percent of co-op students longer-term...We are using co-ops for future growth."[24] Co-ops were also described as a "...platform for 'try before you buy' scenarios."[25] They also serve as another potential referral network to source talent. As one employer noted, "[Co-op students] go back to build our brand and refer other high-caliber students to us. Students build our talent pipeline."[26]

On the other hand, there are challenges to using co-op students. One reason is they require large amounts of staff resources for recruitment, training and supervision. As one employer succinctly noted, "Co-ops require onboarding – we get value, they contribute and we pay them but they need to be able to ramp up quickly and hence, we cannot just have co-ops."[27] This sentiment is consistent with existing research on employer perspectives on work-integrated learning programs like co-op. The Higher Education Quality Council of Ontario suggests that the single biggest challenge facing employers that take advantage of work-integrated learning opportunities such as co-op is the amount of staff time it takes to recruit, train and supervise co-op students. The smaller the firm, the more likely it is to cite this as a challenge.[28]

Furthermore, employers note that many students lack requisite soft skills. One employer found that many students "don't know how to be good team players and build with a team. They do not have realistic expectations."[29] This is consistent with employer-based surveys that suggest students are lacking in expected soft skills.[30] Finally, the timelines of co-op programs are often misaligned to the timelines of startups/scale-ups. As one employer noted, "We are always late to the co-op cycle because of our budget cycle and how unpredictable it is."[31]

As such, employers have turned to work-integrated learning models that enable them to keep students for a longer period of time. One employer reported relying on a professional experience year program, which functions like a 12 to 16-month co-op program.[32] Despite mixed reviews from employers on the value of co-op, there was a high level of agreement that they are a valuable pipeline for young talent.

Rapid-training

There are rapid training programs to help job seekers develop relevant skills in a short amount of time relative to other typical pathways such as post-secondary education or vocational schooling. Most are intended to serve an audience of adult learners that have different learning needs from a typical post-secondary student.

One rapid training program that came up repeatedly amongst startups/scale-ups was coding boot camps. These are defined as "intensive, accelerated learning programs that teach beginners digital skills...that vary in length from six to 28 weeks, although the average boot camp length is 12 weeks long."[33] These coding boot camps exist to help startups/scale-ups meet their

technical talent needs. However, many employers indicated that graduates from coding boot camp programs are not necessarily a good fit as much of the talent is too entry-level for their needs. Employers universally stated that they do not need junior front-end developers, which is the profile of the typical coding boot camp graduate. Coding boot camps, employers claim, have not been training the much needed specialized technical talent alluded to earlier.[34] In addition, employers perceive many coding boot camps as lacking in equipping prospective candidates with a growth mindset. As one employer put it, "The best developers are incredibly disciplined, methodically minded and work independently – coding schools are organized and people who are participating often lack that skill set to teach themselves."[35]

Furthermore, employers perceived coding boot camps to be lacking in rigour with respect to their admissions processes. In the words of one employer, "Anyone can get in...there must be an element of something selective and competitive for it."[36] Some coding boot camps are adapting their programming to be more responsive to industry need, but the lack of clear, skill-based labour market data available makes this a challenge.

EVALUATING TALENT

This stage refers to employers evaluating and assessing prospective employees in determining whether they display the necessary qualifications for employment.

Show, not tell

Employers suggest that assessing talent is a relatively straightforward step. Employers often ask prospective employees to tangibly demonstrate their skills and will have them produce work. As a result, challenge-based interviews in which prospective employees must simulate solving a real-world problem are popular interviewing methods. One employer reported offering candidates an "opportunity to build a challenge marketing sales customer success, do the challenge on their own time, submit and, if the challenge is promising, they're invited in to present to the team where their presentation and communication granular is assessed."[37] The downside of this approach is that challenges can be time-consuming for candidates with little guarantee of payoff at the end. If the employer is targeting highly desirable candidates with multiple employment options, an overly onerous challenge-based interview process could be a turn off.

Another method to evaluate a prospective candidate is through their previous work. This puts employers in an active recruiter role. When hiring developers, one employer reported looking at open source projects on tools such as Github where a prospective candidate has participated in suggesting that "if someone has contributed to open source projects, that tells you that they have basic debugging skills and that they have good documentation."[38] Employers want see tangible demonstration of a prospective candidate's skills and any systems to highlight these were seen positively.

Assessing Unconventional Labour Market Signals

Hiring talent for startups/scale-ups is very competitive. As such, employers must look to other indicators that are not typical. As one employer noted, "If we could hire people who had great pedigrees, we would. Someone with computer science at Harvard is more likely to be a strong candidate, but we can't compete for that talent – we're forced to find the *diamonds in the rough,* but we have to get very good at that to turn it into an advantage."[39] Another employer spoke about hiring a line cook to be one of their public relations people. And yet another employer commented that "most tech folks who have been extremely successful have dropped off somewhere in their academic career, a lot of bigger wins come

from people who excelled in non-pedigree programs. Our best growth hacker...had a background that's totally unimpressive."[40]

However, employers also noted that conventional labour market validation signals are not necessarily strong indicators that the candidate is the right fit for their needs. One employer noted that their first hire was a "PhD in machine learning at MIT who left his last year to join the company. They were supposed to revolutionize the technology and it was a disaster – they had no practical application whatsoever."[41] Through these unconventional labour market signals, employers are aiming to determine whether they possess the growth mindset trait identified earlier. What this suggests is that there does not need to be a standard profile for someone who works in a startup/scale-up environment.

RETAINING TALENT

This stage refers to the efforts that employers put into developing strategies for keeping talent in their company.

Pathways for Growth

Some, but not all, employers have given careful consideration to creating pathways for career growth within a company as a talent retention strategy. This was most evident with technical talent, especially in light of a high demand for more senior technical talent and/or technical talent that also involves a people management role. Traditional growth pathways are generally made up of promotions that lead to roles managing ever larger teams. However, some employees are not interested or qualified to lead teams, though they are highly valuable workers. Instead of letting these workers languish, employers have been flexible with the type of pathways for career growth available for their employees. One employer stated, "We created some vertical paths on the technology side. We are celebrating people as they become individual contributors and giving them options. Example of one team lead that was in a people management role that did not want to be that. Found a different technical role for them that they wanted."[42]

Other employers reported having a fast pathway for career growth for junior talent as a means to encourage them to take on additional responsibilities. Employers referred to having to promote talent within to acclimatize them to new responsibilities. However, very few startups/scale-ups have the infrastructure in place to properly prepare their workers to take on additional responsibilities. One employer with over 200 employees that has the requisite infrastructure in place said that there is an "80/20 gap [and they have to be] focused on development people to fill that 20-percent gap, but it requires a robust process."[43]

A Rapid Ramp-Up

Startup/scale-up employers require employees that are able to ramp up quickly, which is all the more pressing given their business constraints. Furthermore, they lack the capacity to train their staff. This is especially true of recent graduates and students. As one employer put it, "No one comes out of school with the abilities we need, so companies are having to train employees. However, a lot of graduates come out and do not know how to be good team players and to build with a team."[44] Employers claimed they do not have "time to train junior developers. They need to hit the ground running and integrate quickly with their team."[45] Integrating with a team is what employers emphasize as being critical to ramp up quickly.

The lack of resources towards training is broadly consistent with what many small and medium-sized enterprises report. When there is training, it is often directed towards more highly skilled and more senior-level staff. Evidence shows that 70 percent of the training budget goes to this category

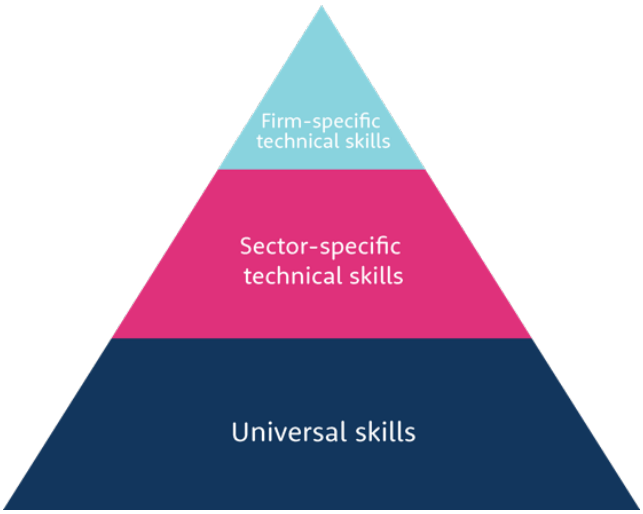
of workers, while lower-skilled employees are in higher need of professional development.[46]

OBSERVATIONS

The goal of gathering this research was to provide insight into the talent needs of employers for the purpose of better informing program design for training providers, particularly within the context of supporting career transition for mid-career workers. The following observations and considerations provide a framework for how to take these insights from employers and adapt them for training, whether through public or private institutions.

SKILLS IN DEMAND

Employers are seeking to hire employees with a variety of skills. To better understand how to translate skill demand into training, we must distinguish between different sets of skills and what kind of training programs are best suited to support this skill development. We can distinguish between three "tiers" of skills:



- **Universal skills**
  - These are skills that are used in nearly every job and across a multitude of sectors. These are the most transferable skills for participants and include literacy skills as well as "soft" skills such as communications, collaboration and problem solving. A "growth mindset", which has been identified as essential for employers, would also fall into this category.
- **Sector-specific technical skills**
  - These are skills that tend to be specific to one industrial sector (or closely related industrial sectors). For example, digital skills like web development, user experience design, sales and project management are broadly applicable to technology-oriented sectors.
- **Firm-specific technical skills**
  - These are the most narrowly scoped skills and tend to be specific to one particular firm or group of like firms. In-house corporate training, work-integrated learning and onboarding are most often used to develop this set of skills.

Given these different tiers of skills, training providers have oriented themselves to different tiers of the training pyramid. Educational institutions such as post-secondary institutions are better positioned for the lower parts of the pyramid as they most often provide universal skills through traditional degree or diploma programs. Sector-specific technical skills can be trained through a range of approaches including industry-driven programs at public institutions, continuing education classes, and private career colleges such as coding academies and boot camps, etc. It is nearly universal that the firms themselves deliver firm-specific technical skills. To properly realize

the skills pyramid, each level must be successfully integrated, building on layers and layers of skills so that employees with a strong foundation of universal and sector-specific technical skills can "hit the ground running" with a company, despite the need for onboarding to familiarize with firm-specific requirements.

SUPPLY-DRIVEN AND DEMAND-DRIVEN

There are a number of design methodologies for training programs that help job seekers get matched with appropriate employers and therefore address labour market need. Broadly speaking, training programs can be driven by job seekers (supply-push) or by industry (demand-pull).

Employers suggest that from their perspective, a key factor for success in training, particularly for sector-specific technical skills, is the inclusion of industry in designing programming to ensure that training corresponds to their needs. It is critical to create mechanisms that ensure that employers are able to clearly articulate their skill needs to training providers and ensure they are reflective in programming design. Real-time, regionally relevant competency and skill-focused labour market information is a missing link for training providers to design such programs creating a gap in their ability to be responsive and reflective of employer needs.

MEETING LEARNING NEEDS OF MID-CAREER PROFESSIONALS

The primary role that post-secondary institutions play in the training ecosystem is through degree or diploma programs, with specific focus on young adults that are entering the workforce for the first time. Mid-career professionals pursue training programs to deepen their technical skills or make a career transition. They are often constrained with the demands of their work life and home life. Training providers must reflect this reality in the design of adult-friendly programs targeting mid-career workers. This goes beyond flexible scheduling and includes considerations around how best to assess prior learning and experience, incorporating competency-based evaluation tools, and designing lean curriculums that focus on providing the minimum knowledge required to be job-ready. Some post-secondary institutions are exploring this in earnest and, indeed, many post-secondary institutions do offer continuing education intended for a mature adult audience to supplement their core audience of young adults. At the same time, the reality is that the nimbleness required and the ability to integrate employers into skilling pedagogy calls for new paradigms that are more attuned to the needs of mid-career professionals.

CONSIDERATIONS FOR NEXT STEPS

The purpose of this research was to understand the challenges of finding talent from the perspective of employers at a sufficiently granular level. We wanted to move beyond what job vacancies they needed to fill to better understand the processes for communicating talent needs, strategies being deployed for sourcing and securing talent, and the ability to train and retain existing talent. Understanding these processes and methodologies for evaluating applicants help inform intermediaries about how they can most successfully support employers and workers to develop an effective "third pillar" of workforce development infrastructure as envisioned by the Advisory Council on Economic Growth.

These findings suggest there is a strong appetite for an industry-led, demand-driven training solution. Some of the key considerations that organizations seeking to support mid-career workers and employers through the impacts of automation include:

+ **Understand talent demand on a granular, company-by-company level**

  — While companies might identify a need to fill similar sounding jobs, when pressed they often describe the skills they value differently. Speaking to companies provides a richer and more accurate skill profile for jobs which can then be adequately reflected in the training.

+ **Have consistent dialogue with employers on their skill needs**

  — Fast growing companies are constantly iterating and new technologies are coming online frequently, thus continually changing the nature of work and the needed skills demands.

+ **Recognize the vital importance of a growth mindset in employees and ensure all training fosters this**

  — Design programs in such a way that trainees are pushed to develop their abilities to adapt, self-teach and to be flexible while solving a variety of problems.

+ **Develop tools to translate the value of previous work experience in what might be considered "old economy jobs" to the language of "new economy jobs"**

  — Many of the skills valued in traditional jobs are still highly valued in new economy jobs, but they may be described differently. Translating this value can shrink the perceived distance between old jobs and new jobs.

+ **Design lean programming that provides the essentials**

  — Do not attempt to train workers for every single aspect of a skill (at the speed new tools are being developed, that knowledge will be quickly obsolete). Rather, train them to sufficiently undertake the job and help them develop techniques to become self-learners so they are always staying current.

PALETTE INC.

The Brookfield Institute for Innovation + Entrepreneurship is incubating Palette Inc., an organization charged with catalyzing employers, training providers and job seekers to engage and develop new approaches to workforce development. The mission of Palette is to particularly focus on mid-career workers whose jobs are threatened by automation and ensure an appropriate retraining and upskilling infrastructure that positions these individuals for high-demand careers in the innovation economy. Specifically, Palette will:

+ Increase the number of mid-career workers transitioning from jobs that are at high risk of automation to jobs that are at a lower risk of automation through upskilling

+ Decrease the number of employers that identify a lack of domestic talent as their primary businesses challenge

+ Increase the availability of agile, short-term, industry-led training programs within the training ecosystem

+ Improve mechanisms for collecting granular, sector-specific, skill-focused labour market data, particularly from small and medium-sized enterprises, and disseminate that data widely

A strong third pillar of workforce infrastructure would require a few key components:

- Clear, granular, real-time information about what skills employers are seeking;
- A pool of well suited job seekers who are looking to upskill for new work;
- Rapid and relevant training programs that produce workers geared toward the current needs of employers.

Palette Inc. will function as a backbone for gathering data from employers through their labour market signals and from job seekers to catalyze and spur training providers to design and deliver programs to meet that demand. Palette is envisioned as the foundation for the third pillar, ensuring a training marketplace that meets the needs of the country.

In the coming months, the Brookfield Institute for Innovation + Entrepreneurship will be launching Palette Inc. as an independent not-for-profit organization. It is currently under development, seeking partners for a pilot in 2018.

If you are interested in learning more about this initiative or working with us, please visit our website at brookfieldinstitute.ca/palette.

CONCLUSION

Significant changes in the labour market are nothing new but the pace of innovation in processes, technology or systems is accelerating. It is best to understand our current situation not as the beginning of new sudden change, but as the beginning of a very rapid acceleration of consistent change. Ensuring we have the mechanisms in place to adapt and benefit from this change will be essential for all members of society to see a benefit from automation and technological advance.

As skill demands, job descriptions and new roles change and develop at a rapid rate, mechanisms are needed to ensure programming and support systems are relevant. Close, on-going collaborations with employers are critical to gather and interpret labour market signals, and to design programming that transitions available skills to needed skills. The research gathered in this paper represents a snapshot in time and geography of what employers in fast-growing, knowledge-intensive companies are seeking and provides a foundation of understanding of the types of outcomes a workforce development program would exhibit.

Inclusive growth through innovation must be the foundational goal of all programs, supports and interventions focused on the future economy – whether they are targeted at workers or employers – in order to see a broad social benefit from automation and the changing labour market.

WORKS CITED

Advisory Council on Economic Growth. (2017). Tapping Economic Potential Through Broader Workforce Participation.

Advisory Council on Economic Growth. (2017). Learning Nation: Equipping Canada's Workforce with Skills for the Future.

Business Council of Canada. (2016). Developing Canada's future workforce: A survey of large private-sector employers.

ICTC. (2015). Digital Economy Supply: Canada's Post-Secondary Education Stream.

ICTC. (2017). The Next Talent Wave: Navigating the Digital Shift - Outlook 2021

Lamb, C. and Seddon, M. (2016). The State of Canada's Tech Sector, 2016.

Lamb, C. (2016). The Talented Mr. Robot: The impact of automation on Canada's workforce.

Lamb, C., & Lo, M. (2017). Automation Across the Nation: Understanding the Potential Impacts of Technological Trends across Canada.

MaRS (2018). Talent Fuels Tech.

OECD (2014). Skills Beyond School: Synthesis Report, OECD Reviews of Vocational Education and Training, OECD Publishing.

Rivard, P. (2017). The Contribution to Canadian Net Employment Change by High-Growth Firms.

Statistics Canada. (2017). Key Small Business Statistics - June 2016.

The Institute for Competitiveness & Prosperity. (2017). The Labour Market Shift: Training a highly skilled and resilient workforce in Ontario

World Economic Forum. (2016). The Future of Jobs: Employment, Skills and Workforce Strategy for the Fourth Industrial Revolution.

APPENDIX

APPENDIX A - PARTICIPANT LIST

Roundtable #1 - Real Ventures

- Kahuso
- Raw Signal Group
- Universe
- Ada Support

Roundtable #2 - Communitech

- Clearpath Robotics
- Magnet Forensics
- Axonify
- Sortable
- KIK
- D2L
- Communitech
- TextNow
- Thalmic Labs
- Atomic

Roundtable #3 - Scale-up Consultation with MEDG

- Information Venture Partners
- NexJ Systems
- Ryerson DMZ
- RateHub
- FreshBooks
- Genesys Capital
- MaRS Discovery District Venture Services

Roundtable #4 - Council of Canadian Innovators

- Wattpad
- Ethoca
- Council of Canadian Innovators
- Hubba
- FreshBooks

Roundtable #5 - OneEleven

- Borrowell
- Applied Brain Research
- Nudge.ai
- Blockthrough
- OneEleven
- Altus Group

Additional Employer Interviews

- Street Contxt
- Information Ventures
- Nudge.ai
- Influitive

Training Providers

- Lighthouse Labs
- LinkedIn/Lynda.com
- BrainStation
- HackerYou
- Npower

APPENDIX B - ROUNDTABLE AGENDA

Time	Activity
8:30-9:00	Coffee + networking opportunity
9:00-9:25	Welcome, opening remarks, and overview of MEDG Scale-Up Strategy with introduction to the workshop.
9:25-9:50	Activity #1: + **Objective:** Obtain insight into what key barriers are top of mind for scale-ups. + **Output:** Populated flipcharts with barriers identified on labeled post-it notes representing 6 strategic pillars, by 3 phases of growth, growth, grouped by strategic pillars. + **Key questions:** What are the key barriers your company has faced or is facing? + **Activity detail:** Each table uses post-it notes with all six pillars to write down barriers they face.
9:55-10:35	Activity #2: + **Objective**: Obtain deeper insights as to why these barriers are barriers and what impact they have. + **Output**: Identified barriers (and priorities) by strategic pillar, along with the rationale. + **Key questions**: Why do you face these barriers? + **Activity detail**: Tables organized by each pillar discuss those specific pillars in detail.
10:35-10:55	Activity #3: + **Objective:** Understand what existing solutions, if any, these scale-ups have pursued to overcome these barriers. + **Output:** Identified existing solutions matched with a corresponding barrier. + **Key questions:** What have been the most useful resources you have accessed to grow your business? How have you been overcoming this barrier, if at all? + **Activity detail:** Tables organized by each pillar discuss those specific pillars in detail.
10:55-11:00	Wrap-up + Thank You

ENDNOTES

1 Statistics Canada (2017), Key Small Business Statistics - June 2016, p. 1
2 Advisory Council on Economic Growth (2017), Learning Nation: Equipping Canada's Workforce with Skills for the Future, p. 12.
3 Lamb, C. (2016). The Talented Mr. Robot: The impact of automation on Canada's workforce.
4 ICTC (2017), The Next Talent Wave: Navigating the Digital Shift - Outlook 2021, p. 13.
5 ICTC (2015), Digital Economy Supply: Canada's Post-Secondary Education Stream
6 Roundtable, Real Ventures
7 C. Lamb, (2017) Stacking Up: A snapshot of Canada's developer talent, p. 45.
8 Roundtable, Real Ventures
9 Roundtable, Council of Canadian Innovators
10 Roundtable, Real Ventures, September 6, 2017.
11 Roundtable, Council of Canadian Innovators, October 4
12 Business Council of Canada (2016), Developing Canada's Future Workforce, p. 4.
13 Roundtable, Council of Canadian Innovators
14 Roundtable, Council of Canadian Innovators
15 OECD, *Skills Beyond School: Synthesis Report,* p. 92
16 Lamb, C. (2016), The State of Canada's Tech Sector, 2016.p. 55
17 Roundtable, September 7
18 Roundtable, Communitech
19 Roundtable, Real Ventures
20 Roundtable, Council of Canadian Innovators
21 Roundtable, Council of Canadian Innovators
22 MaRS (2018), Talent Fuels Tech, p. 11
23 HEQCO (2016), A Practical Guide for Work-Integrated Learning
24 Roundtable, Canadian Council of Innovators
25 Roundtable, Real Ventures
26 Roundtable, OneEleven
27 Roundtable, Real Ventures
28 HECQO (2012). Work-Integrated Learning and Postsecondary Graduates: The Perspective of Ontario Employers, p. 59.
29 Roundtable, Communitech
30 Ibid, p. 59.
31 Roundtable, Canadian Council of Innovators
32 Roundtable, Canadian Council of Innovators
33 CourseReport, What is a Coding Bootcamp?
34 Roundtable, Council of Canadian Innovators
35 Roundtable, Real Ventures
36 Roundtable, OneEleven
37 Roundtable, Real Ventures
38 Roundtable, OneEleven
39 Roundtable, Real Ventures
40 Roundtable, Real Ventures
41 Roundtable Real Ventures
42 Roundtable, Council of Canadian Innovators
43 Roundtable, Council of Canadian Innovators
44 Roundtable, Communitech
45 Roundtable, Council of Canadian Innovators
46 Advisory Council on Economic Growth, (2017). Learning Nation: Equipping Canada's Workforce with Skills for the Future, p.5.