ICTC CTIC

2020 | 2021

Annual Report

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A Message from the Chair

Last year, the Canadian economy continued to feel the reverberating effects of the pandemic. COVID-19 has in many aspects upended the way we work, learn, and transact with the economy. Lockdowns and social distancing overburdened many industry verticals. Small to medium sized enterprises were especially hard hit as they had to navigate declining demand, dwindling supply chains, reduced revenues, and an overly indebted financial landscape. The pandemic also tested the limitations of our academic institutions and underlined some of the shortcomings of the gig economy. The dramatic surge in online business also heightened the risk, and the reality, of cyberattacks.

Despite these trying times, the digital economy continued to demonstrate strong resiliency bolstered by the rapid transition to online channels and the deployment of automation and digital tools across many industry verticals. Many who were able to work from home acquired new skills and reported increased productivity. These changes will have a lasting impact on Canadian society and workplace culture.

In fiscal 2020-2021, ICTC was at the vanguard of the digital-led recovery. Our programs helped Canadians return to the job market while guiding industry to emerging digital opportunities. We also created a multitude of publications to provide insights on the path to a resilient economic recovery. These included important studies on economic resiliency in the face of adversity, as well as a policy contribution to the 2021 policy discussions at the World Economic Forum in Davos, Switzerland.

Among the many flagship capacity building programs advanced by ICTC last year, the EDGE UP (Energy to Digital Growth Education and Upskilling Project) initiative in Alberta was of particular importance during these challenging times. It was championed and led by Calgary Economic Development and funded by the Future Skills Centre with ICTC as a key founding partner, working with academic and workforce development institutions to pave the way for two cohorts of displaced oil and gas professionals to transition to careers in the Calgary's burgeoning high technology sector.

Finally, as a neutral advisor for the digital economy, ICTC endeavours going forward to continue to inspire a strong digital agenda that heightens Canada's digital advantage in a global economy. I wish to conclude by thanking all ICTC board members, partners, stakeholders, and staff for their support and commitment to ICTC's mission and for collectively advancing a shared digital future for Canada.

We look forward to a great and healthy year ahead.

Dr. Thomas P. Keenan FCIPS, I.S.P., ITCP
Professor, School of Architecture, Planning and Landscape
University of Calgary
ICTC Board Chair

A Message from the President

More than a year has passed since we began to witness the devastating impact of the COVID-19 pandemic on the lives and livelihoods of Canadians. Over a million jobs were lost and many Canadians lived through lockdowns while swiftly adapting to the new reality of a contact-free economy. Several industries also faltered while others thrived by being digital by default. COVID-19 also reframed societal inequalities, leaving many workers behind and disproportionately impacting younger demographics and underrepresented populations. Reintegrating this talent in Canada's economic recovery plans will be critical to avoiding long-term labour market scarring.

There however is reason now for optimism as the fight against this pandemic is expected to turn a decisive corner by the close of 2021. All indications point to a rebound in the Canadian economy with real GDP growth of 3.7% in 2022, according to the April 2021 Bank of Canada Monetary Policy Report. This is partly due to pent-up demand, available business capacity, and a strong rebound in the U.S. market.

In fiscal 2020-2021, ICTC continued to inspire a forward-looking digital agenda for Canada by leading a multitude of national and international discussions on the digital-based economy and society, publishing pioneering research and policy papers to guide and respond to national and international trends. ICTC further expanded its capacity building solutions to leverage the full potential of Canada's talent, from early schooling and post-secondary education to employment readiness, upskilling and reskilling Canada's digital workforce to respond to a changing economy, and fostering innovative immigration programs to support industry growth.

We are also developing programs and tools to help businesses gauge their innovation and digital maturity while adopting transformative technology to heighten their competitive advantage in a global economy. Finally, with adversity comes opportunity, and ICTC will continue to guide in the coming years a vibrant, sustainable, and shared digital future for Canada.

My special thanks to all our partners and stakeholders for their valuable support and trust in our mandate, to the board members for their guidance, and to our very talented staff for their remarkable creativity and efforts in advancing a critical digital agenda for Canada.

Namir Anani, P. Eng, ICTC President & CEO

About ICTC

ICTC is a not-for-profit, national center of expertise for the digital economy. ICTC strengthens Canada's digital advantage in a global economy through trusted research, evidence-based policy advice, and creative capacity building programs. In partnership with a vast network of industry leaders, academic partners, and policy makers from across Canada, ICTC fosters globally competitive Canadian industries empowered by innovative and diverse digital talent.

The combined offering of our forward-looking research, evidence-based policy advice, and successful capacity building programs provide a unique value proposition in Canada by delivering measurable and tested solutions for Canada's digital economy.

With a core team of over 80 highly qualified professionals across Canada, we champion research, workforce and organizational development, and digital policy solutions for Canada. Our team is comprised of economists, researchers, analysts, engineers, program managers, social scientists, public relations and outreach specialists with the drive to advance a pivotal digital agenda for Canada. Our values are anchored in our independence and insight into what is right for Canada's economy and society in this evolving digital landscape.

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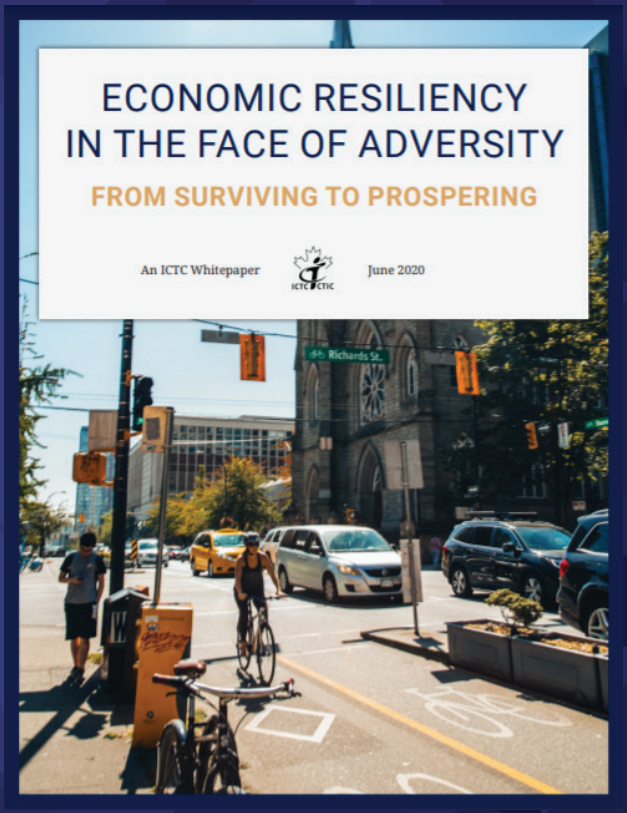
Digital Think Tank

Economic Resiliency in the Face of Adversity



Published in June 2020, ICTC's white paper *Economic Resiliency in the Face of Adversity* responds to the colossal shift in the Canadian economy brought on by the COVID-19 pandemic. The paper proposes new pillars to drive sustainable economic recovery and social wellbeing for Canadians.

During the first two months of the pandemic (March and April 2020), over 3 million Canadian jobs were lost. The most adversely impacted sectors included accommodation and food services, and retail. Although the Canadian labour market would later rebound to a degree, job loss in the spring of 2020 represented the largest drop since the Labour Force Survey was launched in 1976. Post-pandemic Canada will build on a foundation of workforce development and preparedness, building resilient supply chains, leveraging international trade, enabling a connected health system, fostering cyber resilience, and supporting a carbon-neutral economy.

Workforce development and preparedness requires that Canadians have access to high-quality jobs and the training needed to obtain them. Youth education and experiential learning, as well as ongoing adult education and continuous skill development, are central—and they must be driven by the principles of inclusiveness and accessibility. Ease of access, shared-cost, flexibility, and broad recognition is key to supporting resilient upskilling and reskilling pathways for Canadians.

Despite growing calls to "bring manufacturing [or other industries] home," overall resilient supply chains require international cooperation and the leveraging of technology and trade. Onshoring vital supply chains such as the manufacturing of personal protective equipment and food production can be beneficial for Canada, but this shift must be coupled with automation to be economically feasible and efficient. Foreign direct investment can play a key role in attracting the investment necessary to spur the digitization of these supply chains. Leveraging free trade agreements remains important. Canada is privy to some of the most innovative and favourable free trade agreements in the world: making the best use of agreements like CUSMA, CETA, and CPTPP is critical.

The pandemic put Canadian healthcare to the ultimate test. It spotlighted shortcomings and highlighted how digitization can improve and enhance Canadian healthcare security. As of 2019, Canada had fewer doctors per capita than the OECD average, but digital technology can play a key role in improving accessibility and reach. Telemedicine was put to widespread use for the first time during the pandemic: it protected healthcare workers and citizens during the reign of an airborne and contagious virus, and it opened the door to convenient (nearly at-your-fingertips) healthcare services. With investments in connectivity infrastructure, telemedicine can also provide improved access to healthcare for Canadians in rural and remote communities.

Although the pandemic had the most negative impact on small and medium sized businesses (SME's), these companies remain central to Canada's overall economy. The pandemic spurred digitization across all sectors, but it also exposed points of cyber vulnerability, particularly as the shift to work-from-home intensified. In 2018, 40% of Canadian SMEs experienced phishing and virus attacks. While ensuring cyber safety is increasingly on their radar, many businesses require assistance for implementing such safeguards. Interventions to support cyber resiliency among Canadian SMEs include tax credits, wage subsidies to hire cybersecurity professionals, and the development of cyber hygiene toolkits.

Lastly, a robust and resilient recovery for Canadian businesses and workers cannot be decoupled from a green and carbon-neutral future. In other words, economic policy must focus on environmentally friendly solutions and pathways. Avoiding rolling back existing environmental standards is essential, and support systems like new stimulus packages or infrastructure spending must prioritize clean and green interventions. These developments will undoubtedly create jobs in areas like conservation, biodiversity, and reforestation. To drive this green recovery forward, key policies include investor tax credits of flow-through shares for clean technology, the development of a green bond incentivizing micro-transport alternatives, and improving the conditions needed to support the future of smart mobility.

The Digital-Led New Normal: Revised Labour Market Outlook for 2022

In light of the unprecedented economic and financial uncertainty wrought by the COVID-19 pandemic and related global shutdowns, ICTC released an updated economic bulletin in August 2020. The report, titled *The Digital-Led New Normal*, serves as an update and addendum to ICTC's previous outlook, *Canada's Growth Currency: Digital Talent Outlook 2023*, released at the end of 2019. It includes an analysis of the recent economic shocks that have impacted the global and Canadian economy and provides updated employment and GDP forecasts for the Canadian economy overall, the digital economy, and six key innovation areas: cleantech, agri-foods and food tech, interactive digital media, advanced manufacturing, clean resources, and health and biotech.

Despite the significant loss in economic output and employment brought on by the COVID-19 pandemic, the Canadian digital economy remains remarkably resilient to the current crisis. Increased demand for digital services and the ability of many digital economy employees to work remotely has allowed the Canadian digital economy to come through the "Great Lockdown" (first wave) relatively unscathed. Because of this resilience and expected growth in influence, ICTC forecasts that employment in the digital economy will continue to grow to over 2 million by the end of 2022. While slightly lower than was forecast in ICTC's Outlook 2023, this still represents a significantly faster rate of growth compared to the overall economy and many other sectors. ICTC's six digitally based innovation areas are all also expected to grow faster—both in terms of GDP and employment—than their non-digital counterparts.

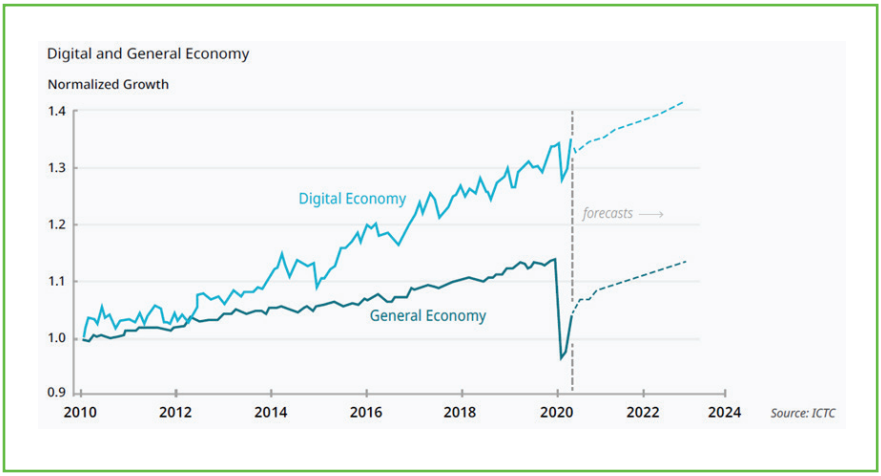
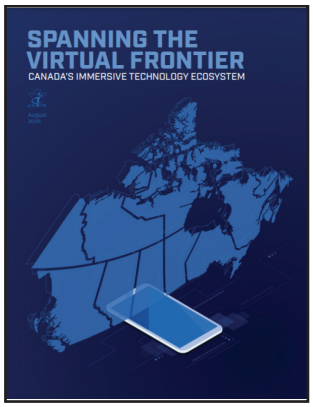
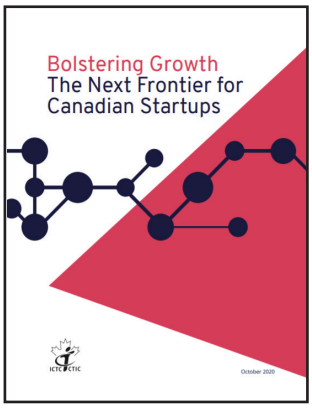


Figure 1.

Digital adoption is quickly becoming mission critical for Canadian small businesses. Many companies are focusing on investment in critical digital infrastructure like cloud technology, fintech applications, eCommerce, intelligent supply chains, and automation. Such investments are becoming essential to operational resiliency and thriving in a post-COVID economy. Digital talent will also be a key enabler of a resilient economic recovery. A focus on in-career digital upskilling, transitional employment pathways for displaced and underrepresented workers into digital occupations, and stronger youth engagement will allow Canada to assert itself on the global stage.

COVID-19 has caused ripples across the economy and impacted all businesses and activities. While no business has been completely spared, the pandemic has heightened the importance of digital technology and clarified its essential role in our future economy. A successful and competitive post-COVID Canada will, by its very nature, be digital-first.





Spanning the Virtual Frontier

Published in August 2020, the report *Spanning the Virtual Frontier* provides a first-of-its-kind analysis of Canada's budding immersive technology ecosystem. Immersive technology is an umbrella term that encompasses virtual reality (VR), augmented reality (AR), mixed reality (MR), and all other forms of computer-altered and extended reality. The report finds that there were more than 350 immersive technology companies across Canada in 2020. Located primarily in Toronto, Vancouver, Montreal, and Alberta, 91% of these companies are small to medium sized enterprises (SMEs). These startups and SMEs focus on a broad range of industry applications for immersive technology, including MR for prototyping and design, VR for simulation and training, and AR for online shopping. They employ dynamic technical teams, comprised of software engineers and architects, user experience designers, and domain-specific technical advisors. *"Figure 2."* provides a visual summary of the key roles involved in a standard immersive technology team.

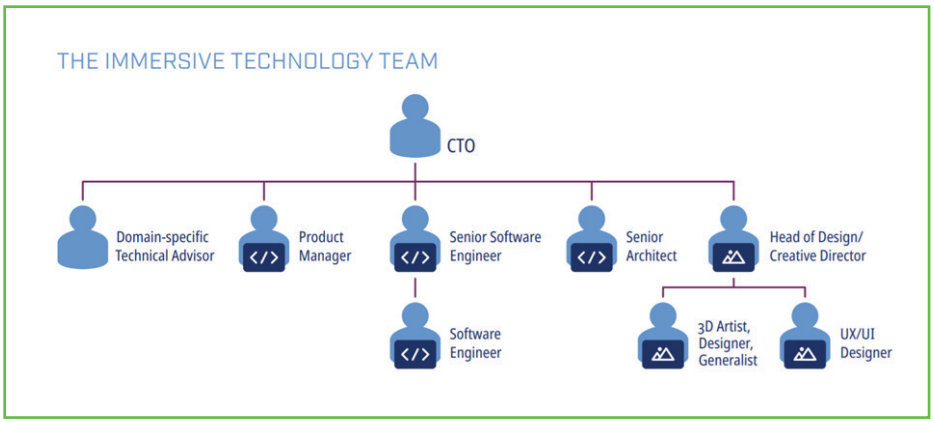


Figure 2. Technical immersive technology roles. This infographic summarizes top immersive technology roles. Roles were identified through web scraping (e.g., job postings, talent profiles) and discussions with industry representatives. ICTC, 2020.

Bolstering Growth: The Next Frontier for Canadian Startups

A secure post-COVID economic recovery will depend on Canadian SMEs and their ability to scale up and compete successfully on the global stage. *Bolstering Growth: The Next Frontier for Canadian Startups*, an October 2020 white paper published in partnership with ventureLAB discusses the ingredients needed for a strong and resilient scale-up ecosystem in Canada—one that can shape and support globally competitive anchor companies. It highlights important considerations related to intellectual property (IP), business culture, investment, and trade. Formal IP is central to a country's innovation output, yet despite ranking 7th out of 129 countries in innovation inputs (research institutions and infrastructure, human capital, and market sophistication, etc.), Canada ranks only 22nd for its knowledge and technology outputs. Section 1 of the paper discusses these challenges in more detail and highlights possible strategies for creating, protecting, and incentivizing Canadian IP. The report emphasizes that creating a successful scale-up economy in Canada will require establishing a built-to-scale Canadian business culture that couples promising startups with business expertise and attracting high-quality investment to support local ecosystem growth. It concludes with the need for Canadian companies to expand beyond Canada's borders and leverage international trade deals.

Responsible Innovation in Canada and Beyond: Understanding and Improving the Social Impact of Technology

This study took on an ambitious topic: the social impact of technology. It provides a high-level synthesis of approaches to responsible innovation in Canada. Considering a vast array of technologies and topics and drawing from a series of in-depth interviews, it presents best practices for improving the social impact of technology. *"Figure 3."* is a snapshot of report content, addressing common principles for a responsible innovation life cycle. The report also addresses specific stakeholder groups: investors; designers, developers, and technologists; educators; technology users; and policymakers. The unprecedented impact of COVID-19 has heightened Canada's awareness of technology-related challenges along with the importance of creating a robust, resilient, and just system for technology to function as a social good for all. While the field of ethical technology is vast and complex, interviewees in this study identified numerous practical strategies for improving social impacts.

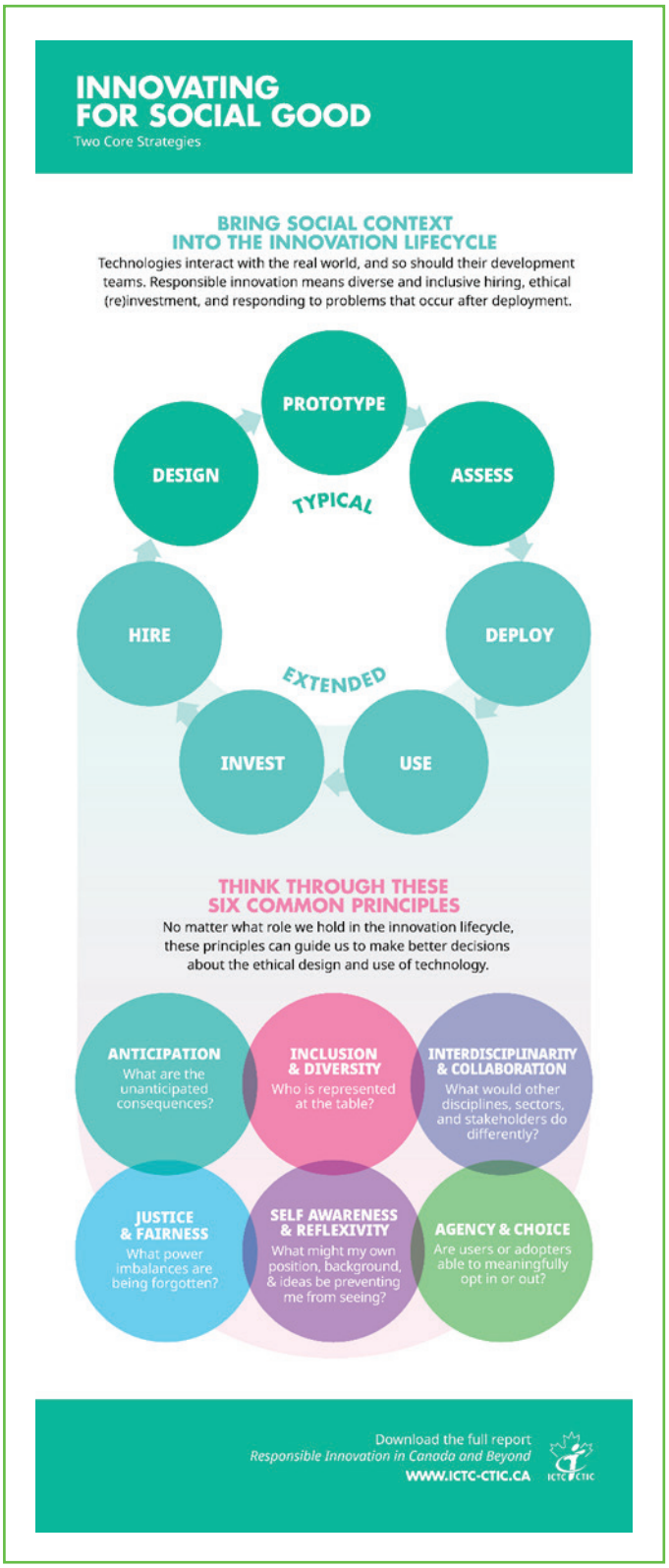
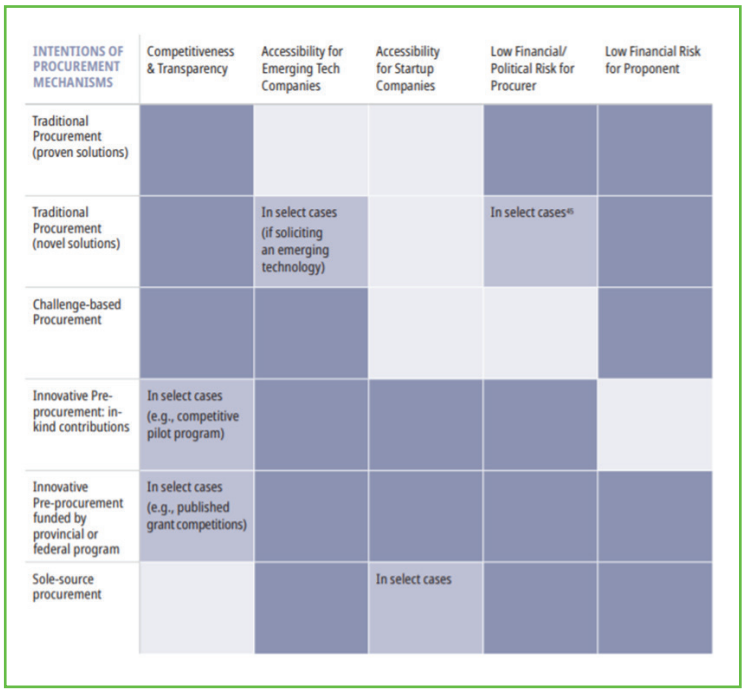


Figure 3.

Procurement Office or "Living Lab?"

In the face of rapid global population growth, commensurate urbanization, and the urgency of climate change, managing urban resources sustainably and equitably is more important than ever. A smart city is a city that uses technology to manage resources more efficiently and equitably, and/or pursues long-term planning to that end. But before smart technology can be used by the public sector, it must be procured. Procurement has the potential to be a highly strategic tool for building smart cities: it allows municipalities to signal investment intentions, engage in long-term planning, and manifest their values through procurement criteria for sustainability and inclusion.

This study tackles the question of how well traditional forms of public procurement serve new and emerging technologies, examining the trade-offs between innovation and risk. Through document analysis of Canadian smart city requests for proposals and stakeholder interviews, it assesses the pros and cons of procurement mechanisms—old and new—and the impact that each has on the nature and success of public-private-partnerships. The figure below provides a high-level summary of procurement mechanisms and report findings about their intent and impact in Canada.



INTENTIONS OF PROCUREMENT MECHANISMS	Competitiveness & Transparency	Accessibility for Emerging Tech Companies	Accessibility for Startup Companies	Low Financial/ Political Risk for Procurer	Low Financial Risk for Proponent
Traditional Procurement (proven solutions)					
Traditional Procurement (novel solutions)		In select cases (if soliciting an emerging technology)		In select cases[45]	
Challenge-based Procurement					
Innovative Pre-procurement: in-kind contributions	In select cases (e.g., competitive pilot program)				
Innovative Pre-procurement funded by provincial or federal program	In select cases (e.g., published grant competitions)				
Sole-source procurement			In select cases		

Figure 4.

Smart Energy and Environment Policy Roundtable

ICTC's Smart Energy and Environment Policy Roundtable on December 3, 2020, was the second event in a series on creating a vibrant and inclusive smart economy for Canada. Dr. Sarah Burch, Canada Research Chair in Sustainability Governance and Innovation, and Sonya Hull, a leader in smart infrastructure and digital grids at Siemens Canada Ltd., opened the discussion with two presentations on Canada's energy future. In the event's second hour, an invited group of 30+ attendees from industry, government, academic institutions, and civil sector organizations were led in discussion by ICTC facilitators. Participants formed four smaller discussion groups to address a series of challenge-based questions.

Together, the speakers and roundtable participants discussed environmental priorities for federal, provincial, and local policy; technology needs for energy transitions; and community-led initiatives for a sustainable future for Canada. The event highlighted the need for coordination and targeted efforts from all levels of Canadian society, including strong collaboration between the public and private sectors, inter-provincial agreements and infrastructure, and community-driven energy generation.

Smart Mobility Policy Roundtable

ICTC's Smart Mobility Policy Roundtable took place on February 2, 2021. It was the third in a series on creating a vibrant and inclusive smart economy for Canada. Graham Cavanaugh, Senior Planner of the New Mobility at TransLink, and Marie-France Laurin, Director of Business Development at Stantec Generation AV, opened the discussion with two presentations on smart mobility trends and developments in Canada. In the event's second hour, an invited group of 30+ attendees from industry, government, academic institutions, and civil sector organizations were led in discussion by ICTC facilitators. Smaller discussion groups addressed a series of challenge-based questions.

Together, the speakers and roundtable participants discussed the role of data and privacy in facilitating smart mobility solutions, infrastructure developments, and the technologies required to support the smart mobility evolution. They also investigated how the evolution of smart mobility will eventually alter the passenger experience. Multi-stakeholder collaboration, privacy literacy, open data, public consultations, and increased public-private-partnerships were highlighted as necessary to support an inclusive vision of Canada's smart mobility future.

Smart Government Policy Roundtable

ICTC's Smart Government Policy Roundtable—the fourth in ICTC's series of events about creating a vibrant and inclusive smart economy for Canada—was held on March 11, 2021. The roundtable was opened by Dr. Ann Cavoukian, former Information and Privacy Commissioner for the Province of Ontario and inventor of Privacy by Design, who gave a keynote speech about privacy-conscious innovation. In the event's second hour, an invited group of 30+ experts were led in discussion by ICTC facilitators.
Participants then formed smaller groups, working together to highlight key trends in smart government, identifying areas and strategies for future progress.

Throughout this process, participants discussed themes such as inclusion and accessibility, privacy, collaboration, and digital adoption. Roundtable participants noted that a vibrant and inclusive smart economy must include "smart" government in all senses of the definition: not only government that makes smart decisions but also government that uses technology to enhance its decision-making and services delivery. Roundtable participants emphasized that while there are high hopes for smart government in Canada, concerted and consistent effort will be needed to make it a reality.

Check out more Digital Think Tank reports on our website!

Capacity Building Initiatives

WIL Digital

ICTC's Work Integrated Learning Digital (WIL Digital) provides post-secondary education (PSE) students meaningful on-the-job learning and experience for their newly acquired theoretical knowledge and technical skills. An equally important goal of WIL Digital is to expand the ICT talent pool to make Canadian employers more competitive in the digital economy.

To date, ICTC's WIL Digital—which is funded by the Government of Canada through the Student Work Placement Program (SWPP)—processed 6,047 high-quality paid WIL placements across Canada.
For the fiscal 2020-21, the Government of Canada introduced measures to mitigate the impacts of COVID-19 and the ability of employers to hire PSE students. Accordingly, ICTC was able to provide greater flexibility and support that employers needed during the health crisis. Moreover, effective January 4, 2021, the definition of "underrepresented groups" was expanded to include students who identify as a visible minority.

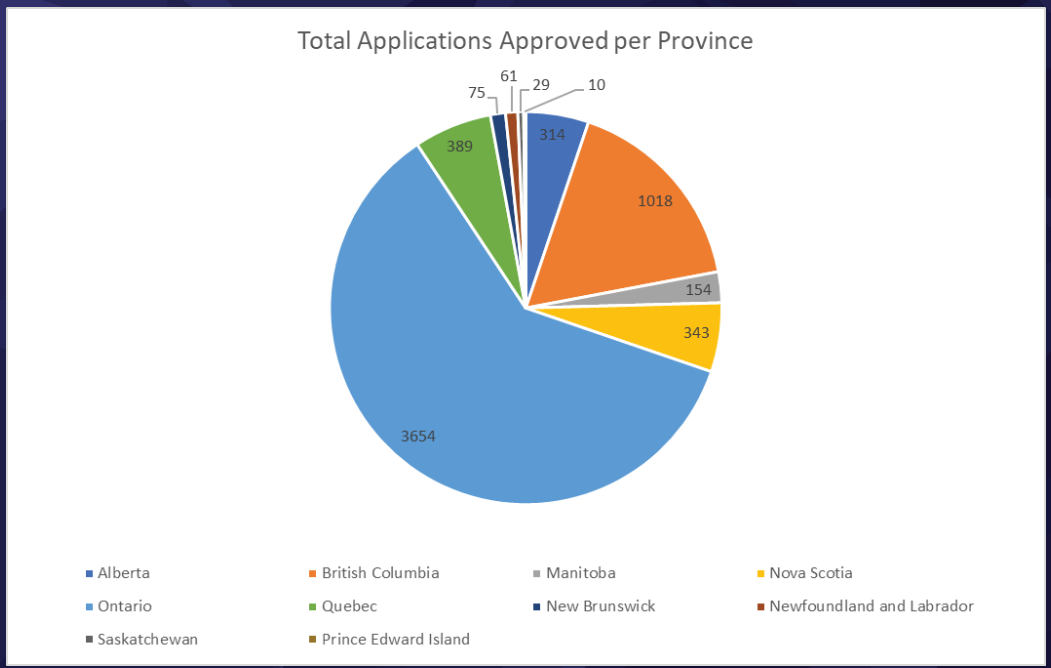


Figure 5.

ICTC has been working with post-secondary education institutions and industry associations in Quebec to strengthen our strategic presence in the province and increase the uptake of WIL placements.

Leveraging established partnerships under ICTC's WIL Digital program ensures our success in the 2021-22 fiscal year in all provinces across Canada. Over the past year, ICTC signed MOUs with 24 new partners and seven agreements with post-secondary institutions that participated in the WIL Digital program as employers.

Employer Spotlight

"This was my first experience with a WIL Digital placement and found the process extremely simply and straightforward to follow. The fact that the program was able to adapt to the COVID crisis and fund much of the salary in advance made a big difference for our cash flow and the ability to hire students."

A good example of the difference we are making is our partnership with the Centre québécois d'innovation en commerce (CQIC), now known as "Numana," which has implemented an innovative solution to help Quebec retailers in their digital transformation by providing them with technology-based solutions. Through the Achetons plus ici (le Cercle api) [Buy More locally] initiative, CQIC hired nearly 50 students with funding from ICTC's WIL Digital program. The students contacted nearly 5,500 merchants to offer them technological solutions, such as live shopping.

Finally, in Winter term 2021, ICTC successfully launched five e-learning courses: Advanced Manufacturing; Artificial Intelligence; Cybersecurity; FinTech; and Intelligent Retail and Commerce. The e-learning courses are designed to help students prepare for and complete their performance requirements and duties under WIL Digital by introducing them to industry-relevant concepts. Each course consists of six modules. In addition to the modular course content, students interact with industry experts, solve an industry problem, and network with their peers. The main goal is to empower the students to be more effective and productive sooner, without wasting the employer's precious time. As a result, students gain confidence, improve critical thinking and problem-solving skills, and better demonstrate the full extent of their capabilities and value to employers.

ICTC granted 162 certificates of completions to students who satisfied the WIL digital e-learning course requirements. Eighty-nine percent of the students (57 out of 64) surveyed reported that their chosen course subject was helpful to their learning and/or skills development. Each of the students received an employability resource that included key industry data on the most in-demand jobs and skills to help with their career planning and job search.

Student Spotlight

"My placement has been extremely insightful and valuable toward the development of my career. I had the opportunity to work on a range of projects at App Growth Network, which provided me with growth and teachings for future placements. I developed skills in marketing analytics, presenting to clients, mobile UX optimization and data analysis."

Digital DASH & Cybersecurity Training for Youth

With the support of the Government of Canada's CanCode initiative, ICTC was able to add a Cybersecurity Training for Youth initiative to the existing DASH program. Cybersecurity Training for Youth prepares middle and secondary school students for post-secondary STEM education through our virtual eLearning course, hands-on simulated environments, and interactive challenges that develop critical and digital skills. Students also learn to identify the roles they can play in securing computer systems and the skills essential to many cybersecurity fields.

- Cybersecurity Fundamentals for Youth eLearning course
- Interactive CyberDay Challenge powered by Field Effect's Cyber Range
- Youth Annual Cyber Summit
- CyberTitan

Cybersecurity Fundamentals for Youth eLearning Course

ICTC's Cybersecurity Fundamentals Course is an online learning pathway that teaches the fundamentals of cybersecurity while developing digital literacy and cybersecurity skills useful for jobs in the field. The course targets Grade 6-12 and consists of four modules covering common risks and threats:

- Personal data and identity theft
- How to prevent and protect against common risks and threats
- Real-world connections between the skill sets of a cybersecurity professional and job opportunities
- Best practices and standards for securing their data and ensuring it stays safe

Interactive CyberDay Challenge

ICTC's flagship Cyberday Challenge activity is a hands-on, digital skills learning activity, where students "harden" (secure) a Windows operating system against attack, thereby gaining vital cybersecurity insights.

In this activity, students are given a scenario and asked to solve cybersecurity vulnerabilities using their knowledge and problem-solving skills. Students participate in a full or half-day of virtual experiential learning.

Youth Annual Cyber Summit

This event is a 24-hour activity that runs in parallel with Cybersecurity Awareness Month in October. It is hosted by ICTC, providing teachers and parents access to live and pre-recorded presentations, panel discussions, and interactive learning activities for students. The summit features industry experts sharing their cybersecurity insights to help students become more savvy online citizens and consider the diversity of cybersecurity career options.

This year we had 4,245 participants join various events during our Youth Annual Cyber Summit.

CyberTitan

CyberTitan is a Canadian cybersecurity education competition for middle and secondary school students. This school year, 133 CyberTitan teams across Canada competed over three rounds of competition among 5000-plus teams under the Air Force Association's CyberPatriot program. Ten teams earned a spot in ICTC's CyberTitan IV National Finals in Ottawa on May 17, 2021. This year, we also invited an exhibition team made up of students from the Canadian Cadets program. CyberTitan engages students in problem-solving opportunities by providing them a security challenge based on real-world Canadian experiences (a privacy breach or compromised data system). A special thank you goes to our platinum partner Communications Security Establishment, Canada's national cryptologic agency, for all of its support!

Focus on Information Technology (FIT)

The Focus on IT (FIT) program is designed to help secondary school students understand the importance of building digital and ICT skills for business, education, community, and our daily lives. FIT also encourages students to continue their digital learning at post-secondary institutions. Regardless of which education program students choose, digital skills are critical to opening doors to future careers. FIT is a national program geared to provincial educational outcomes and expectations. It allows students to focus on learning about ICT and business while meeting the requirements of their provincial secondary school diploma. Students can choose to follow a core competency path or choose a specialty in one of the following five areas: Software Design and Development, Interactive Media, Network and Systems Operations, Business and Information Analysis, and Cybersecurity. Over the last year, ICTC has awarded 730 FIT certificates to students across Canada. In 2021 so far, ICTC has issued 91 FIT certificates, despite the challenges presented by COVID-19.

Talent Acquisition for the Digital Economy

Talent Acquisition for the Digital Economy (TADE) is a new ICTC program building on the iAdvance approach. The goal of this Province of Alberta funded program is to support Alberta businesses in hiring and retaining the digitally savvy talent. ICTC is making available a free Human Resources Toolkit for small and medium sized businesses to help strengthen their competitive advantage nationally and internationally.

Context: The global pandemic has affected all businesses, especially small and medium companies (fewer than 500 employees). COVID-19 has also highlighted and accelerated the need for digital transformation. Companies across all industries are evaluating their digital capabilities, adding payment capabilities on their websites, using cloud technology, and automating workflows. This work requires attracting and retaining the right talent with up-to-date digital skills, but this can be challenging.

TADE is currently building a Human Resources Toolkit with best practices, guidelines, and checklists for hiring, onboarding, and retention. Supplemental information and workshops will include digital economy essentials such as cybersecurity, artificial intelligence, blockchain, e-commerce, labour market information, and diversity and inclusion. ICTC is providing this free resource to at least 250 small and medium sized companies that are planning to hire for digital roles in Alberta in 2021 to September 2022.

The Province of Alberta is working in partnership with the Government of Canada to provide employment support programs and services.

Funded by:

Canada Alberta

Check out our Vimeo page for recent Capacity Building Webinars!

iAdvance

This ICTC strategic initiative helps Canadians gain greater insights and build sustainable pathways for employment and skill development in a rapidly changing digital-based economy.

Canada's economy continues to undergo a structural transformation brought on by innovative technologies, shifting trade dynamics, and emerging environmental trends, among other factors that are altering the labour market and dramatically changing the nature of work.

Knowledge of high-growth sectors across the economy and in-demand jobs within those sectors is critical. Canadians also need to understand the short-duration training opportunities that are available for upskilling or retraining, and which credentials or experience will be recognized in tomorrow's economy. Lifelong learning, flexible learning pathways, and short-duration skills training are more important than ever before.

iAdvance provides these critical sectoral-focused insights and provides sustainable end-to-end pathways to employment in our rapidly changing digital-based economy. Training pathways are informed by ICTC evidence-based research and focus on providing micro-credentials that represent functional abilities or competencies in a workplace or industry, as identified by both Canadian employers and industry-partners.

iAdvance programs managed by ICTC in 2020:

EDGE UP (targeted to career transitioners)
Arrival to Fintech Ready (focused on newcomers)
Youth Dividend (targeted to youth)

EDGE UP

ICTC is proud to be a partner on EDGE UP (Energy to Digital Growth Education and Upskilling Project). Led by Calgary Economic Development (CED) with an investment of almost $1.5 million by Future Skills Centre in 2019, EDGE UP provided short-duration skills development to mid-career oil and gas professionals. Displaced oil and gas engineers and geologists in the program received training in one of three program streams: IT Project Management through the University of Calgary Continuing Education, Data Analytics through SAIT (Southern Alberta Institute of Technology) and Software/Full Stack Development through Bow Valley College. Riipen oversaw a Capstone applied-learning project at the end of the tech training.

Together with Calgary Economic Development, ICTC conducted skills mapping research to showcase the most in-demand digital occupations in Calgary and their required skills. The results of this study were incorporated into an online platform to educate displaced Calgarians about transitioning to high-tech opportunities. ICTC conducted 76 interviews for EDGE UP's Cohort 1 and 86 for Cohort 2, leading to the intake of 49 participants in each of the two cohorts who completed the program. The intake process closely followed the program's Eligibility Criteria informed by ICTC's foundational skills mapping research.

ICTC also created and implemented the course *Transitioning to ICT Work*, designed to give EDGE UP participants a framework for identifying and developing their career potential for in-demand ICT roles in Calgary. This included an orientation to the digital economy and the tech sector, and provided a pathway to move from education to employment. The course was structured as "wrapped-around" training: an initial two weeks of training preceded tech training with partner post-secondary institutions, followed by a third week of training called "Transitioning to ICT Work." ICTC issued the graduates an iAdvance certificate.

As a founding partner, ICTC played an important role in the EDGE UP partner committee meetings and provided ongoing support to unemployed EDGE UP graduates through to May 2021. With approximately 70% of the program's graduates now employed or continuing studies, the pilot has proven to be a success. A key to the success of EDGE UP was partnership collaboration. Calgary Economic Development won an international award–a Bronze medal for Partnerships in EDGE UP–from the International Economic Development Council.

Following the success of the pilot, Future Skills Centre and Calgary Economic Development announced an expansion of the program on April 30, 2021, with an investment of $5.4 million by Future Skills Centre to train 320 unemployed oil and gas professionals for careers in tech. The original partners from the pilot program will remain in place, with the addition of a new post-secondary institution: Mount Royal University. Participants in the expanded program will be divided into two cohorts of 160 each. The first cohort is scheduled to begin career-transition training in August 2021.

Other additions to EDGE UP include working with a wider range of oil and gas professionals who are seeking to transition to tech, and ICTC will facilitate and administer a Work-Integrated Learning (WIL Digital) placement wage subsidy funded by the Government of Canada's Student Work Placement Program.

Arrival to Fintech Ready

The Arrival to Fintech Ready (AFR) program was launched in August 2020 with funding by the province of Ontario's Skills Catalyst Fund. It is a response to initial research for the program that revealed a high demand for blockchain developers in Ontario and, at the same time, a gap in current Canadian educational offerings compared to the knowledge required by industry.

AFR immediately proved extremely popular, with dozens of registrants competing for spots. Ultimately, 25 newcomers with a computer science background were chosen to participate in AFR after a rigorous selection process that consisted of a collaboration between members of ICTC's Capacity Building and Innovation and Digital Think Tank teams. Since its launch, the program has seen a growing wait list for intake.

AFR began with an ICTC-provided soft skills course with Fintech modules titled "Launching Your Tech Career." All AFR participants indicated that they were very satisfied with this course, saying they were more job-ready after having completed it.

Following the AFR course, the students were enrolled in George Brown College's Blockchain program. The Blockchain program consists of three semesters, ending in August 2021. The third semester of the program began in May 2021. It involves a co-op placement with an employer in the financial technology industry. Many of the employers interviewed in the research process of the program expressed interest in participating in the co-op.

Client Spotlight

"I have thoroughly enjoyed the course and have been awarded the Academic Excellence and Citizenship awards by George Brown College. It's been a memorable journey that wouldn't have been possible without the AFR team."
- Natasha, AFR participant

Youth Dividend

The Youth Dividend program connects underemployed post-secondary graduates (under the age of 30) with businesses and not-for-profit organizations where they can gain meaningful work experience to help them transition to career-oriented employment.

Ninety-six percent of Youth Dividend interns were hired by the host organization or another employer after completion of the program. Ninety-nine percent of employers also said they would recommend the program to other organizations.

Funded by the Government of Canada through Youth Employment and Skills Strategy (YESS)-Digital Skills for Youth (DS4Y) Program, Youth Dividend focuses on meeting the needs of the knowledge economy by investing in practical on-the-job training and skills enhancements of our youth.

Under ICTC's iAdvance framework, Youth Dividend is an end-to-end pathway to employment: ICTC identifies entry level, in-demand roles; candidate selection is done through a skills mapping process in which the skills of the applicants are mapped to the skills required for each in-demand roles.

The internship consists of relevant on-the-job training and work experience, soft skills training, and technical training through third-party training partners. The primary focus is on the following roles:

- Software Development
- Data Analysis
- Data Science
- Business Analysis
- Digital Marketing/Sales

As part of the Youth Dividend program, ICTC provided employers with ICTC's Equity, Diversity, and Inclusion (EDI) Spectrum assessment to help them better understand workplace culture through the lens of diversity and inclusion. Completing the assessment helps organizations identify their stage of EDI readiness as a first step. On completing the assessment, organizations receive a report to help them develop and/or review strategies towards becoming even more responsive.

- The EDI survey tool link/invitation was sent to all 60 employers and completed by 10 respondents.
- Of the 10 complete responses, 70% of respondents achieved a score within the range of Maturity or higher.
- The average score is 80.3 which fall under the score of Excellence.
- 30% (3 respondents) achieved the highest score of Gold Standard.
- No respondents scored within the lowest stage.

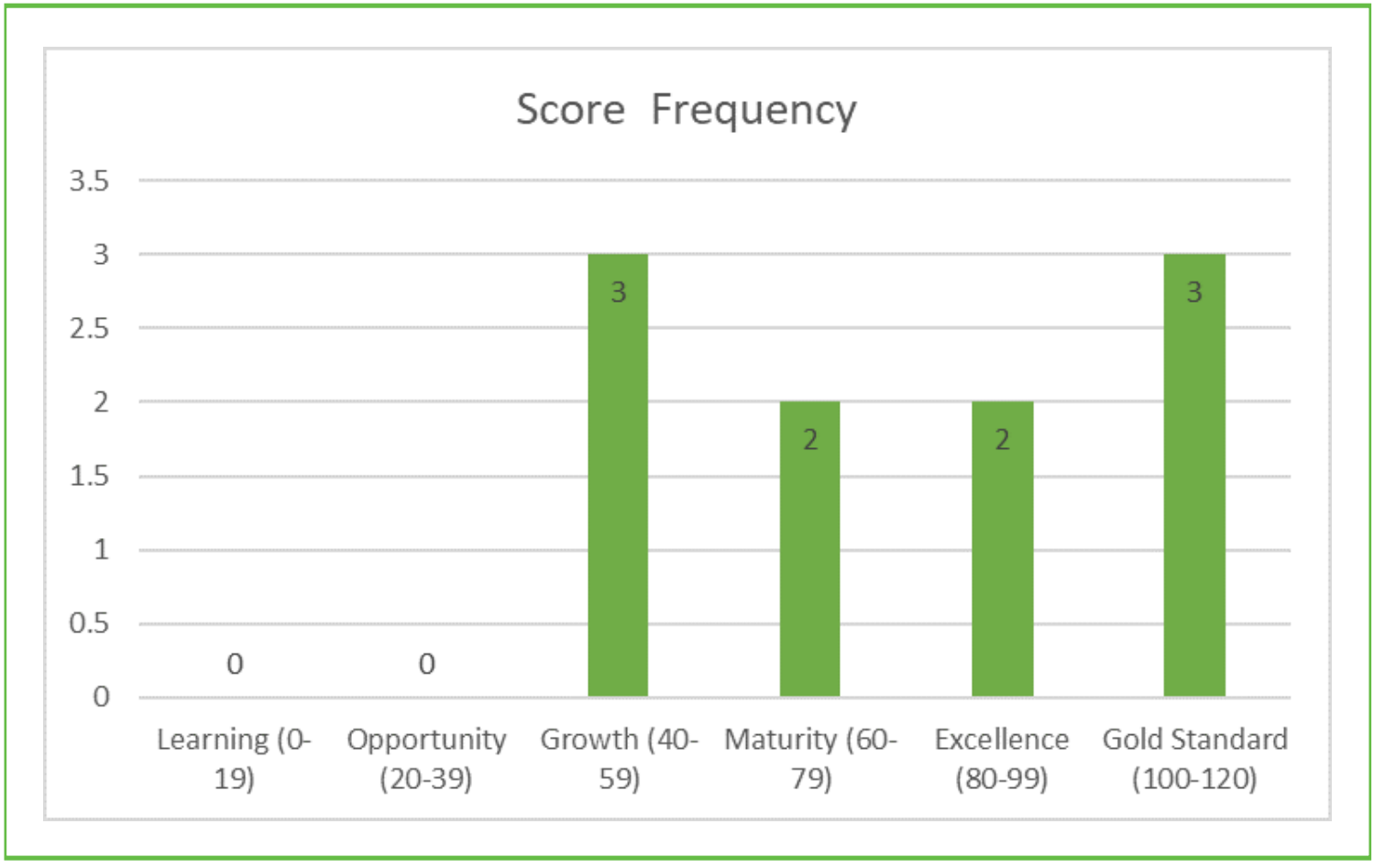


Figure 6.

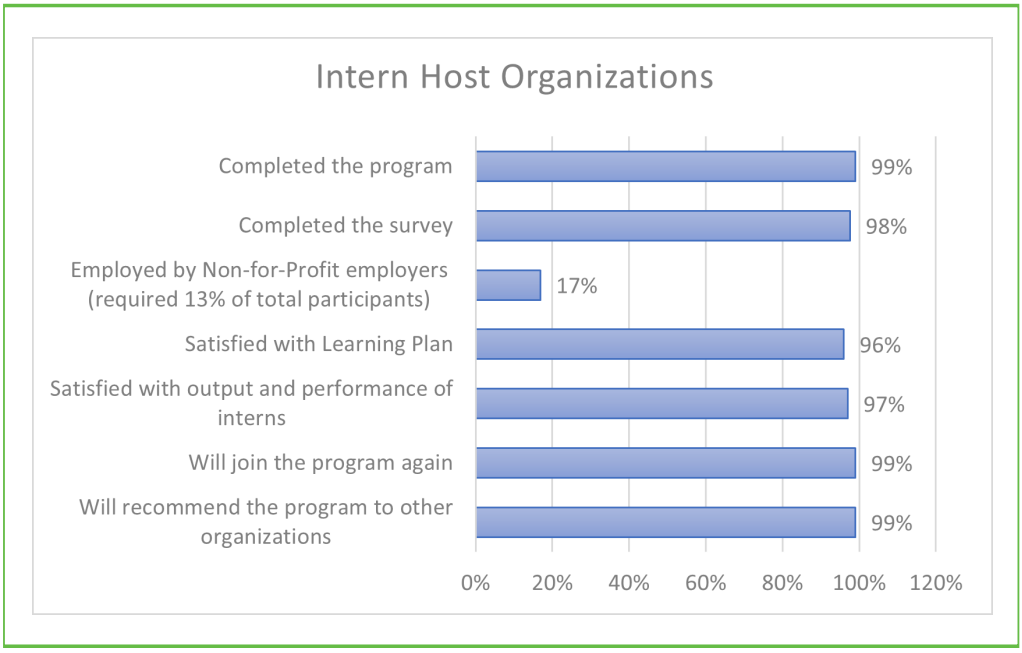


Figure 7.

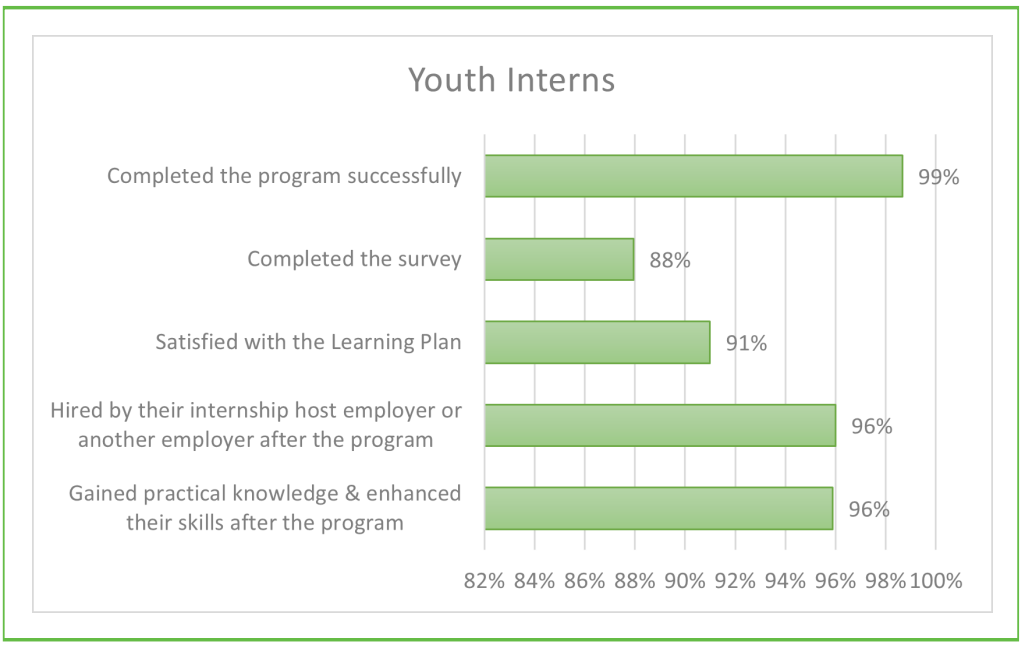


Figure 8.

In mid-June, The Global Apprenticeship Network (GAN), based in Switzerland, released its annual report, which features the success of the Youth Dividend program!

GAN board members who elected to profile Youth Dividend include the UN's International Labour Organization, the International Organization of Employers, the Organization for Economic Co-operation and Development (based in France), the United States Council for International Business, Microsoft, Accenture, and JP Morgan.

ICTC is proud to be recognized alongside other leaders in the digital space for the opportunities we are providing through work integrated learning internships and valuable soft skill trainings to help participants build and sustain successful careers in IT and digital fields.

The report can be found here (Youth Dividend is featured on page 39).

Diversity and Inclusion

GO Talent

COVID-19 had a significant impact on Canadian immigration. In 2020, Canada welcomed the lowest level of newcomers since 1998 (184,000). Consequently, ICTC's Global Onboarding (GO) Talent program had fewer clients, but ICTC was fortunate to continue providing this service because of the program's online delivery model.

Due to the lower numbers, GO Talent—which is funded by Immigration, Refugees and Citizenship Canada (IRCC)—was able to provide more personalized service and help clients better understand what awaits them in the Canadian labour market. Our outreach efforts to employers were also expanded and the quality of those connections was enhanced.

The GO Talent team focused on connecting clients with employers for in-demand jobs in Canada's digital economy. The team hosted additional webinars and increased the number of one-on-one calls with overseas clients to help them prepare for their journeys once borders reopen.

For GO Talent employers, we offer ICTC's e-Talent Canada job board as well as the opportunity to participate in two virtual career fairs each year at no cost. This year's career events were improved by hosting an Employer Spotlight webinar series and by offering technical skills testing for clients.

In 2020, GO Talent's client-employer matching numbers reached an all-time high, with 238 client connections. Some of those clients (124) were connected to multiple employers. By helping clients understand what to expect from Canadian employers, they are better prepared for the hiring process, from resume writing to interviewing and onboarding.

Go Talent is expected to ramp up in the coming year as Canada raises its Immigration targets in the coming years.

Client Spotlight

"Here are some of the key pointers which I really liked about your evaluation. It helped me to shorten my resume from four pages to two with the help of templates you shared. Your review comments were very informative, leading me to add quantifiable items to my resume. My resume was initially missing some key elements, so I appreciate that you spotted those. Prompt reviews were really helpful. Did not have to wait long for the comments, which is commendable. In the end, it turned out to be a great resume just because of your services."

Partner Spotlight

"Thank you once again for this amazing opportunity. The program has been a wonderful opportunity for clients to upskill. All participants are employed and doing well."
- Darlene, Executive Director, Multicultural Association of the Yukon

Digital Equity and Employability Pathways

In partnership with Microsoft, ICTC's Digital Equity and Employability Pathways (DEEP) had an extremely successful first run in 2019. The DEEP partnership grew five times its original size in only a few months, with a 93% employment rate, including a 100% employment rate in the Yukon. This success earned the program multiple rounds of additional funding in 2020, totalling more than double what ICTC had received the previous year. Additionally, Microsoft provided ICTC with tools and resources (including the Microsoft name and logo) to enhance ICTC web pages and programs, further raising the profile of the program. Over the past year, over 700 people have expressed interest in DEEP and Microsoft courses.

In 2020, DEEP also provided the resources to intake new cohorts of ICTC's acclaimed Coach Connect program. DEEP also provided the foundation for the creation of ICTC's Agile Industry Mindset (AIM), which launched this spring 2021. AIM is designed as a sustainable ICTC program, created with renowned Life Skills Coach Beverley Walters. The AIM course will be offered to a greater audience in 2021.

In 2020, ICTC also integrated Microsoft's LinkedIn Learning Pathways in various ICTC programs, including Youth Dividend. Microsoft offered their pathways and provided funding to have them integrated across the following categories:

- Software Development
- Sales Representative
- Project Manager
- IT Administrator
- Customer Service
- Digital Marketer
- IT Support
- Data Analyst
- Financial Analyst
- Graphic Designer

Finally, ICTC had the honour of contributing to and participating at Microsoft's annual Future Now event. ICTC was mentioned favourably in Microsoft's Global Skills Initiative launch announcement and its subsequent press release. These initiatives exposed ICTC to thousands of people—a direct result of the success of the DEEP program!

GitHub LinkedIn Microsoft

Other Immigration Programs

ICTC's Immigration team continues its partnership with organizations across Canada to deliver job readiness services to varying demographics. Multiple contracts apply to new and ongoing ICTC services.

The focus areas include current labour market information, workforce development, job readiness, resume review, interview preparation, job matching, cybersecurity, SCRUM training, and Information Technology Professional (ITP) certificates. ICTC is proud to deliver these effective programs to clients.

Client feedback is consistently positive: "I am excited to share with you the news that I got my first job as a business analyst with a software company named EDMS, located in Ottawa. I would like to thank you for your help and support during my job search journey."

Human Resources

ICTC has focused on supporting its employees across Canada during COVID by ensuring regular communication about mental health, events, accessible learning and activities for all family members, and reminding them of the benefits we have in place. During the pandemic, we decided to move to a completely remote workforce across Canada to ensure the health of everyone at ICTC. HR maintained ongoing connection with ICTC employees to ensure we were supporting the needs of all staff and the organization. To keep pace with the rapid growth of ICTC, we drafted and implemented a fully remote on-boarding process that ensures all employees feel connected before they start. They know precisely what to expect once they start, what their first few weeks will look like, and how to connect with people across the entire organization.

ICTC has grown from a staff of 65 employees to 80 between March 2020 and March 2021.

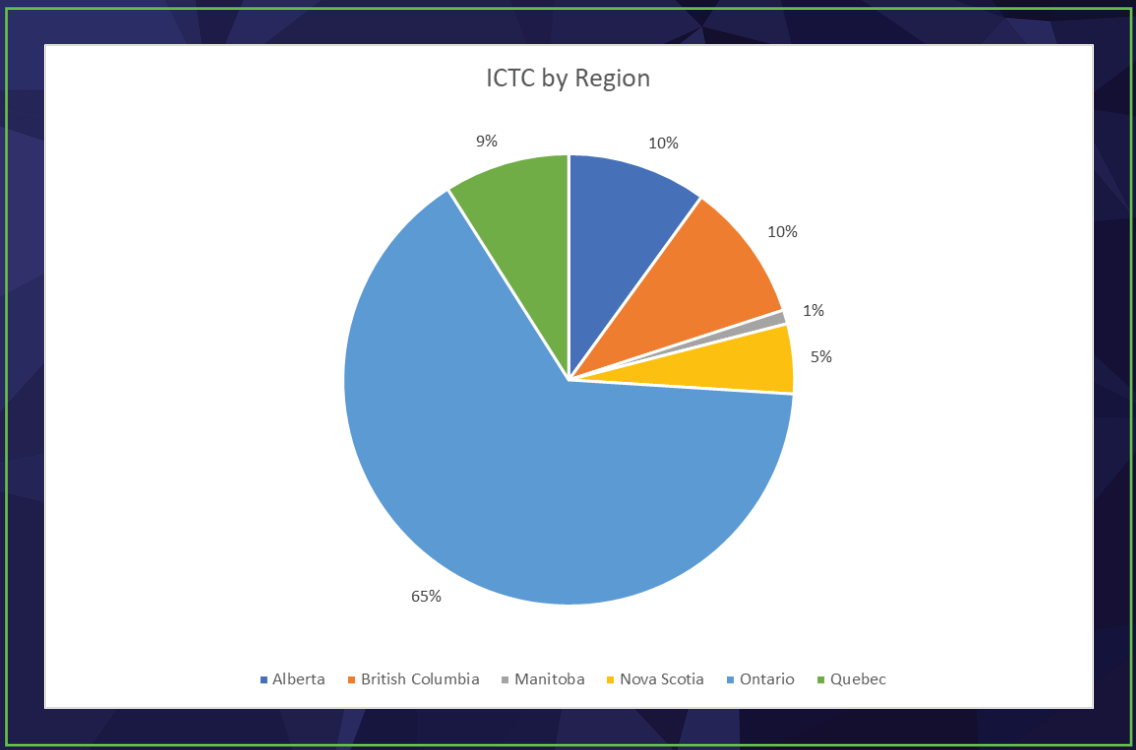


Figure 9.

Communications

The past year has been one of tremendous growth for the ICTC Communications Team (Comms) with respect to the maturity of its services and the measures and impacts of its success. At close to two years of formal operations, the Comms team has ratified a three-year strategy, defined and broadened its range of services, expanded its team, and brought a greater discipline to regular reporting and analytics of ICTC's social and traditional media impacts.

ICTC Comms is proud to have launched a French-language services branch that presently includes two full-time writers/translators dedicated to advancing ICTC's Bilingual Imperative mandate. The Comms three-year plan clearly outlines almost a dozen key service delivery areas, and a roadmap for continued growth and expansion.

In seeking to provide only the highest quality levels of client service, Comms has dedicated team members embedded in key ICTC business lines and programs to respond to their immediate and on-going needs. Comms also created an online service request feature allowing for any staff member to submit a support request. Last year, the team responded to 129 requests, ranging from social media campaigns, collateral development, webinar outreach, translation, video production, and more.

Along with establishing more disciplined and responsive client services, the Comms team has also met its commitment this year to publish a monthly newsletter (ICTC Insider), issue weekly media monitoring reports, and establish monthly/annual traditional and social media analysis— not just at the corporate level, but for individual programs and services.

We are pleased to share a highlight of these results.

Profile ▲	Audience	Net Audience Growth	Published Posts	Impressions	Engagements
Reporting Period May 1, 2020 – May 31, 2021	**9,183** ↗ 21.4%	**1,652** ↗ 6.9%	**1,757** ↗ 90.2%	**751,516** ↗ 19.2%	**21,678** ↗ 9.8%
Compare to Apr 1, 2019 – Apr 30, 2020	**7,565**	**1,546**	**924**	**630,262**	**19,746**
ICTC-CTIC	3,501	264	663	539,667	10,456
Information and C...	1,173	91	452	31,404	1,608
Information and C...	4,509	1,297	642	180,445	9,614

Figure 10.

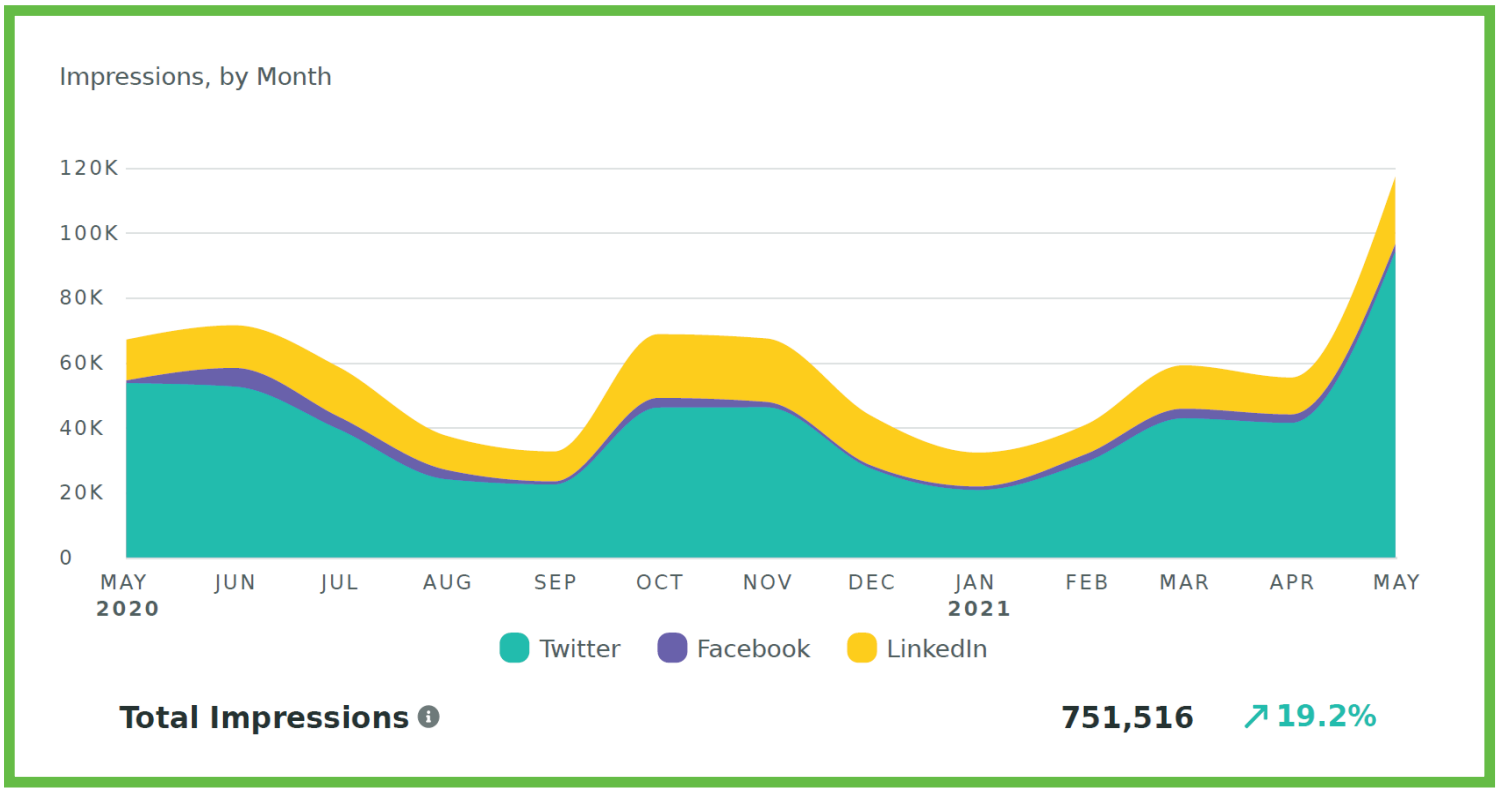
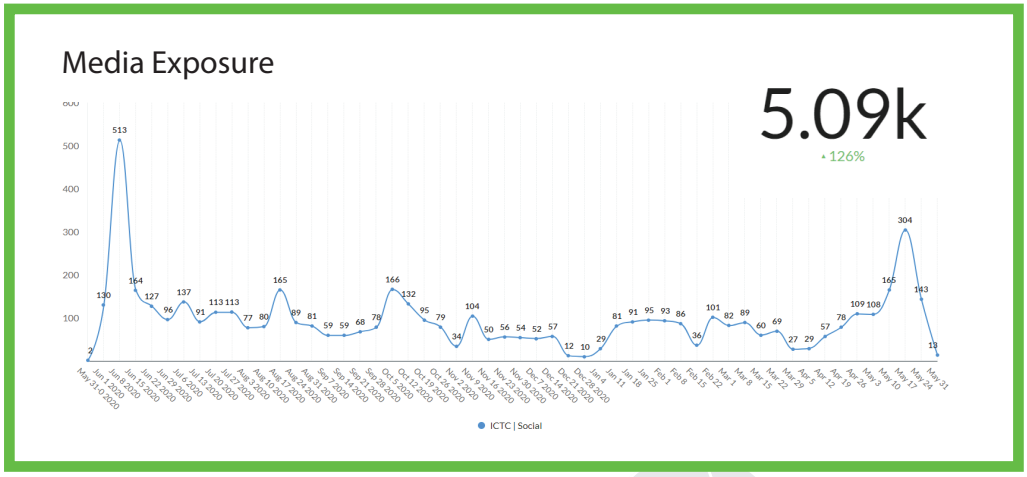


Figure 11.



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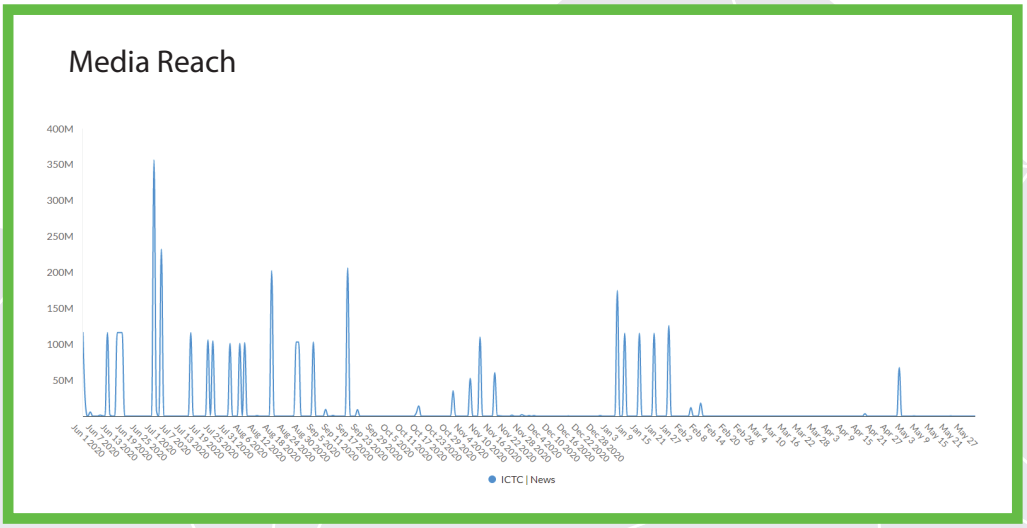

Figure 13.

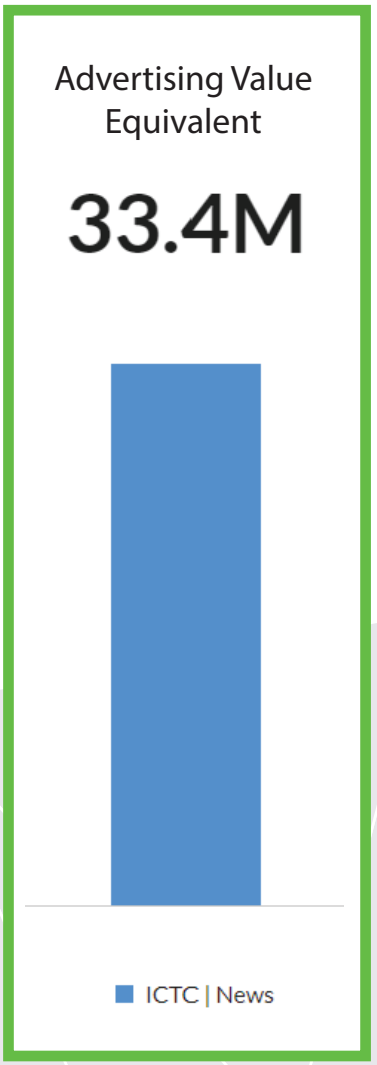

Figure 14.

Partners

A special thank you to all of our partners who have collaborated with ICTC in the 2020-2021 year! We are grateful for your continued support, and are looking forward to future endeavours.

Acadia University
Alberta Ministry of Labour & Immigration
Bishops University
Calgary Economic Development
CAVCOE
Cégep de Lévis
Cégep de l'Outaouais
Cégep de Saint-Félicien
Cégep de Trois-Rivières
Cégep Édouard-Montpetit
Cégep Garneau
Cégep Limoilou
CIETECH
Cisco Systems
Collège Ahuntsic
Collège de Maisonneuve
Collège John Abbot
Collège Matrix
Colors Inc.
CRIM (Centre de Recherche Informatique de Montréal)
CSE (Communications Security Establishment)
CyberNB
Dalhousie University
Development Solutions Europe Ltd.
Développement économique de l'agglomération de Longueuil
DigiBC
Durham College
École de technologie supérieure
École des sciences de la gestion
ECSEL Joint Undertaking
EMILI Canada
First Nations Technology Council
Future Ready New Brunswick
George Brown College
Global Affairs Canada
Harvest Moon Consultants
IMD World Competitiveness centre
International Labour Organization
Invest in Canada
Invest Ottawa & Bayview Yards
Joint Economic Development Initiative (JEDI)
Knowledge Adapters
Magnet
March of Dimes Canada
Memorial University of Newfoundland
Microsoft
MILA
MITT
Natural Resources Canada
New Brunswick Department of Post-secondary Education, Training, and Labour
Niagara College of Canada
Northern Ontario Heritage Fund Corporation
Numana (Formerly TechnoMontréal)
Octopi
Ottawa University
Propulsion Quebec
Qwasar
RÉPAF (Réseau des entrepreneurs et Professionnels Africains)
RSN Consulting Inc
Simon Fraser University non PIVOT
Tech Adaptika Solutions Inc
Tech Manitoba
TechConnex
TechnoMontreal (now Numana)
Transport Canada
Trouve un Stage Inc.
Université de Sherbrooke
Université Laval
University of British Columbia
University of Manitoba (Asper School of Business) University of Ottawa
UQTR Université du Québec à Trois-Rivières
Vancouver Economic Commission
VentureLab
WCT (Women in Communications and Technology)