

# DIGITAL ECONOMY TALENT SUPPLY: IMMIGRATION STREAM

THE INFORMATION AND COMMUNICATIONS TECHNOLOGY COUNCIL | 2016



## PREFACE

The Information and Communications Technology Council (ICTC) is a not-for-profit national centre of expertise for the digital economy. Through trusted research, innovative talent solutions, and practical policy advice, ICTC fosters innovative and globally competitive Canadian industries empowered by a talented and diverse digital workforce.

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The authors made all reasonable efforts to ensure accuracy and fair reflection of the diverse perspectives gathered during consultations in compiling the document. The opinions and interpretations in this publication are those of the authors and do not necessarily reflect those of the Government of Canada.

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Thank you!

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## FOREWORD



Ted Maulucci, Chief Information Officer, Tridel Corporation

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I have worked at the Tridel Corporation for my entire career, starting as a construction superintendent and slowly taking on more responsibility for technology to become the Chief Information Officer. I have been at Tridel for close to 25 years, leading the IT function for the last 15.

Rewind back 20 years and PC's were just emerging and technology was viewed with both opportunity and skepticism. The IT workforce at Tridel, consisted of a single individual. As technology became more refined over the years, the business soon depended on it and the IT team grew from that single individual to a team of 30 employees and consultants. The growth of the dependence on technology in business is accelerating rather than decelerating, even the banks of today are more like IT companies than before.

We can look at the data related to the growth and demand for skilled IT workers and wonder where the people are coming from. Without bringing up the data, I can share that in conversation with my CIO peers the main challenge on the top of all our lists, is finding the right skilled talent. Globalization leads to greater competitiveness and that requires constant change and improved efficiency. Efficiency improvements come from process engineering and ultimately improvements in the use of technology. As a proud Canadian, knowing that for us to sustain our standard of living, we need to innovate and to do that we need skilled people, no matter what their background is or where they come from.

Throughout my career at Tridel, I have hired many individuals and our team is a mix of people from all over the world, with almost an even split of women and men — a gender composition we are extremely proud of when compared to that of Canada's ICT sector. Most of the people on our team have been together for over ten years, which is almost unheard of in tech related jobs. Most of the team are internationally educated professionals and we still reminisce about those first interviews — so nervous and conscious of accents and English, without knowing that all we wanted was highly skilled people that could develop applications and support infrastructure. We have built strong relationships over these last years with the people that Canada was so fortunate to get. There is both gratitude and appreciation that keeps our team together.

**In my opinion, this is a great deal for Canada. We get these wonderfully brilliant people that want to come to our country and in return it creates a rich culture that drives innovation and ultimately success for our companies.**

I am proud to be a supporter of ICTC and am a big believer in what they do. Many of the skilled people that choose Canada to be their home are unaware of the culture and often struggle to find meaningful employment. Often, it is simply a matter of some coaching and confidence building and soon they are filling the skills gap that exists. I am also proud to be a part of the Canadian CIO community that is willing to support these newcomers through bridging programs and individual coaching.

This study by ICTC showcases how far Canada has come with respect to welcoming the worlds' citizens to our country and offering them excellent opportunities in tech. At the same time it also highlights the road ahead and the steps we need to take as a nation to continue to secure global talent. In a world that is so often filled with bad news, we need to celebrate this good news story of people helping people and bright futures being created! I thoroughly enjoyed reading this study and hope you will too.



Ted Maulucci  
Chief Information Officer



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# DIGITAL ECONOMY TALENT SUPPLY: IMMIGRATION STREAM

## EXECUTIVE SUMMARY

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The global market for information and communications technology (ICT) is estimated to have reached \$3.8 trillion in 2015, with nearly all new investment focused on “third platform” technologies that require interdependencies between social, mobile, applications, analytics and the cloud (SMAAC). The Internet of Things (IoT) — the extension of the Internet into the physical world through embedded technology that can communicate in real time — has become the most important innovation for accelerating digital adoption and ICT expansion worldwide. The rise of these advanced technologies is causing a transformative shift across all areas of Canada’s and the global economy.

The application and adoption of SMAAC and IoT in sectors such as health, manufacturing, natural resources, financial services and government services has created strong demand for highly skilled workers capable of implementing and managing these technologies. However, Canada is experiencing a shortage of skilled ICT talent, due to demographic shifts and not enough youth in the supply pipeline. Canada is not alone in this trend, and the global talent scarcity — compounded by increased labour mobility due to free-trade agreements — will boost the importance of securing internationally educated professionals. This new reality means that Canada must continue to recognize and welcome immigrant ICT talent to address labour shortages and increase business’ innovation.

Immigrants are vital to our nation’s competitiveness and are helping to drive Canada’s digital economy. Currently, there are more than 350,000 (40%) immigrants employed in ICT jobs in Canada’s digital economy. About 96% are permanent residents or Canadian citizens and 4% are temporary workers. Permanent and temporary ICT immigrants enter the country via a number of different pathways and represent an important segment of the economic migrants coming to Canada. Since the 2008 global recession, the proportion of immigrants (permanent and temporary) in the digital economy has increased steadily each year.

Immigrants joining the ICT sector are a diverse and highly educated talent pool:

- ◆ Over three-quarters of immigrants employed in ICT jobs have an educational background in ICT or science, technology, engineering, and mathematics (STEM).
- ◆ The top region of origin for immigrants employed in ICT occupations are China, European Union, and South Asia.
  - ◆ More than 60% of immigrants employed in ICT are members of a visible minority group.
- ◆ About one in four immigrants employed in ICT is a woman.

Despite the importance of immigrants to Canada's digital economy a number of challenges and barriers exist for efficiently attracting and integrating immigrants into the workforce. Fierce international competition for global digital talent, efficiency of the migration process, pending trade agreements skills mismatches and human resource practices impact the ability to rapidly integrate ICT newcomers into the workforce. A number of these obstacles impede our nation's ability to effectively leverage the talents and benefits this group has to offer. Therefore, ICTC recommends:

- ◆ Policy makers should provide a temporary exemption for two years for specific high demand occupations identified by reliable labour market forecasts. This exemption should be capped to a certain number nationally.
- ◆ Policy makers should make temporary allowances for companies to hire above the cap limit in return for contributing financial support to developing the talent supply in Canada (quid pro quo policy).
- ◆ Policy makers and employers should prioritize the transition of higher skilled and high demand ICT Temporary Foreign Workers (TFWs) to permanent citizens as part of the Canadian Experience Class.
- ◆ That where Labour Market Impact Assessments (LMIAs) are necessary (for the non-exempt occupations), policy makers should delegate the responsibility to labour market subject matter expert organizations to fast track the process for employers looking to hire global talent.

With regards to Express entry, ICTC recommends that:

- ◆ Federal and provincial policy makers should work with industry and labour market-focused organizations to update labour market information and National Occupation Classifications codes used by immigration and workforce development staff for assessing the supply of and demand for emerging occupations.
- ◆ Federal policy makers should reinstate the expedited visa stream previously referred to as the Facilitated Processing of Information Technology Workers in order to allow skilled global digital talent to enter Canada quickly to fill immediate talent shortages high-demand occupations.

Furthermore, devising policies, strategies, and programs, at the government and enterprise level, that eliminate the barriers immigrants face will allow for them to more quickly integrate into the ICT workforce. Therefore, we also recommend that:

- ◆ Policy makers should make available to small- and medium enterprises (SMEs) more resources that can help SMEs identify and address unconscious bias and build cultural competence within their organizations so that they can make the most effective use of all immigrant talent available to them.
- ◆ Industry, education and government should develop and promote targeted learning opportunities to attract female immigrants to ICT



careers. This may include targeted industry-driven awareness and community programs to attract this talent pool into high-demand ICT careers and targeted scholarships to attract female immigrants.

- ◆ Industry and government should invest in offering more training and development opportunities to promote continuous learning, advancement opportunities, workforce upskilling, and enhance immigrants' communication skills.
- ◆ Industry should employ inclusive and skills-based recruiting techniques to overcome issues surrounding international credential and experience validation.

These recommendations form part of Canada's National Digital Talent Strategy [Digital Talent — Road to 2020 and Beyond](#) designed to ensure Canada's talent will be well prepared to succeed as skilled workers and entrepreneurs in our increasingly digital and global economy.

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# DIGITAL ECONOMY TALENT SUPPLY: IMMIGRATION STREAM

## INTRODUCTION

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Canada's Information and Communications (ICT) sector is a \$74 billion per year industry and employs over 655,000 professionals from all backgrounds and experience. Given that more than half of Canadian ICT workers are employed in non-ICT sectors, the digital economy at large has more than 877,470 professionals employed in ICT jobs. As an industry, the ICT sector has outperformed the overall economy since the global financial crisis in 2008. ICT sector growth has accelerated during 2014 and 2015 averaging 6.4% annually over that period and doubling the growth and pace of other sectors of the economy.

Technologies such as social media, mobile, apps, analytics, and cloud (SMAAC), Internet of Things (IoT), automation and advanced manufacturing are driving innovation and competitiveness in Canada's economy. These disruptive technologies are modifying business models across all economic sectors through virtualization of operating systems, servers, storage devices, and network resources — as well as digitalization of key business processes such as marketing, commerce, production, customer service, and communication. Digital technologies are changing the way companies do business, resulting in quick and easily accessible data and communications, information consistency, responsive case management and seamless information exchanges. Many sectors in Canada's economy, such as ICT, government, finance, healthcare, manufacturing, professional services and others have already embraced digital technologies. Despite this progress, there are several obstacles to digital adoption such as, not appreciating the full value and benefits, lack of available funds and financing, and lack of available skilled talent to implement and manage digital technologies.

As businesses continue to go digital or look to develop new technologies, the demand for skilled digital talent in Canada has remained extremely high. Based on ICTC's projections, more than 182,000 ICT positions will need to be filled by 2019. The core ICT sector (including SMAAC) and its associated subsectors — including cyber security, e-commerce, entertainment and video gaming, CleanTech, eHealth, and connected transportation and cities — will continue to experience exponential growth and a high demand for talent. Additionally, there are several sectors outside of the traditional technology sector that are adopting and innovating digital technologies and are in dire need of skilled ICT talent. Specifically, in the next four years manufacturing, finance, and health will have a strong demand for skilled ICT talent. As digital adoption across all sectors increases and the emerging subsectors continue to grow, the ICT labour market will tighten even further.

There are problematic talent shortages and pipeline challenges, including an aging population, low birth rates and an increase in the number of retiring baby boomers. Since the mid-1990s, Canada's population growth has remained stagnant at 1% per year and the contribution of natural increase (i.e., the difference between births and deaths) is predicted to further decrease over the next 20 years.<sup>1</sup> In 2015 alone, over 90,000 ICT workers were nearing retirement and this number will continue to grow as more baby boomers exit the workforce in the upcoming years.

While annual ICT enrolment rates have increased by 24% since 2010<sup>2</sup>, the number of ICT graduates, with the right skills, will not satisfy labour market demand. For example in 2015, 29,000 people graduated from ICT related degrees, which represents less than a quarter of the workers needed to satisfy employer demand. Furthermore, there are simply not have enough young people selecting STEM courses in secondary school — a critical gateway for entering ICT post-secondary programs and careers in the future.

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<sup>1</sup> Laurent Martel (October 27, 2015). "Recent changes in demographic trends in Canada." *Statistics Canada*.

<sup>2</sup> *Information and Communications Technology Council (2015). Digital Economy Supply: Canada's Post-Secondary Education Stream.*

In addition, as a result of employment growth and replacement demand due to skills mismatch, retirements and other exits, demand–supply imbalances will affect some occupations (e.g., information systems analysts, computer and network operators, computer programmers, software engineers, database analysts and administrators) more than others. These talent supply-demand imbalances impact every stage of the talent pipeline, from entry level roles to senior leadership and C-suite positions. As talent scarcity increases, leveraging Canada’s diverse talent pool will help ensure businesses have the skilled people they need to compete in the global digital economy. Over the next decade, skilled immigrants will continue to increasingly play an important role in mitigating labour force shortages.

## IMMIGRANTS — A CRITICAL SUPPLY OF DIGITAL TALENT

Canada has a strong tradition of welcoming global talent and is consistently listed as a top destination for immigrants. Indeed, the online job posting and aggregator web site, recently found that Canada was one of the top 3 countries, along with the United Kingdom and United States, international job seekers looked at for Java programming job postings.<sup>3</sup> With the labour market continuing to tighten, it will be increasingly important to leverage this diverse talent pool to maintain our competitive advantage in the global digital economy.

Diverse and inclusive businesses with immigrants are more productive and innovative, translating into real and significant financial gains for businesses and the economy at large. Conference Board of Canada research found that there is a positive relationship between net migration and country-level scores on innovation.<sup>4</sup> Furthermore, the Conference Board of Canada found that increasing immigration corresponded to a positive increase in imports and exports and even Foreign Direct Investment (FDI), an important component for promoting innovation.<sup>5</sup>

Additionally, immigrants provide a strong competitive advantage to companies. The buying power of ethnic minorities has increased and immigrant employees help inform companies about the needs of customers from ethnically diverse backgrounds.<sup>6</sup> Moreover, a number of immigrants are bilingual or even multilingual and act as a cultural bridge for communicating and building relationships in global markets.<sup>7</sup> Furthermore, immigrants can help foster a workplace culture grounded in diverse thinking, a critical driver for innovation.<sup>8</sup> An analysis by McKinsey & Company of companies’ diversity and organizational performance revealed that ethnically-diverse companies are 35% more likely to outperform their peers.<sup>9</sup> The impact and benefits of immigrants in the workforce is not isolated to one organizational sector, but evident in companies from all areas of economy, including ICT.

In order to fully leverage the value of global digital talent, we must understand the characteristics and employment experience of global digital talent in Canada. The data and analysis in this report will shed more light on the background, migration pathways, and challenges of immigrants in the Canadian ICT labour market. Additionally, it will provide insights for all stakeholders — policy makers, organizations, and immigration agencies — so that they can tailor their strategies and policies to effectively leverage this critical talent pool.

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<sup>3</sup> Indeed (2016). *Labour Market Outlook 2016: Uncovering the Causes of Global Jobs Mismatch*.

<sup>4</sup> The Conference Board of Canada (2010). *Immigrants as Innovators: Boosting Canada’s Global Competitiveness*.

<sup>5</sup> Ibid.

<sup>6</sup> HRMA (2012). *Hiring and Retaining Skilled Immigrants: A Cultural Competence Toolkit*.

<sup>7</sup> Ibid.

<sup>8</sup> Ibid.

<sup>9</sup> McKinsey & Company (November 2014). *Diversity Matters*.

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## Section 2:

# SNAPSHOT OF IMMIGRANTS IN CANADA'S DIGITAL ECONOMY

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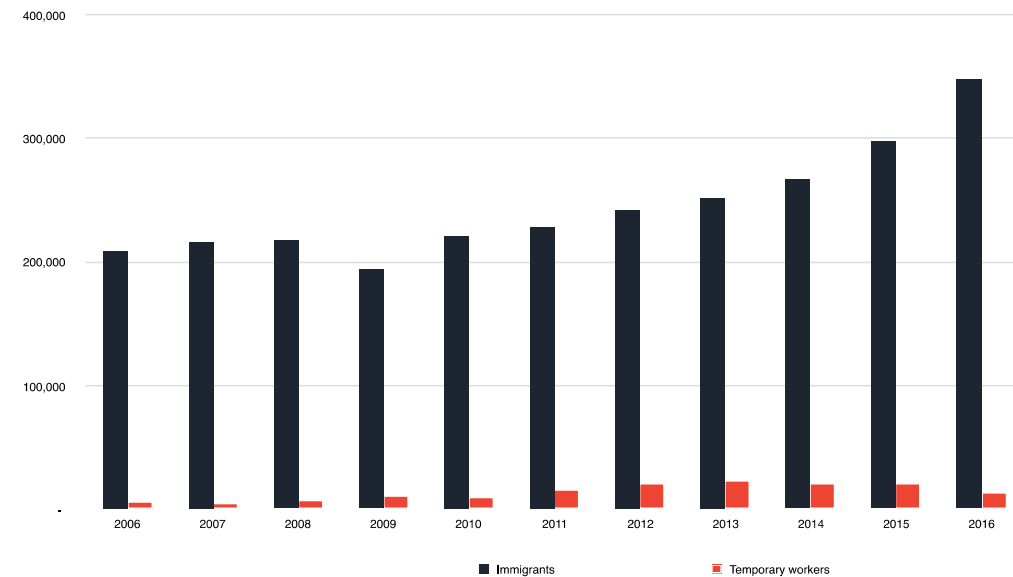
Immigrants play a critical role in the health and growth of Canada's digital and overall economy. Currently, of the 17,946,600 individuals employed in Canada, over 4,428,300 (25%) are immigrants.<sup>10</sup> In terms of digital talent, of the total number of workers presently employed in ICT occupations across all sectors of the economy, there are more than 350,000 (40%) immigrants in ICT jobs in Canada (Figure 1). This is in sharp contrast with the overall economy, where immigrants hold one-quarter of all jobs. Of these immigrants employed in ICT jobs approximately 347,300 (96%) are landed immigrants.<sup>11</sup>

Furthermore, of the 4 million immigrants employed in all jobs in Canada, 334,600 (7%) are temporary workers and in ICT positions 13,400 (4%) are temporary workers. Unemployment amongst ICT immigrant professionals (landed and temporary) is consistently low at 2.7% and has remained relatively steady for the past four years. In contrast, the unemployment rate among immigrants in the overall Canadian labour market is 7.7%.

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LANDED AND TEMPORARY IMMIGRANT ICT EMPLOYMENT ACROSS ALL SECTORS IN CANADA

Fig. 1



SOURCE: ICTC; Statistics Canada (2016).

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<sup>10</sup> Refers to people who were born outside Canada including those who later obtained Canadian citizenship or permanent residency.

<sup>11</sup> In this study landed immigrants have been defined as those who have obtained permanent residence and temporary workers are those who are working in Canada on a temporary visa.

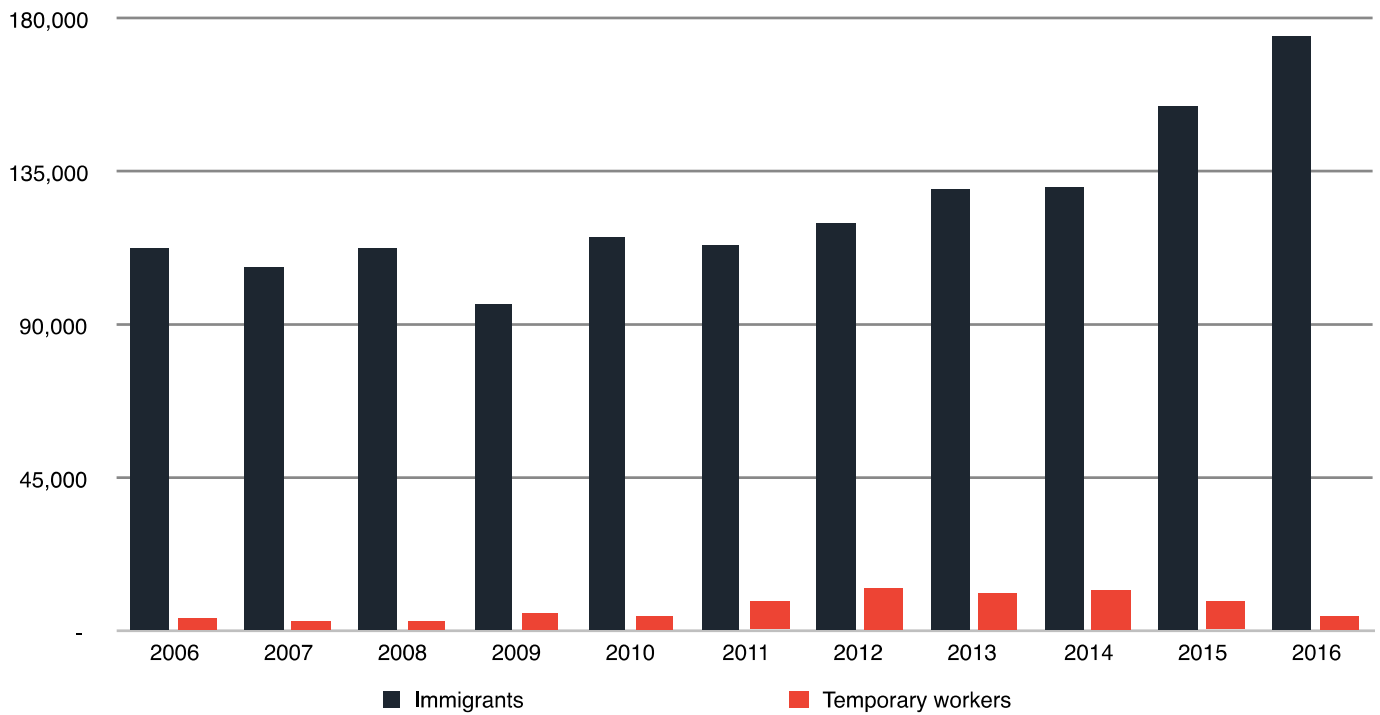
## ICT SECTOR

In the ICT sector specifically, of the total number of workers from all professions (655,000) in the sector, about 258,700 (40%) are immigrants of which 245,900 (38%) are landed immigrants and 12,800 (2%) are temporary workers. Furthermore, about 178,900 (44%) immigrants are employed in ICT jobs in the ICT sector. Of these ICT immigrants, 174,700 (97%) are landed immigrants and 4,200 (2%) are temporary workers (Figure 2). This indicates that the majority of landed immigrants employed in the ICT sectors are working in ICT jobs where as the opposite maybe true of temporary workers. However, due to the expanding nature of emerging hybrid-ICT jobs, it is also possible that these temporary workers are classified under jobs that are not 'traditional' ICT occupations.

After the 2008 recession, the number of immigrants, particularly landed immigrants, employed in ICT jobs in all sectors has steadily increased. With respect to temporary ICT workers, the prevalence of these workers has steadily increased, but this growth appears to have plateaued in the past year. These trends may change in the upcoming years as more free-trade agreements are ratified and immigration policies adjusted. For example, if the Trans-Pacific Partnership (TPP) is ratified the labour mobility stipulations outlined in the agreement could cause disruptions in the labour market as the inflow of global talent increases or as Canadian citizens leave to work abroad.

LANDED & TEMPORARY IMMIGRANT ICT EMPLOYMENT IN THE ICT SECTOR

Fig. 2



SOURCE: ICTC; Statistics Canada (2016).

## Geographic dispersion

Provincially, Ontario employs the highest number of immigrants in ICT roles, with 199,650 in 2015. By comparison, ICT employment for immigrants is 63,500 in Quebec, 45,810 in British Columbia, 28,800 in Alberta, 5,110 in Manitoba, 3,540 in Nova Scotia, 2,650 in New Brunswick, 2,360 in Saskatchewan, 1,280 in Newfoundland and Labrador, and 100 in Prince Edward Island.

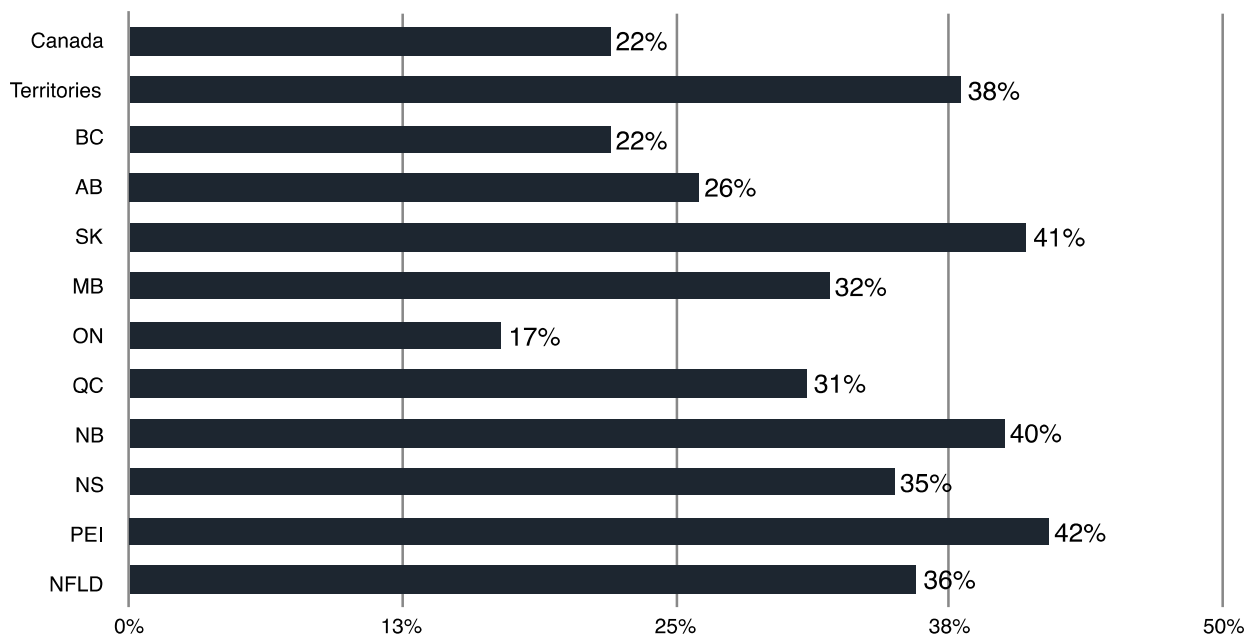
## Citizenship status and length of time in Canada

About one in five immigrants have yet to obtain Canadian citizenship while securing employment in ICT jobs according to 2011 data (Figure 3). This data indicates that the majority of immigrants in ICT jobs are naturalised. This trend also appears to be related to the length of time immigrants have been in Canada, with more than 15% of immigrants having been in Canada for more than five years (Figure 4).

Geographically, the proportion of immigrants without Canadian citizenship is higher in some areas, such as Prince Edward Island (42%), Saskatchewan (41%), New Brunswick (40%), and the Territories (38%). Again, these geographical trends appear to be related to the length of time immigrants have been in Canada. Specifically, these regions tended to have higher proportions of immigrants who had been in Canada for less than five years. This trend could be due to campaigns, programs, policies or strategies enacted by these jurisdictions to attract more new immigrants to their respective regions.

PREVALENCE OF IMMIGRANTS IN ICT JOBS THAT DO NOT HAVE CANADIAN CITIZENSHIP

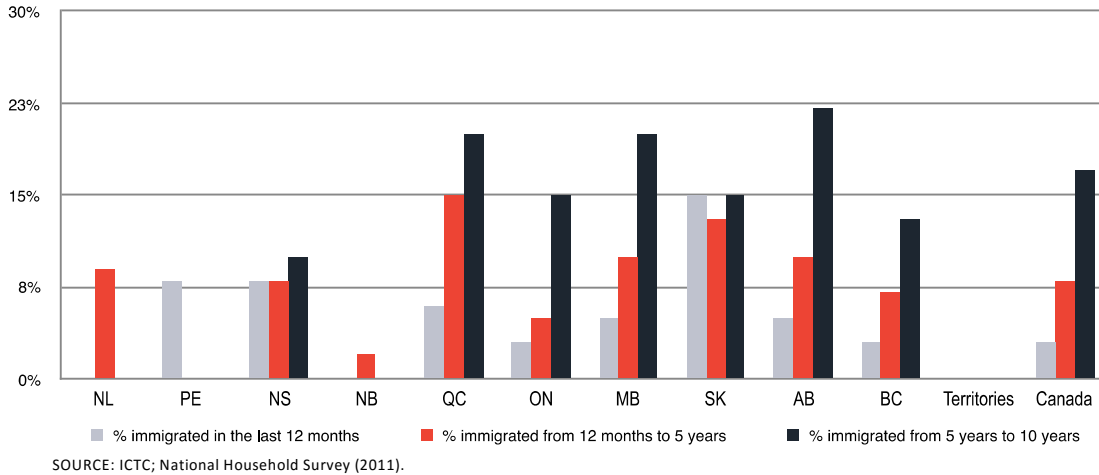
Fig. 3



SOURCE: ICTC; National Household Survey (2011).

Fig. 4

IMMIGRANTS WITH ICT JOBS: LENGTH OF TIME IN CANADA

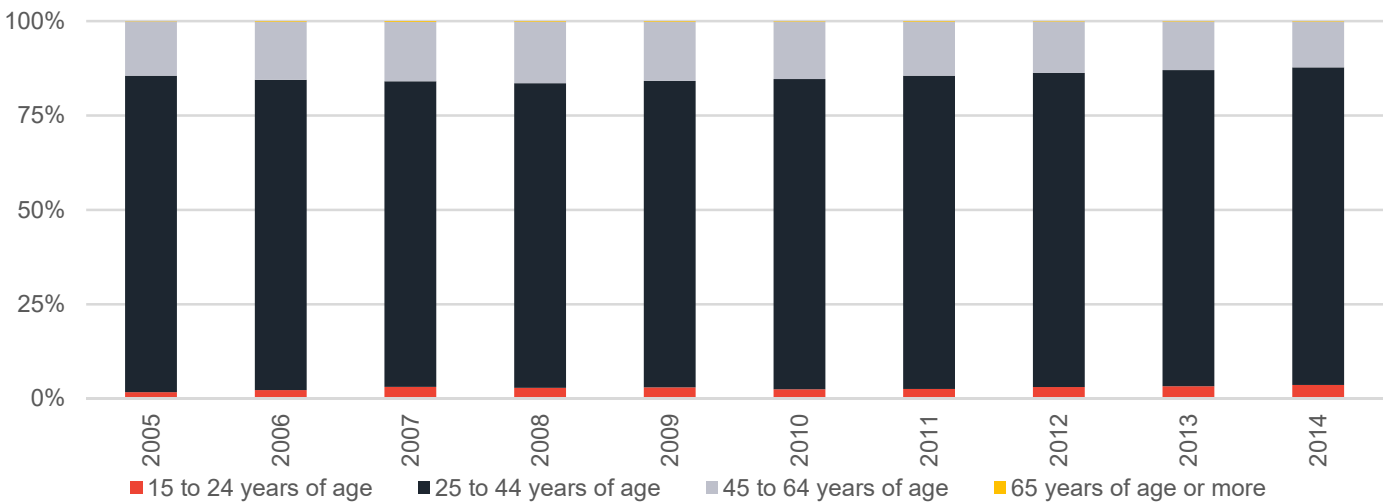


Age

The age profile of all economic immigrants entering Canada has remained relatively unchanged over the past decade, and this includes ICT professionals as well. Overwhelmingly, the majority of immigrants (temporary and permanent) entering Canada are between the ages of 25 and 44 years old. While there has been a slight increase in the number of immigrants aged 15 to 24 years, this age group still only makes up less than 10% of all principal applicant immigrants.

Fig. 5

AGE DISTRIBUTION OF ALL IMMIGRANTS IN CANADA



SOURCE ICTC; Immigration, Refugees and Citizenship Canada (2016).

\*This data is for principal applicants only and does not include dependents or accompanying family members.

## Educational background

Immigrants remain a highly educated talent pool. Overall, a significant proportion of immigrants employed in ICT did post-secondary studies in a related area such as ICT or science, technology, engineering or mathematics (STEM) (Table 1). About a decade ago more than half of all immigrant men had an engineering or computer science degree<sup>12</sup> and in 2015 more than three-quarters of all immigrants in ICT have some sort of (college or university) post-secondary degree in ICT or STEM.

There is an equal split of immigrants who secured employment in ICT among those who studied in Canada and those who studied overseas. Prince Edward Island and the Territories have lowest percent of immigrants who studied outside of Canada. This finding indicates that these individuals are probably international students who studied in that region and then obtained employment, but most likely (especially in the case of the Territories) studied somewhere in Canada then post-graduation moved to these areas for employment. Conversely, New Brunswick has the highest percent of immigrants who studied outside of Canada, indicating that many of these individuals are probably newcomers to Canada.

ACADEMIC BACKGROUND AND LOCATION OF STUDY AMONG IMMIGRANTS WORKING IN ICT JOBS

Table. 1

Geographical Region	ICT+STEM background	Studied outside Canada
NL	64%	43%
PE	50%	17%
NS	82%	52%
NB	57%	63%
QC	77%	50%
ON	76%	55%
MB	75%	53%
SK	76%	51%
AB	81%	57%
BC	74%	53%
Territories	50%	0%
<b>Canada</b>	<b>76%</b>	<b>54%</b>

SOURCE: ICTC: National Household Survey (2011).

## Occupations

The ICT jobs with the highest proportion of immigrants were information systems analyst and consultants (26%), computer programmers and interactive media developers (17%), and software engineers and designers (10%).

<sup>12</sup> Information and Communications Technology Council (2011). *Impact of Immigration on Canada's Digital Economy: A Situational Analysis*.



This indicates that immigrants are concentrated in jobs vital to the digital economy, since these occupations map closely to ICTC's forecasted in-demand occupations for the next three years. These jobs also tend to have unemployment rates below the 3.7% average in ICT, with one, software engineers, experiencing 0% unemployment. A decade ago, the jobs with the most immigrants were information systems analyst and consultants, computer programmers and interactive media developers, electrical and electronics engineers and software engineers and designers, indicating few differences between the top jobs for immigrants from 2006 to 2016.<sup>13</sup>

## TOP ICT JOBS FOR IMMIGRANTS ACROSS ALL SECTORS IN CANADA

Table 2

Top ICT jobs for immigrants	# Employed	Proportion
Information systems analysts and consultants	90,600	26%
Computer programmers and interactive media developers	59,000	17%
Software engineers and designers	35,500	10%
User support technicians	33,200	10%
Computer and information systems managers	21,100	6%
Database analysts and data administrators	18,100	5%
Computer network technicians	17,600	5%
Graphic designers and illustrators	17,400	5%
Electrical and electronics engineers	15,900	5%
Web designers and developers	15,600	4%
Computer engineers (except software engineers and designers)	10,500	3%
Electrical and electronics engineering technologists and technicians	7,600	2%
Information systems testing technicians	3,600	1%
Telecommunication carriers managers	1,600	0%
Broadcast technicians	-	0%

SOURCE ICTC; Statistics Canada (2016).

Altogether, the top occupations held by immigrants in each province closely mimic the overall top jobs. However, there are some geographical differences with respect to software engineers. The top ICT jobs for the provinces with the largest number of immigrants are listed below:

- ◆ Ontario
  - ◆ Information systems analysts and consultants (31%)
  - ◆ Computer programmers and interactive media developers (16%)
  - ◆ User support technicians (10%)

<sup>13</sup> Ibid.

- ◆ Quebec
  - ◆ Computer programmers and interactive media developers (24%)
  - ◆ Information systems analysts and consultants (19%)
  - ◆ Computer networks technicians (9%), user support technicians (9%), and graphic designers and illustrators (9%)
  
- ◆ Alberta
  - ◆ Information systems analysts and consultants (30%)
  - ◆ Computer programmers and interactive media developers (17%)
  - ◆ Software engineers and designers (16%)
  
- ◆ British Columbia
  - ◆ Information systems analysts and consultants (20%)
  - ◆ Software engineers and designers (18%)
  - ◆ Computer programmers and interactive media developers (17%)

## Gender

Currently, about one in four immigrants employed in an ICT position is female (Table 3). This ratio is relatively similar to the proportion of females in the overall/total ICT workforce (23%). In comparison, the proportion of women in overall Canadian workforce is 48% and the proportion of women in the immigrant workforce in Canada is 47%. This comparison, highlights that there are similar challenges and barriers for attracting and integrating female immigrants into ICT. Whether a ‘double-penalty’ (i.e. being a member of more than one disadvantaged group, such as being an immigrant and a woman), exists for female immigrants in ICT is difficult to determine based on this data, however, it does indicate that a significant disparity is present.

With respect to specific occupations, the proportion of females in the total ICT workforce and females in the immigrant ICT workforce is relatively similar. There are only two exceptions — information systems testing technicians and electrical and electronics engineering technologists and technicians — where the difference in the proportions between females overall and females in the immigration segment is more than five percent. In fact, for information and systems testing technicians, women make up almost half of the immigrant workforce. However, in spite of this, it is also evident that women are concentrated only in a couple of the future in-demand jobs — graphic designers and illustrators and database analysts and data administrators — indicating that more efforts to get women, including female immigrants, into high-demand ICT careers may be warranted.

GENDER DISTRIBUTION AMONGST IMMIGRANTS WORKING IN ICT JOBS Table. 3

ICT occupation	Proportion of females in total ICT workforce	Proportion of females in the immigrant ICT workforce
Information systems testing technicians	41%	49%
Graphic designers and illustrators	45%	41%
Database analysts and data administrators	35%	32%
Web designers and developers	32%	34%
Telecommunication carriers managers	32%	29%
Information systems analysts and consultants	28%	28%
User support technicians	24%	22%
Broadcast technicians	24%	26%
Computer and information systems managers	23%	22%
Computer network technicians	19%	18%
Computer programmers and interactive media developers	18%	22%
Software engineers and designers	17%	19%
Computer engineers (except software engineers and designers)	12%	14%
Electrical and electronics engineers	11%	14%
Electrical and electronics engineering technologists and technicians	10%	16%
<b>Total in ICT occupations</b>	<b>23%</b>	<b>24%</b>

SOURCE ICTC; Statistics Canada (2016).

## Region of origin

With respect to region of origin, China (21%), European Union (including the United Kingdom) (19%), and South Asia (13%) are the top three areas that immigrants employed in ICT jobs originate from (Figure 5). These areas have historically been the top source countries. For example, China and South Asia have been the top source countries since the 2000s. In 1971, more than 60% of Canada's immigrants came from Europe, by 2006 this proportion had dropped to 37%, and by 2011 European immigrants represented less than one-fifth of the migrant pool.<sup>14</sup> While it is possible that these region of origin trends will remain the same in the upcoming years, as more free-trade agreements are signed, this data could fluctuate and change.

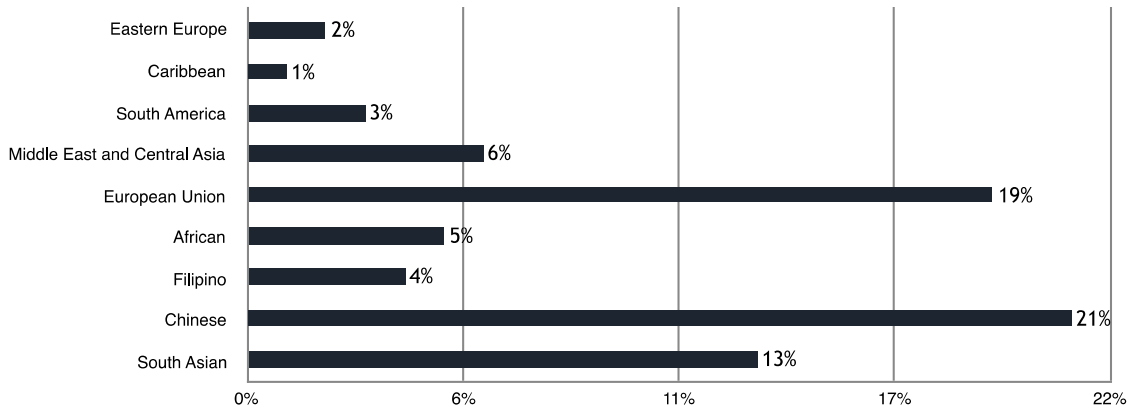
It is important to remember that being an immigrant is not necessarily synonymous with being a member of visible minority group. An analysis of immigrants in ICT jobs revealed that approximately 64% of immigrants identified themselves as a member of some visible minority group and 36% did not identify themselves as a visible minority (Figure 6). Out of those who did self-identify as being a visible minority, 22% identified as being Chinese, 15% as South Asian, 5% as Black, and 4% as Filipino.

<sup>14</sup> Information and Communications Technology Council (2011). *Impact of Immigration on Canada's Digital Economy: A Situational Analysis*.

Again, these trends closely overlap with the top regions of origin. It is also important to note that the term “visible minority” is not a global term and is often unknown to internationally educated professionals when they come to Canada, and hence may impact the data and their self-identification.

## GEOGRAPHIC REGION OF ORIGIN AMONGST IMMIGRANTS WORKING IN ICT JOBS

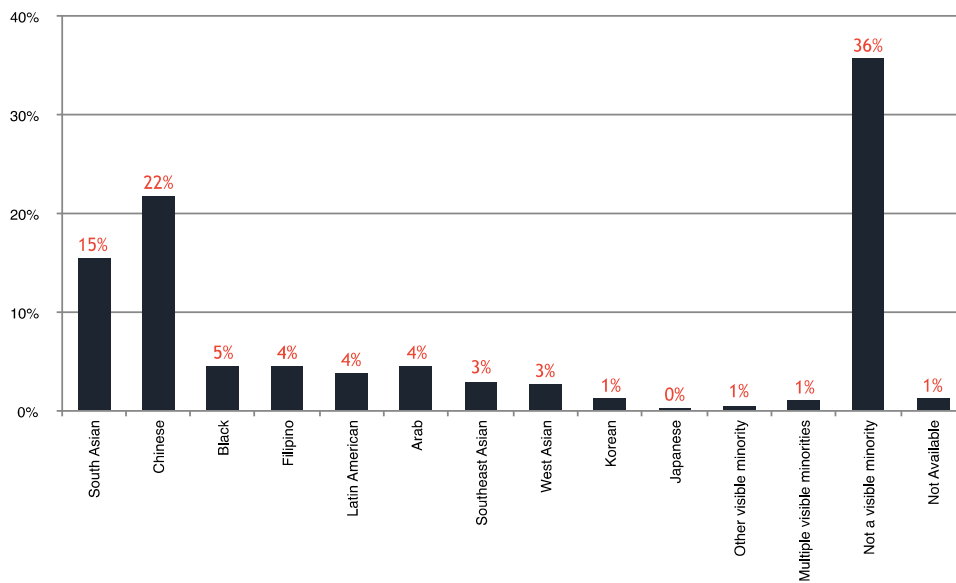
Fig. 6



SOURCE ICTC; National Household Survey (2011).

## SELF-IDENTIFIED VISIBLE MINORITIES AMONGST IMMIGRANTS IN ICT JOBS

Fig. 7



SOURCE ICTC; National Household Survey (2011).

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## Section 3:

# FLOW OF GLOBAL ICT TALENT FROM THE MIGRATION STREAM

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To provide a more complete picture of immigrant ICT talent, an investigation and analysis of the flow of global digital talent coming to Canada from both the temporary and permanent migration streams is also warranted. Immigration, Refugees and Citizenship Canada (IRCC) set 2015's maximum permanent immigration level plan to about 284,900 individuals, split between the economic, humanitarian, and family admission categories.<sup>15</sup> Out of these categories, the economic class is one of the largest and has more than doubled since 1991.<sup>16</sup> Economic migrants, temporary and permanent, represent an important source of talent, especially in ICT.

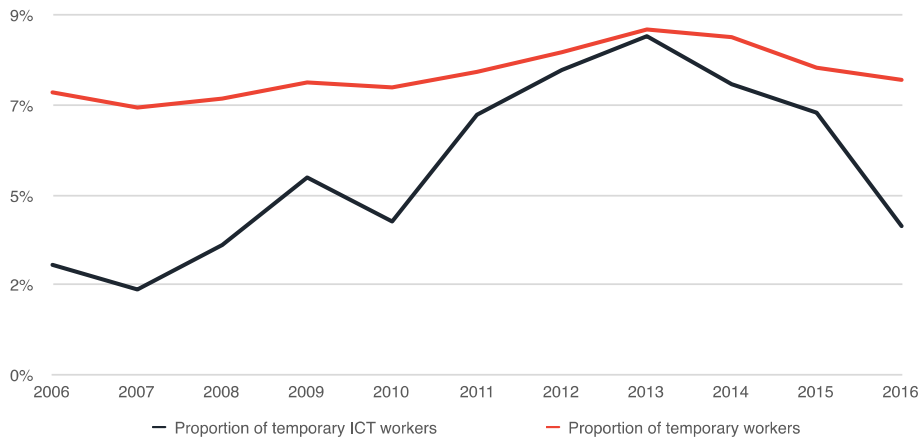
## Temporary Foreign Workers

Temporary foreign workers are important to Canada's economy because they help industry fill immediate talent gaps. Temporary foreign workers currently represent about 4% of immigrants working in ICT positions in Canada's digital economy. This is in contrast to the overall economy, where temporary foreign workers represent about 8% of employed immigrants in Canada. Furthermore, the proportion of temporary ICT immigrants in Canada peaked in 2013 at 8% and has steadily declined since (Figure 8). This could be due to the re-vamp that the Temporary Foreign Workers Program experienced in the past couple of years. Furthermore, employers' difficult experiences completing Labour Market Impact Assessments also known as LMIA's, (which is often necessary for bringing temporary global talent to Canada) may have shied them away from using this migration stream.

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PROPORTION OF TEMPORARY FOREIGN WORKERS IN THE OVERALL AND DIGITAL ECONOMY

Fig. 8



SOURCE ICTC; Statistics Canada (2016).

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<sup>15</sup> The Canadian Chamber of Commerce (2016). *Immigration for a Competitive Canada: Why Highly Skilled International Talent is at Risk*.

<sup>16</sup> Information and Communications Technology Council (2011). *Impact of Immigration on Canada's Digital Economy: A Situational Analysis*.

## Express Entry

Express Entry is a management and processing system for a number of Canada’s economic immigration programs such as Federal Skilled Worker Program, Federal Skilled Trades Program, and the Canadian Experience Class. Launched in 2015, this system was designed to increase the efficiency, flexibility, speed of the migration process and make economic migration more responsive to Canadian labour market needs. While still in its infancy, available preliminary data is shedding light on some of the demographics and characteristics of the inflow of newcomer talent coming to Canada.

Out of the top ten occupations of invited candidates in the Express Entry system, four are ICT occupations — information systems analysts and consultants, software engineers, computer programmers and interactive media developers, and graphic designers and illustrators — all of which closely correspond to the jobs with the largest number of employed immigrants and the most in-demand ICT occupations. Yet, the total number of Express Entry candidates in these ICT occupations is less than the total of the top two jobs — food service supervisors and cooks. Interestingly, IRCC found that food service and cook candidates tended to have lower human capital scores and a valid job offer whereas candidates in ICT, finance, and university professors had higher human capital scores, but no valid job offer.<sup>17</sup>

TOP OCCUPATIONS OF INVITED CANDIDATES IN EXPRESS ENTRY IN 2015

Table. 4

Top 10 occupations of invited candidates	Number of invited candidates	Proportion of total invited candidate pool (%)
Food service supervisors	2,356	8%
Cooks	2,295	8%
Information systems analysts and consultants	1,255	4%
Software engineers	940	3%
Computer programmers and interactive media developers	935	3%
University professors and lecturers	745	3%
Retail sales supervisors	669	2%
Graphic designers and illustrators	550	2%
Financial auditors and accountants	494	2%
Financial and investment analysts	446	2%

SOURCE Immigration, Refugees and Citizenship Canada (2016).

For all the Express Entry candidates the top three countries of residence includes Canada (78%), India (6.2%), and the United States of America (2.2%).<sup>18</sup> Since many temporary workers currently living in Canada use Express Entry as a path to permanent residency, this finding makes sense. With respect to country of citizenship, the top three countries from which Express Entry candidates held citizenship in were India (22.4%), Philippines (12.6%), and China (5.9%).<sup>19</sup> Again, this finding corroborates with ICTC’s other data with respect to country of origin and visible minority group. For the Federal Skilled Workers class, 80% of applications are finalized in 4.7 months or less; 3.5 months or less for the Canadian Experience Class; 4.9 months or less for Skilled Trades class; and 3.8 months or less for the Provincial/Territorial Nominees class.<sup>20</sup>

<sup>17</sup> Immigration, Refugees, and Citizenship Canada (2015). *Express Entry Year-End Report 2015*.

<sup>18</sup> Ibid.

<sup>19</sup> Ibid.

<sup>20</sup> Ibid.

It is important to note that this data is preliminary and based on a small volume of applications. These times could increase as application volume size increases.<sup>21</sup>

## Other Pathways: Provincial Nominee Program

The Provincial Nominee Program (PNP) is another important pathway for immigrants to enter Canada, with the federal government setting a maximum of 48,000 admissions in 2015, almost double the number in 2008.<sup>22,23</sup> As of 2015, a small portion of PNP candidates were filtered through the Express Entry program. Based on preliminary data the top provinces with Express Entry candidates invited to apply through Provincial Nominee Program was British Columbia (1,528 invited candidates), Ontario (871), Nova Scotia (656), and Saskatchewan (497).<sup>24</sup> Several of other provinces — such as Manitoba, Alberta, and New Brunswick — have a significant number of immigrants that migrate to Canada via the PNP.<sup>25</sup> However, since a small proportion of PNP candidates go through Express Entry, this is not entirely indicative of the regional trends and use of PNP, particularly in Quebec. It is important to note that Quebec's Provincial Nominee Program is separate and distinct from all other provinces as the process and requirements are unique to the province.

## Other Pathways: International Students

Studying in Canada as an international student is another entry pathway into the Canadian workforce. In 2014, international students represent 8% of post-secondary enrollment in Canada. The number of international students has doubled over a 10 year period, from 159,426 students in 2003 to 293,505 in 2013, and the rate has accelerated more in recent years.<sup>26</sup> The majority (55%) of international students are studying at a university.<sup>27</sup> The overall gender split for international students is close to 50-50.<sup>28</sup> In 2013, the top five source countries for international students were China (95,160 students), India (31,665), South Korea (18,295), Saudi Arabia (14,235), and France (13,090).<sup>29</sup> The students from these top five countries represented more than half of the total number of international students in Canada.<sup>30</sup> Ontario, British Columbia and Quebec receive the majority of international students in Canada.<sup>31</sup> Many of these students arrive with the long-term goal of becoming a permanent resident or Canadian citizen.<sup>32</sup> Furthermore, a number of migration pathways are favourable to international students seeking to stay in Canada permanently.<sup>33</sup>

## Other Pathways: Entrepreneurs and Investors

Entrepreneurs and investors are a vital component of Canada's digital ecosystem and this includes entrepreneurs and investors from outside of Canada. Domestic and international venture capitalists and private investors play an important role in assisting firms in increasing their R&D and promoting innovation. The number of migrants coming to Canada on an entrepreneur or investor visa had remained steady throughout the early 2000's and peaked in 2010, with British Columbia leading the way (Figure 9). However, since then the number of entrepreneurs and investors coming to Canada has steadily decreased. This trend is evident in all provinces, except for Quebec, where the number of immigrant entrepreneurs and investors reached a record high in 2015.

In addition to these above-noted direct immigration pathways, it should be noted that the following groups may also be viable options as potential sources of highly-skilled ICT talent: persons coming as dependents of principal applicants, family class applicants and

<sup>21</sup> Ibid.

<sup>22</sup> The Canadian Chamber of Commerce (2016). *Immigration for a Competitive Canada: Why Highly Skilled International Talent is at Risk*.

<sup>23</sup> Information and Communications Technology Council (2011). *Impact of Immigration on Canada's Digital Economy: A Situational Analysis*.

<sup>24</sup> Immigration, Refugees, and Citizenship Canada (2015). *Express Entry Year-End Report 2015*.

<sup>25</sup> Government of Manitoba (2014). *Manitoba Immigration Facts: 2014 Statistical Report*.

<sup>26</sup> Canadian Bureau for International Education (2014). *A World of Learning: Canada's Performance and Potential in International Education*.

<sup>27</sup> Ibid.

<sup>28</sup> Ibid.

<sup>29</sup> Ibid.

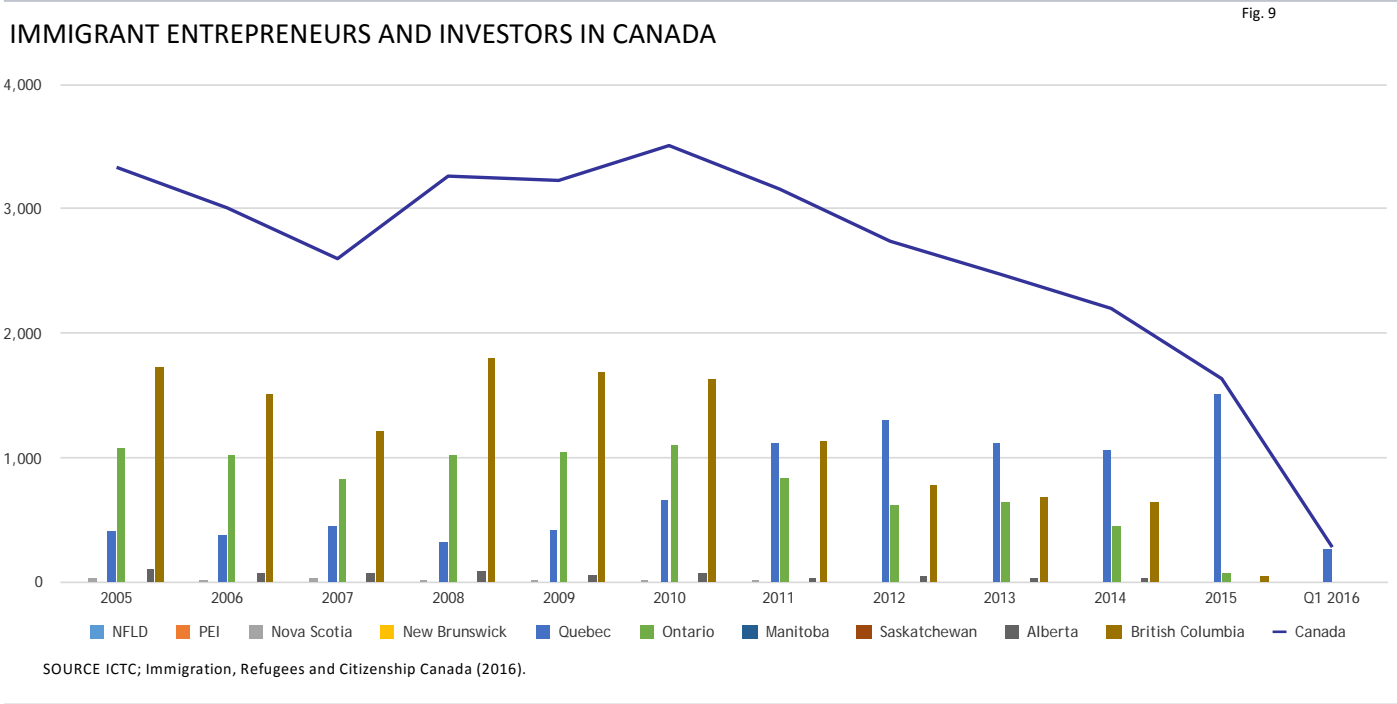
<sup>30</sup> Ibid.

<sup>31</sup> Ibid.

<sup>32</sup> Ibid.

<sup>33</sup> Immigration, Refugees, and Citizenship Canada (2015). *Express Entry Year-End Report 2015*.

dependents, and refugees.



## Section 4: CHALLENGES, BARRIERS, AND OPPORTUNITIES

While immigrants, particularly those who are educated and highly-skilled, have relatively good outcomes in Canada, there still remains a number of challenges and systemic barriers they encounter that limit their ability to seamlessly integrate into the workplace. Similarly, organizations also encounter barriers and challenges in terms of acquiring and securing international digital talent. Success in the fast-paced global digital economy and the battle for international talent will depend on addressing the challenges and barriers facing talent and business.

### International competition for immigrant talent

As population growth continues to decline, domestic skilled talent will become increasingly scarce. The global talent scarcity will boost the importance of securing highly skilled international workers. Canada is not alone in this trend, with countries like Denmark, Germany and the United Kingdom also experiencing talent shortages.



The European Commission, for example, anticipates a shortfall of around 825,000 ICT positions by 2020.<sup>34</sup> A report from the United States Department of Labour forecasts there will be 1.4 million computer specialist job openings by 2020 — but, universities are unlikely to produce enough qualified graduates to fill even a third of these positions.<sup>35</sup> Additionally, ‘traditional’ immigrant source countries are investing in policies and programs to either re-patriate or retain local talent.<sup>36</sup> In this context, companies and recruiters have had to evolve human resources practices — such as introducing new employment models like crowd sourced labour and global virtual workers — to obtain skilled top talent.

Furthermore, open global economies, enabled by free-trade agreements like the TPP, increase talent mobility as companies expand into new markets and labour markets become further globalized. As these free-trade agreements become ratified the growing competition for global talent will further intensify. This new reality means that Canada must continue to recognize and welcome international talent to remain competitive and address the skills shortage in our digital economy.

## Efficiency of Canada’s migration process

Canadian ICT employers, via ICTC focus groups, have continually expressed a preference to attain permanent workers over temporary workers. However, they have also shared that they will defer to whatever process is most effective and efficient to ensure continued company growth and sustainability.

There are a number of challenges in efficiently and effectively matching immigrants to jobs commensurate with their experience and skills while also meeting employers’ labour demands. To make the migration process for ICT and other high skilled workers more efficient, last year, the Government of Canada launched the Express Entry program to improve the efficiency and effectiveness of economic migration to Canada. The new system is designed to process permanent resident applications within six months and is more demand driven to meet labour market needs. According to IRCC, 80% of all cases have met the six month time processing commitment.<sup>37</sup> Albeit, these results are based on a small volume of applications and times may increase as application volumes grow. Even with these promising early results, an evaluation to improve the efficiency and outcomes of the system has been launched.

The transition process for highly skilled temporary foreign workers to stay in Canada can be complicated, making companies vulnerable to losing this productive and innovative skilled talent. Additionally, employers in high-demand sectors like ICT experience difficulties and delays in getting visas for high-skilled (permanent and temporary) digital talent to come to Canada.<sup>38</sup> Similarly, companies in new and emerging technology sectors are experiencing difficulties in securing talent because there are few or no National Occupational Classification (NOC) codes to match these jobs to. As a result, these jobs and the potential candidates get overlooked while demand keeps exponentially growing. Overall, these challenges reduce a company’s competitiveness in attracting highly educated global digital talent.

A former program that was widely favoured by employers as a conduit to quickly bring international talent to Canada to fill immediate talent shortages, was the Facilitated Processing of Information Technology Workers program. This program was widely favoured by employers because it enabled them to secure highly-skilled talent for in-demand jobs without having to acquire a Labour Market Impact Assessment (LMIA). From 2000 to 2009, this program admitted more than 18,000 in-demand ICT workers to Canada.<sup>39</sup>

## Skills Mismatches

Technical skills are the easiest to transfer across geography and borders. As a result, jobs that have very strong focus on technical skills — such as software programming or web development — are easier to secure for highly-skilled immigrants.

However, there are challenges with skills mismatches similar to other groups of ICT professionals, such as interpersonal,

<sup>34</sup> The European Commission (September 25, 2015). *Grand Coalition for Digital Jobs*.

<sup>35</sup> Michael Rosenbaum (August 12, 2015). “How to fix the tech talent shortage.” *Info World*.

<sup>36</sup> World Economic Forum (2011). *Global Talent Risk — Seven Responses*.

<sup>37</sup> Immigration, Refugees, and Citizenship Canada (2015). *Express Entry Year-End Report 2015*.

<sup>38</sup> Canadian Chamber of Commerce (January 2016). *Immigration for a Competitive Canada: Why Highly Skilled International Talent is at Risk*.

<sup>39</sup> Information and Communications Technology Council (2011). *Impact of Immigration on Canada’s Digital Economy: A Situational Analysis*.

communications, and business skills. Additionally, internationally educated professionals (IEPs) also encounter language and cultural gaps, creating further barriers to effectively utilize this vital talent pool. Some existing strategies to overcome these include:

- ◆ **Pre-arrival training and support:** The goal of pre-arrival information sharing and training is to equip IEPs with essential knowledge about working in Canada and skills that will make them more attractive to prospective employers. Providing resources such as language self-assessments, labour market orientation sessions, and e-learning courses help IEPs improve their understanding of the Canadian ICT workplace culture, including communication and competencies. Overall, this strategy increases the likelihood of IEPs securing employment, commensurate with their experience, faster once in Canada and reduces orientation and ramp-up time once hired.
- ◆ **Post-arrival training and support:** This may include bridge training programs that address employment barriers for highly skilled ICT IEPs, helping them create a pathway to meaningful employment in the Canadian job market. Through professional development opportunities (including technical skills upgrading), mentorship, coaching, and/or work experience components, these programs help IEPs better integrate socially, economically, and culturally into the workforce and Canadian society.

## Inclusive work environment and human resources practices

In order to effectively leverage the talents and benefits immigrants offer, organizations need employ inclusive human resources (HR) practices and create an environment that is welcoming to newcomers. In a recent ICTC survey, companies cited increasing their organizational capacity and capabilities, increasing their innovation and capacity to grow, and enhancing their ability to source new talent as the top three reasons for investing in diversity and inclusion. Another ICTC survey also found that few ICT employers have formal diversity and inclusion strategies or policies in place for doing so. This suggests that while companies understand the benefits of diversity and inclusion, few have the resources (e.g., time, finances, people) to invest in and implement these initiatives.

Flexible and inclusive recruitment and hiring practices are important for removing systemic barriers that immigrant job applicants may face. Lack of recognition of international qualifications and experience can be a significant barrier for immigrants. Also, it can be difficult for organizations to evaluate international credentials and work experience.<sup>40</sup> The Conference Board of Canada estimated in 2010 that the cost of not recognizing the credentials and skills of immigrants is between \$4.1 and 5.9 billion annually.<sup>41</sup> However, recruitment techniques, such as skills testing for all applicants, can help overcome this barrier for both employers and immigrant job applicants. Furthermore, more openness and flexibility around accepting international educational certificates, job equivalencies or job-related experiences, by employers may also help overcome this obstacle. While this may be difficult for small- and medium enterprises (SMEs) who have limited resources, there are immigrant-serving organizations who either have existing pre-screened candidates or can help with this process, which SMEs could tap into.

Additionally, creating a flexible and inclusive work environment that appreciates the talents, perspectives, and backgrounds of all employees, including immigrants, is extremely important. Training all staff about cultural codes, intercultural communication, and unconscious bias helps to equip people with the awareness and sensitivity necessary to recognize their own and others potential biases. This is an important step in the journey towards creating a culturally inclusive organization that respects and values diversity and creates an environment that promotes different thinking styles, critical for innovation.

<sup>40</sup> The Conference Board of Canada (2010). *Immigrant as Innovators: Boosting Canada's Global Competitiveness*.

<sup>41</sup> Ibid.

Furthermore, organizations can also investigate ways to provide training to immigrants to bridge any skills or language gaps they may have. For example both Kinaxis, a software-as-a-service (SaaS), and NTT Data, offer English language training for newcomers looking to improve their English language skills. Similarly, employing best-in-class human resources and employee development practices, such as career mentoring, further aids the integration process (see the Promising Human Resources Practices text box for more examples). Lastly, partnering and tapping into immigrant employment and community agencies are also effective supports for making the integration process quicker and smoother.

## Promising Human Resources Practices for Preparing and Integrating Newcomers

The presence of promising human resources practices to actively integrate and retain newcomers will positively influence their job satisfaction and engagement.

### **Pre-arrival:**

Providing would be newcomers with the information, resources and tools as well as connections to potential employers to assist them in a successful transition to the Canadian job market.

### **Onboarding:**

A comprehensive process spanning several months (or more) that serves to help a new hire build a solid understanding of your business, company culture and policies, and their role in meeting your business goals. By engaging the employee in his or her new position, it helps them build relationships with coworkers, build a sense of commitment to your company, and make the employee productive as soon as possible.

### **Mentoring:**

Mentoring is a relationship between an employee (the mentee) and a more experienced or senior employee (the mentor), whereby the mentor provides guidance on a range of professional issues. As an IEP, having someone guide you towards improving performance, building networks, enhancing skills and knowledge, and building awareness of how to navigate (and advance in) the corporate culture is key to your long term success in an organization.

### **Managing Performance:**

Performance management allows an employer to observe the growth of an employee, and provides the opportunity to highlight strengths while also identifying areas requiring improvement. The employee, in turn, has an opportunity to receive feedback on, and be recognized for, his or her performance. Analyzing employee performance ensures job satisfaction and fosters professional and personal growth.

### **Career Development:**

Career development is about identifying the skills and competencies that an employee needs to develop in order to advance in their careers. Career development helps employees become more proficient, efficient, work more independently and productively, and prepares them to advance in their career.

### **Networking:**

Networking consists of an individual attempting to develop and maintain relationships with those deemed to have the potential to assist them in their work or career. For IEPs, networking enables them to build up professional connections to build their career. By actively facilitating access to these networks, an employer will benefit from increased employee satisfaction, engagement and retention.

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## Section 5:

# CONCLUSION AND POLICY RECOMMENDATIONS

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The quest for talent in Canada's evolving, dynamic digital economy is predicted to intensify over the upcoming years due to demographic shifts and retiring workers. With immigrants representing more than one-third of ICT workers in Canada, they currently and will continue to play an increasingly pivotal role in addressing the digital talent shortage. Additionally, ethnic diversity strengthens innovation and organizational performance. Coming from a diverse range of backgrounds and increasingly educated, they represent a rich source of talent for the digital economy. While Canada remains a popular destination for newcomers, particularly from Asia and Europe, the globalised nature of the digital economy compounded by domestic systemic barriers pose challenges for the rapid integration of immigrants into the ICT workforce.

Our success in the battle for global digital talent will depend on how organizations, government, policy makers, and industry overcome these obstacles and address the barriers facing talent and business. Implementing policies that allow businesses to efficiently and quickly secure international talent will be critical in the battle for global talent. Furthermore, making the obstacles for bringing temporary global digital talent to Canada to fill the immediate needs of businesses is important as well. Certain high skilled, high pay occupations, such as software engineers, and computer programmers and interactive media developers, are crucial for the digital economy, and in absence of securing temporary talent for these in-demand high skilled occupations, Canada maybe at risk of having organizations move to other jurisdictions where this talent is readily available. Anecdotal evidence shows that the current process is complex and lengthy involving LMIA's, job advertisements, which is a large challenge for industry to overcome, with some deciding to abandon the process altogether.

Therefore, ICTC recommends:

- ◆ Policy makers should provide a temporary exemption for two years for specific high demand occupations identified by reliable labour market forecasts. That this should be capped to a certain number nationally.
- ◆ Policy makers should make temporary allowances to allow companies to hire above the cap limit where necessary in return for contributing financial support to developing the talent supply in Canada (quid pro quo policy).
- ◆ Policy makers and employers should prioritize the transition of higher skilled and high demand ICT Temporary Foreign Workers (TFWs) to permanent citizens as part of the Canadian Experience Class.
- ◆ Where Labour Market Impact Assessments (LMIAs) are necessary (for non-exempt occupations), policy makers should delegate the responsibility to labour market subject matter expert organizations and associations to fast track the process for employers looking to hire global talent.

With regards to Express entry, ICTC recommends that:

- ◆ Federal and provincial policy makers should work with industry and labour market-focused organizations to update the labour market information and National Occupation Classification codes used by immigration and workforce development staff for assessing the supply of and demand for emerging occupations.
- ◆ Federal policy makers should reinstate the expedited visa stream previously referred to as the Facilitated Processing of Information Technology Workers in order to allow skilled global digital talent to enter Canada quickly to fill immediate talent shortages high-demand occupations.

Furthermore, devising policies, strategies, and programs, at the government and enterprise level, that eliminate the barriers immigrants face will allow for them to more quickly integrate into the ICT workforce. Therefore, we also recommend that:

- ◆ Policy makers should make available to small- and medium enterprises (SMEs) more resources that can help SMEs identify and address unconscious bias and build cultural competence within their organizations so that they can make the most effective use of all immigrant talent available to them.
- ◆ Industry, education and government should develop and promote targeted learning opportunities to attract female immigrants to ICT careers. This may include targeted industry-driven awareness and community programs to attract this talent pool into high-demand ICT careers and targeted scholarships to attract female immigrants.
- ◆ Industry and government should continue to invest in offering more training and development opportunities to promote continuous learning, advancement opportunities, workforce upskilling, and enhance immigrants' workplace communication skills.
- ◆ Industry should employ inclusive and skills-based recruiting techniques to overcome issues surrounding international credential and experience validation.

Altogether, these recommendations build upon and form part of ICTC's National Digital Talent Strategy, [Digital Talent — Road to 2020 and Beyond](#), designed to ensure Canada's talent will be well prepared to succeed as skilled workers and entrepreneurs in our increasingly digital and global economy.

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## Appendix A1: Case Studies

### CASE STUDIES

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#### Maria Lopez-Garcia: One ICT Business Analyst's Journey to Canada

Maria Lopez-Garcia is a Business analyst at the College of Nurses of Ontario, working to harmonize new technology in the college. Previously she worked 10 years in Mexico as a business analyst and project leader in the finance industry. She completed her schooling in Mexico and has a Bachelor's in Computer Engineering and a MBA (Masters of Business Administration). As a newcomer, she intricately understands what means to leave your home country and come to Canada to start a new life. Her story highlights the highs and challenges of what so many immigrants may experience during their journey to Canada.

Maria's journey to Canada started back in 2004 when she came to Toronto with her husband for a visit and did an exchange at the University of Western Ontario, Ivey School of Business. Both her and her husband instantly fell in love with Canada and returned to Mexico with goal of coming back to Canada permanently. After working many years to save money, they applied for permanent residency through the Skilled Workers Program. From application to approval, the process took about 10 months and they received their final approval in November 2010.

In early 2011, Maria discovered she was pregnant, so they decided to delay their move to Canada to stay closer to family and allow her daughter to start to build cultural ties to Mexico. After her daughter was born, Maria had to apply for her daughter to obtain temporary residency before they could make the final move to Canada. During this process, Maria experienced some bumps in the road as she struggled to gain permission to bring her daughter with her. In the end, she wrote a letter to immigration authorities explaining her case, and finally got approval to bring her daughter.

Once Maria had arrived in Canada, she experienced three obstacles she had to overcome during the integration process. First, was understanding and determining the equivalency of her job experience and titles in Mexico to Canadian job titles. In order to overcome this, Maria connected with a career coach through Information and Communications Technology Council (ICTC). Maria's career coach helped her decide which industry to enter and which positions best matched her experience. For example, Maria's

experience in Mexico was in the finance industry, but in Canada finance is very popular, so her coach encouraged her to start looking at other industries where her skills and experience could provide more value.

Maria's second obstacle in her journey was adjusting to the new culture and location. Maria found that government supports and information on what you need to do to before you arrive were very helpful. She and her husband also used job banks and labour market information to determine what city is best for certain types of jobs. When she arrived, Maria got out and explored the city, parks, rode the subway, and talked to people, all to get a lay of the land.

*Maria says "If you stay at home, you don't know what you're missing."*

Third, was learning how to manage time between job hunting, adapting to new surroundings, and spending time with family. Specifically, finding childcare support was particularly challenging with the wait list for daycare more than 1 year long. Even with limited resources and childcare support, she found a way to structure her week so that she had dedicated time to job searching, looking after her daughter, and personal time with her husband and family.

Despite these obstacles, Maria's tenacity and perseverance to overcoming these challenges, reaped huge rewards for her. From arrival in Canada to securing a job, it took Maria about 5 months (including time spent in career coaching) to successfully find a job that met her experience and skills. At first this process took time, but as soon as she made progress, the job search process gained a lot of momentum and moved fast. In terms of adapting and understanding Canadian culture, everyday had a new success and after several months, Canada felt like home.

Now that she's been in Canada, for over 2 years, these challenges are in the past. One thing that Maria is sometimes still hesitant about is her accent and learning to be more clear and succinct with her communication. One time at work, before she began to speak during a meeting, Maria started to apologize for her accent and

then the rest of her team told her not to worry, we're all immigrants or from another place.

*Maria says that "After that, I realized I need to be proud of my accent and be proud of being an immigrant."*

After going through the migration process, Maria has had the chance to reflect on what could be done better. First, she says that having someone who has experienced the migration process to speak about the process and what needs to be done is extremely helpful because hearing these stories helps build migrants' confidence.

Also, more knowledge about Canadian history, neighborhoods, even retail brands is helpful because it explains the full background of a place, so that the person can use it in conversations and better understand Canadian and local city culture.

She says the benefits are on both sides, as newcomers learn more about their new country and native Canadians learn about other cultures. Maria also feels that having a 'one-stop shop' with information, stories, labour market information, possibly linked to the Government of Canada's site would make it easier for migrants to access information rather than searching multiple different sites.

Her tips and advice for companies employing immigrants, is to solicit immigrant talent for feedback. Immigrants see how things could be improved because they have fresh eyes and different mindset. Employers should be open to conversations with immigrants about how things could be done differently because immigrants are eager to provide feedback and passionate about improvement and innovation.

## Kinaxis: Breaking Down Barriers to Hire Immigrant Talent

Kinaxis is a Software as a Service (SaaS) company that specializes in supply chain and manufacturing software for multinational corporations. Established in 1984, Kinaxis is a Canadian company and became publically traded in June 2014. Its head office is in Ottawa, Ontario, but also has operations in 8 countries around the world including Hong Kong, Japan, and the Netherlands.

As an expanding organization with a high demand for talent, it is important for Kinaxis to secure the top-skilled talent, including immigrants. Skilled immigrants are important to Kinaxis because they serve as a vital pool of highly-skilled talent and bring different perspectives towards solving business challenges.

Kinaxis takes an inclusive and open approach towards recruiting talent, including immigrants. For them, Canadian job experience or equivalencies is not a concern — if you can work in Canada, have basic English communication skills, and pass the recruitment process, you will be hired. Kinaxis taps into their existing employee base through their referral program to source more talent, including immigrants. They also partner with immigration employment or community agencies to recruit newcomer talent.

Sometimes communication skills can be a barrier for immigrants seeking employment, including during the interview stage of the recruitment process. Kinaxis reduces this barrier by using skills testing for all candidates during the recruitment process. This practice levels the playing field for all candidates, including newcomers who maybe still improving their English language skills. Skills testing allows the candidates' technical skills to shine through and clearly demonstrates whether they can perform the tasks required for the job.

Furthermore, Kinaxis encourages candidates in advance of an interview to let them know if they don't engage in a particular gesture or practice because of cultural or religious reasons, so that a member of the Human Resources team can prep the hiring manager about the situation and help them understand why, so that candidates aren't unintentionally penalized.

Kinaxis provides several programs and supports to ensure immigrants are fully integrated into the organization. Kinaxis provides English as a Second Language (ESL) training 3 days per week to help those newcomers who want to refine and enhance their English language skills.

*Megan Paterson, Vice-President of Human Resources, says "We need people with the right skills and they're hard to find, so this program is a great workaround for overcoming English communication gaps, if there are any."*

Kinaxis also has a very open and welcoming culture, built around inclusivity and information sharing. The company, with the assistance of numerous employees, offer supports and mentoring not only to newcomer employees, but also to partners and spouses, so that they feel comfortable and connected to the community.

Also, management and HR actively encourage managers to be open and welcoming to new employees. Altogether, these practices have created a multi-cultural and diverse work environment where employee turnover is very low and has contributed to the company's success as an innovative market leader in supply chain software solutions.



## World Skills Ottawa: Connecting Newcomer Talent with Employment

World Skills Ottawa has been in business for almost 20 years, and was originally born out of the government sector. Between 1997 and 2016, World Skills started to offer a wide spectrum of services to newcomers and refugees, including individual assessments, job search programs for newcomers, an Ottawa job matching program, and programs to increase newcomers' employability skills. Currently, there are about 25 staff members, a mix between employment counsellors and job match specialists. World Skills Ottawa works with immigrants and employers from various sectors including Information and Communications Technology (ICT).

For World Skills, the value that immigrants bring to organizations and Canada is extremely important.

*Magdalene Cooman-Maxwell, Director at World Skills says "Immigrants represent a huge pool of highly-skilled talent and by not tapping into them, organizations and our nation are losing millions of dollars."*

Immigrants have a strong passion and willingness to work, commitment to excellence and want to replicate their success in their source country in Canada. World Skills' goal is to help integrate these talented immigrants into Canada's labour force, so that they can secure commensurate work that not only recognizes their skills and experiences, but also benefits the employers that hire them.

A good example is the Ottawa job matching program which takes place on a monthly basis. In this program, World Skills provides information to newcomers and coaches them on how to develop their networking skills and how to market themselves in the job market. Additionally, individuals and representatives from various businesses interested in helping newcomers provide networking and coaching. Company recruiters also partake, and through the networking process find immigrants who have the skills and experience they're looking for.

World Skills also partners with organizations, such as TD and Business Development Canada (BDC), to provide mentorship programs for immigrants. These programs are very successful in that they provide newcomers with the opportunity to network and make connections which ultimately help them secure commensurate employment.

Since, World Skills launched these programs, over 1,000 newcomers have participated, with more than 400 securing commensurate employment (including in ICT), far exceeding their original goal. World Skills attributes their success to several factors, including deep relationships with employers and the mentorship, training, and coaching they provide to immigrants.

## NTT Data: Using Employee Engagement to Integrate Immigrants

NTT DATA is a leading business and IT services provider with 80,000 professionals based in over 40 countries. NTT Data's Canadian operations are headquartered in Halifax, Nova Scotia. NTT DATA provides professional services, including consulting, digital, managed services, and industry solutions. The company is a part of the NTT Group, one of the world's largest technology services companies, generating more than \$100 billion in annual revenues.

In a competitive, dynamic, evolving environment, skilled immigrants bring great value to NTT DATA. This group of workers have shown their commitment to teamwork and provide the workforce with different perspectives. The NTT DATA employee-base in Halifax has representation from over 30 citizenships. Some are inter-company transfers, but many are recruited through the usual process or from the newcomer community in Nova Scotia.

A lot of their immigrant employees come from their campus recruitment program, particularly Dalhousie University, St. Mary's University and Nova Scotia Community College. NTT DATA also uses the Nova Scotia Office of Immigration and ISANS to recruit newcomer talent as well.

*Marsha White, Senior HR Consultant says "It's not all about educational background. NTT DATA is increasingly placing less emphasis on an individual's education and more on the skills they have and the experience they bring to develop a well-rounded culture and workforce."*

Employee engagement and celebration of cultural backgrounds is a big component to NTT DATA's secret to successful newcomer integration. The organization has a strong employee driven cultural awareness committee coordinating cross-cultural events. For example, this committee organizes the annual Chinese New Year and Diwali celebrations, which engage the entire employee base and even spreads into the local community.

NTT DATA also offers a "buddy" program, where they connect new employees, including new immigrants, with an employee who's gone through the relocation, or similar, process to help guide them through the journey. This "buddy" program takes place on an ongoing basis, but is especially intense during the onboarding phase.

For NTT DATA it is vital that newcomers and their families feel like part of the employee base and the wider community. To help achieve this, NTT DATA provides comprehensive information about essential services (such as doctor offices) and information about the community, so that new employees can familiarize themselves with the community.

*Marsha White, Senior HR Consultant says, "It is so important to integrate the family of the employee as well, so that they all feel like members of the community."*

Individual employees and Human Resources (HR) combine efforts to validate and guide these programs, so it's a dual effort on both parties part. In the end, NTT DATA is a great reflection of what it means to be a multi-cultural, diverse workforce where employees positively remark on the company's inclusivity.

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## Appendix B1:

### ACRONYMS

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<b>ESL</b>	English as a Second Language
<b>FDI</b>	Foreign Direct Investment
<b>HR</b>	Human Resources
<b>ICT</b>	Information and Communications Technology
<b>ICTC</b>	Information and Communications Technology Council
<b>IEP</b>	Internationally Educated Professionals
<b>IoT</b>	Internet of Things
<b>IRCC</b>	Immigration, Refugees and Citizenship Canada
<b>IT</b>	Information Technology
<b>LMIA</b>	Labour Market Impact Assessment
<b>NHS</b>	National Household Survey
<b>NOC</b>	National Occupational Classification
<b>PNP</b>	Provincial Nominee Program
<b>SaaS</b>	Software-as-a-Service
<b>SMAAC</b>	Social media, mobile, analytics, apps, and cloud
<b>SME</b>	Small- and medium enterprises
<b>STEM</b>	Science, technology, engineering and mathematics
<b>TPP</b>	Trans-Pacific Partnership

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## Appendix B2:

# RESEARCH METHODOLOGY AND ANALYTICAL FRAMEWORK

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To sufficiently address the key research questions, ICTC's team used proven quantitative and qualitative research methods, including collection of primary and secondary data, reviewing existing literature and environmental scanning of the skills gap issue globally and nationally. Hence the analytical framework for this study relied on following approaches:

### Secondary data:

- ◆ **Labour Force Survey (LFS) data:** Monthly survey gathered from over 100,000 employers across Canada. The LFS provides information about the size of employed and unemployed workforce and is categorized using the 2011 National Occupational Classification system (NOC). The LFS data also provides data on immigration status, gender, and age groups.
- ◆ **National Household Survey (NHS)/Census data:** Conducted in 2011, this data-set provided detailed information about citizenship status, region of origin, educational background, and length of time spent in Canada, and visible minority group, allowing us to cross-tabulate these variables with occupation and immigrant status.
- ◆ **Immigration, Refugees and Citizenship Canada (IRCC):** Preliminary data and results from the Express Entry system from 2015 and data from IRCC's open data portal. The Express Entry data can be found in a report done by IRCC titled 'Express Entry Year-End Report 2015'.

**Review of the existing literature and data:** ICTC team conducted an extensive literature review, including a meta-analysis of academic research, industry reports, government initiatives, and public policy papers related to immigration in Canada