Digital Transformation of Government

Addressing Talent Gaps and the Needs of an Inclusive Workforce

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Foreword

Digital Transformation of Government

Embracing digital transformation and adopting information and communications technologies (ICT) are key as the public sector seeks to keep pace with the demands of the twenty-first century. In today's context, governments can leverage technology and change mindsets to streamline the delivery of services and supports via digital platforms – a demand that grew significantly during the pandemic. This modernization of government would not only increase efficiency within the public sector and improve convenience for its people, but it is also incumbent upon the government to deliver those services in a timely and appropriate way and with an eye to equity, diversity, and inclusion.

This paper examines the issues around digital transformation and the adoption of ICT within the Government of Canada. Written by Deloitte with Toronto Metropolitan University's (formerly Ryerson) Diversity Institute, it examines trends in digital skills and opportunities for the federal government to attract and retain the talent it needs to support digital transformation.

Building on previous work by the Diversity Institute, this report examines the challenges hampering the government's digital transformation and considers innovative solutions. Digital transformation is not just about technology but also about people and the skills needed to drive organizational transformation while staying true to commitments to advance equity, diversity and inclusion. Please join us in considering what these findings mean for Canada's skills and employment ecosystem.

Pedro Barata
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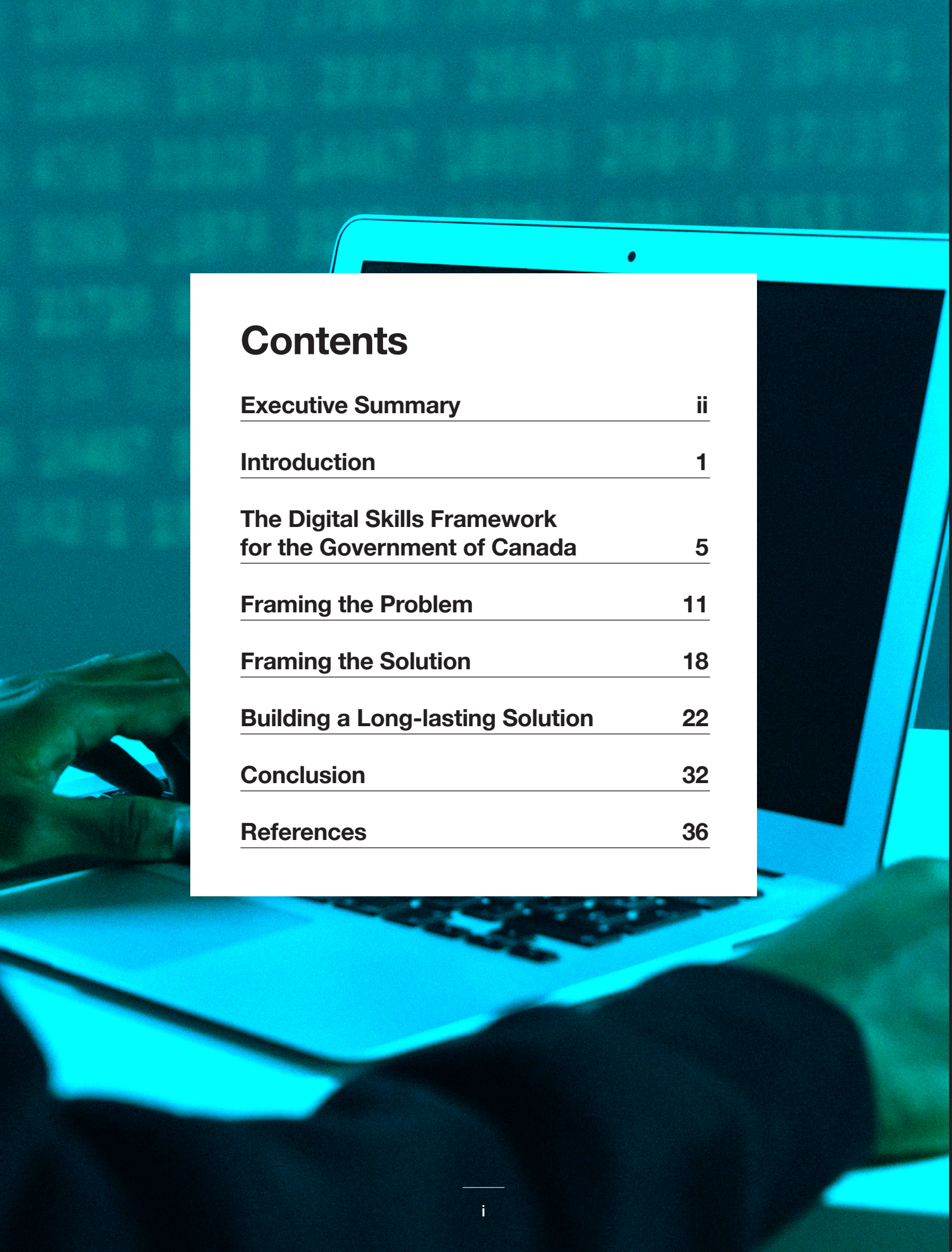

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Executive Summary

The Government of Canada has prioritized digitization of processes and services for more than a decade since the release of *Improving Canada's Digital Advantage* in 2010 in response to citizen demands, accountability frameworks, and the need to do more with less. The COVID-19 pandemic dramatically accelerated this process and sharpened the focus on the need to attract talent as well as to reskill and upskill the existing work force. This report reviews the current challenges and recommends a path forward.

To support a highly skilled and diverse workforce, the Government of Canada needs to:

> Improve talent mobility across departments and roles;

> Accelerate time to skills productivity through alternative pathways such as Work-Integrated Learning;

> Activate a culture of innovation.

An extensive literature review and consultations with a host of experts active in the Government of Canada talent ecosystem revealed three pillars—access, build, and enable—as key areas by which the government will achieve digital transformation. These pillars address three key challenges that limit the Government of Canada's potential to access skills and talent, especially when it comes to recruiting and retaining talent from underrepresented groups. Specifically, we need to challenge three main orthodoxies or assumptions:

#1 – Credentials trump skills, skills trump potential.

> Rigid candidate requirements eliminate high potential talent from the candidate pool and stifle **access** to talent.

#2 – Employees must complete traditional education to obtain necessary skills.

> Traditional education practices are the primary format for existing upskilling and reskilling initiatives but prevent the government from **building** skills and capabilities rapidly and effectively through alternate pathways.

#3 – Some talent management structures which limit access to talent are highly resistant to change.

> Job classification and competition rules can make it difficult to **enable** existing talent, meaning that people with the right skills may not be able to use them.

This report:

- Proposes a framework with three key categories of skills needed by the Government of Canada as (1) digital skills, (2) transformation skills, and (3) socioemotional skills.
- Explores the three orthodoxies or assumptions that impede progress and stifle innovation.
- Frames recommendations to advance an innovation mindset, leverage experiential and work-integrated learning, support faster time to market, and promote continuous improvement while advancing diversity and inclusion.
- Identifies a set of principles for solutions to fill skills gaps that leverages collaborations across the skills and employment ecosystem among educators, non-profit organizations, system integrators/advisers, solution providers, and influencers.
- Proposes how the Government of Canada can build a long-lasting digital transformation skills solution that 1) identifies and assesses the current universe of skills and capabilities available within the ecosystem, 2) determines skills and capabilities required for achieving the Government of Canada's strategic transformation requirements, and 3) activates new opportunities to access, build, and enable those skills and capabilities over time.

Introduction

Driven by citizen demands, the need to do more with less, and the disruptions wrought by the COVID-19 pandemic, governments around the world are accelerating the pace of digitization of processes and services. Countries as diverse as South Korea, the United Kingdom (UK), Colombia,[1] and Estonia[2,3] are at the forefront of digital transformation in government. And they are not alone. According to a Boston Consulting Group (BCG) survey of 24,500 respondents in 36 countries, more than three quarters "expect government services to perform at the standard of leading private sector institutions or better." However, driving digital transformation requires access to expertise and talent — not just with technical skills but with a deep understanding of how to drive change. And this has been a challenge.[4]

In Budget 2010 — long before the pandemic — the Government of Canada committed to "develop a Digital Economy Strategy that will enable the ICT sector to create new products and services, accelerate the adoption of digital technologies, and contribute to improved cyber security practices by industry and consumers."[5] More recently, the government's 2021 *Digital Operations Strategic Plan* outlined a strategy for "approving an annual, forward-looking 3-year enterprise-wide plan that establishes the strategic direction for the integrated management of service, information, data, information technology (IT) and cybersecurity."[6]

But the pace of change has been uneven. Without question, the pandemic accelerated the transformation, with agencies developing and launching programs in months rather than years. The speed of the government's pandemic response has also shown that it can quickly shift services online and transition to remote work, something they had previously been criticized for failing to do.[7,8] Remote work, long resisted in the federal public service, became the norm overnight, opening access to a more diverse workforce and addressing one of the principal barriers to attracting and retaining young staff: more flexible work hours and places.

According to Canada's 2022 *Digital Government Strategy*, "While work is underway to review and improve service standards for government services, we are still in a place where not all services are easy to access and use. Some still involve paper-based processes or the lack of clear online information resulting in clients moving to the phone or in-person service channels. Others are using complex PDF forms for

simple procedures, such as informing the government of a change of address or marital status. These things shouldn't be difficult."[9]

Enabling Digital Transformation

With the proliferation of consumer and business technologies, digital transformation is increasingly becoming more about an organization's talent and their capacity and capability to adopt new technologies and digital ways of working.[10] While new technologies offer significant benefits to the government, implementation — and successful integration into government structures and processes — requires new talent. A further complication is the rapid pace of technological change and concomitant need for workers to constantly update their skills. For example, the World Economic Forum (WEF) has declared a reskilling emergency; more than 1 billion people need to reskill by 2030. Additionally, 42 percent of workers' core skills needs are expected to change in the short term.[11]

The skills required to support digital transformation are often referred to as *digital skills*. While digital skills are often thought to be synonymous with computer science and engineering, there are different levels of digital skills. Deep technology[a] skills are critically important, but so are the skills to apply technology or match technology to organizational needs, as well as the skills needed to apply technology to support work in virtually every role.

Critical and often overlooked are the *transformation skills* needed to drive the adoption of technology. These include what are also considered leadership or management skills, such as strategic thinking and effective change management. These skills are needed to design and implement organizational change in ways that are effective, efficient, and avoid damaging outcomes and staff morale.

As virtually all jobs are now digital jobs, a workforce with a *digital mindset* is key: having a foundational (not necessarily deep or technical) awareness of digital technology and the possibilities it opens up, and the willingness and ability to pursue new opportunities based on that awareness.[12] In addition to foundational digital skills, a digital mindset also requires a set of *socioemotional skills* (often referred to as *soft skills* such as curiosity, leadership, innovation, and a growth mindset) that help employees learn and evolve, and enable them to keep pace

a "Deep [technology] refers to fundamental breakthroughs in science and engineering that profoundly impact industries and people's lives by creating revolutionary solutions that redefine markets and industry processes … Deep Tech innovations solve previously intractable real-world problems, e.g., medical devices and drugs that cure disease and extend life; artificial intelligence to forecast natural disasters such as earthquakes; and clean energy solutions that can help stem global warming." https://www.quora.com/How-would-you-define-deep-tech

with continuous technological change. The larger the proportion of an organization's workforce that possesses such a digital mindset, the more likely it is that organization will be able to access the full benefits offered by technology and the more likely that digital transformation initiatives will succeed.

The Business Case for Diversity and Inclusion

Canada has made ambitious, whole of government commitments to equity, diversity, and inclusion embedding it in virtually every ministerial mandate letter. According to the *2020/2021 Deputy Minister Commitments on Diversity and Inclusion*, departmental management teams are required to establish a culture of inclusiveness, increase the representation of equity-seeing groups, and ensure their policies and programs are free of systemic racism and barriers.[13]

The Government of Canada's pressing need for digital transformation also rests on its ability to attract, retain, and engage diverse talent. By 2036, Statistics Canada estimates that almost 30 percent of the working-age population will be immigrants and nearly 40 percent will be racialized[14]; racialized people, owing in part to immigration policy prioritizing highly skilled internationally educated professionals, are over-represented in the ICT sector.[15] They make up 17.8 percent of the federal public service and are underrepresented compared with their share of the Canadian population and the government's own diversity and inclusion targets.[16] Racialized people are even more underrepresented at the leadership level, representing only 11.5 percent of public service executives. Recent disaggregated data show that some racialized groups (e.g., Black people) are significantly underrepresented.[17]

The issues go beyond just representation. Significant differences are evident in the rate with which Black Canadians are hired within the Government of Canada. A recent Public Service of Canada audit found that while Black employees make up a significant proportion of applications, the proportion of these candidates who pass through the various stages of the hiring process is significantly decreased.[18] Black employees are also more likely to report facing unfair discrimination at work, feeling less included,[19] and receiving lower compensation than others.[20]

Canada's public service has typically been an attractive place for women to work; more are employed by the federal government than in the private sector.[21] However, while they make up 55 percent of all federal workers, they represent only 47 percent of executives.[22] Even more concerning is that the problem worsens for women in digital roles where the talent gaps currently exist. Although women make up a slight majority of the Canadian population, they fill just 27 percent of ICT roles in the federal government and their participation is declining.[23] The Government of Canada is also struggling to attract younger women with digital skills, as the majority of the women in ICT roles within the government are between the ages of 40 and 60. Even for women currently working in this sector, many view their gender as being a barrier to

their career progress, and believe that men are favoured for leadership opportunities.[24] They also report having more responsibilities compared with men, which has a negative impact on their careers.

The Indigenous population is growing fast, with a 42.5 percent increase since 2006, i.e., four times faster than the rest of the Canadian population.[25] Yet, Indigenous Peoples remain underrepresented across most federal departments.[26] Persons living with disabilities also comprise a large segment of the population; in 2017, 22 percent of the Canadian population aged 15 years and over reported one or more disabilities.[27] However, they comprised only 4.3 percent of federal employees in 2021.[28]

If the Government of Canada is looking to meet their targets for digitization, it will need to compete hard for talent and expand its talent pools to include these underrepresented groups. Further, job seekers, particularly younger ones, increasingly prefer to work in diverse and inclusive workplaces.[29]

Method of the Report

To better understand the challenges facing the Government of Canada as it works to advance its digital transformation, the research team combined findings from literature reviews and consultations with 19 experts involved in the Government of Canada talent ecosystem: academic researchers in public policy and digital governance, consultants with expertise in and first-hand experience implementing and advising on digital transformation initiatives, and public sector employees working in the digital transformation space. These consultations were 45 minutes long and the topics ranged from participants' perspectives on digital transformation in the Government of Canada, the skills required to support this transformation, and challenges in upskilling and reskilling existing staff. These consultations and extensive literature reviews were used to build the skills framework, identify key challenges in advancing digitization of government, and offer solutions to address the talent gap.

The Digital Skills Framework for the Government of Canada

Challenges to achieving the Government of Canada's digital transformation goals include an absence of a shared understanding about the competencies needed and how to assess, develop, and use them effectively. We propose a framework of three clusters of skills critical to a successful digital transformation: digital skills, transformation skills, and socioemotional skills.

Digital Skills

The first cluster of skills needed to enable digital transformation are skills required to develop technological solutions to shift business processes and service delivery. Increasingly, Canadians are demanding agile and digital services; however, civil servants often lack the technical skills to design and deliver them.[30] An advanced technical infrastructure needs to be configured and maintained, including cloud-based services.

Additionally, the data generated by these services needs to be applied to ongoing and iterative improvements. New technologies — cloud infrastructure, Artificial Intelligence (AI), cybersecurity, ERP systems, robotics and process automation, software development and testing, and more — require people who are able to design, adopt, and use them.[31]

Without adoption, there is no innovation; Canada needs people who not only develop technologies but can also promote their adoption. For example, a review of roles in demand in AI highlighted the importance of advanced degrees in machine learning. Equally important were skills in sales and marketing and business analysis — professionals who are able to help organizations understand how technology can solve their business problems.[32] Similarly, a report by the Information and Communications Technology Council (ICTC) indicated that business roles in ICT are also in demand: project managers, business analysts, digital marketers, researchers, and business development managers.[33] Many emerging roles most in demand are not yet included in the occupational nomenclatures for the sector.

The different roles in the ICT sector vary in the depth of digital skills required. A comprehensive framework for understanding digital skills needs to distinguish between a) deep technology skills, which normally require advanced study, b) business/technology skills, which serve people in bridging functions between technologists and end-users, and c) basic digital literacy skills, which virtually all workers require

today as part of the foundational *Skills for Success* framework alongside literacy, numeracy, and people skills (see Figure 1).

As history has shown, a lack of precise, shared notions about digital skills can create distortions in policy and practice. For example, a pre-COVID-19 pandemic study by the Brookfield Institute reported that Ontario employers rated digital skills as their greatest need; however, the disaggregated data showed that three quarters were referring to use of digital technology such as Microsoft Office, Excel, and PowerPoint, while 15 percent meant applications such as SQL and data analytics.[34] Only ten percent of job postings required deep technology skills typical of engineers and computer scientists (see Table 1).

Of particular importance are second tier jobs that require business *and* technology skills, often defined as hybrid workers. This was reinforced by the results of our consultations: respondents emphasized the importance of employees who blend a general knowledge of technology with the skills needed to support transformation and work effectively with both clients and technical experts.

A further factor is that specific technical skills can quickly become outdated, meaning that workers must constantly refresh their skill sets. If workers with advanced technical skills do not possess the resilience, flexibility, adaptability, and ability to engage in lifelong learning to constantly reskill, then their value to their organization will have a very limited shelf life.

TABLE 1

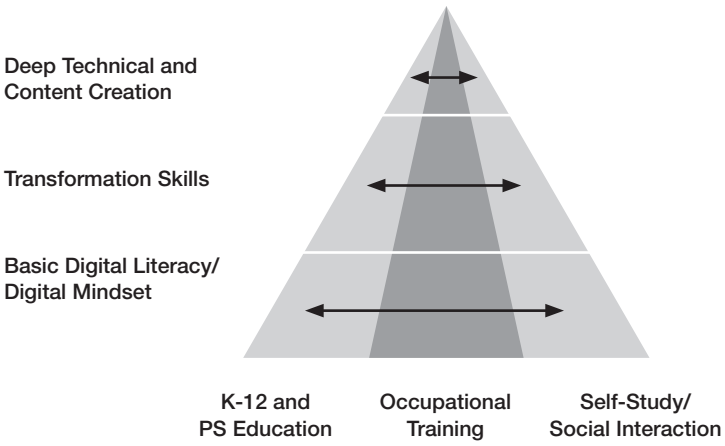
Digital Skills Present in Job Postings, Ontario

Skill	Job Postings	Percentage of postings listing this skill
Java	68,847	10%
Software	76,120	
Technical Support	64,084	15%
SAP (enterprise management software)	62,525	
SQL (programming language for databases)	100,167	
Spreadsheets	74,446	75%
Microsoft Word	145,048	
Microsoft Powerpoint	149,155	
Microsoft Office	306,588	
Microsoft Excel	382,851	

Source: Calculations by Cukier, W., based on Organisation for Economic Cooperation and Development (OECD). (2020). Preparing for the Future of Work in Canada, OECD Reviews on Local Job Creation; see also Vu, V., Lamb, C., and Willoughby, R. (2019). I, Human: The digital and soft skills driving Canada's labour market. Brookfield Institute.

FIGURE 1

What are Digital Skills?



Knowledge, skills and awareness needed to:
- Develop innovative ICT infrastructure, products and services
- Grow the ICT industry
- Create digital media content advantage

Knowledge, skills and awareness to use ICTS to:
- Build markets for ICTs
- Drive productivity and competitiveness
- start up and build SMEs
- Capacity to innovate using digital technology

Knowledge, skills and awareness needed by all Canadians to:
- Participate in the digital economy
- Enhance personal opportunities, life quality
- Use digital technologies to access products and services

Another example of how hybrid workers are valuable can be found in the need for the Government of Canada to adopt a *digital first* approach to the design and delivery of its programs and services.[35] Previously, government offerings and services were developed for release in the physical world and then adapted to the digital environment. While this strategy was often adequate, it did not enable the full realization of the benefits and innovations offered by digital technologies to improve efficiency and user experience. Seizing these benefits requires, for example, not just re-designing a benefit program application form as a PDF but an overhaul of the entire application process so the government is able to automatically identify clients who are eligible for a program.

Implementing such transformative improvements requires not just the digital skills needed to link databases, design user interfaces, and build websites and apps. It also requires an understanding of how these technical processes unfold, and people are needed who know how regulatory and legislative regimes govern the ways in which databases can be linked. It also requires managers who understand how websites and apps work as well as know how to seamlessly transition workforces who are used to manual paper-based application processes to new online automated systems.

Transformation Skills

Digital transformation is the process of understanding how to match technology with evolving organizational needs and how to support the *transformation skills* needed to plan, manage, and adapt to change. But, we need to articulate more clearly just what transformation skills means.

Digital transformation does not occur in a vacuum; it affects the nature, speed, and day-to-day work of employees and end users. All transformation programs require significant program management, change management, and workforce transformation planning. Leaders and managers need to be trained to develop these skills, both themselves and within their teams. We need to ensure the government has hybrid workers who combine knowledge of technology with the capacity to drive change.

Innovation is impossible without the adoption of new technologies. Often, organizations focus on the technology itself rather than the organizational and management processes needed to support the transformation of using that technology. To date, considerable evidence shows that many large scale projects have failed not because of technology but because strategies are not implemented to change project management, accountability mechanisms, and contract and relationship management.[36]

We must consider that implementation and adoption of technology also require transformation skills that support cultural change. The interviewees often mentioned skills gaps that help individuals see the need for change and develop a vision and strategic plan to achieve desired outcomes, communicate effectively with colleagues to bring them along the journey, offer support to end-users during the change process, and adapt to changes in the near and short term. Some examples of the transformation skills needed to lead digitization identified through our project are in Table 2.

Virtually all jobs are now digital, requiring people to solve problems using basic software applications. Yet, our understanding of digital literacy is often framed simply as knowledge of coding. By better recognizing the actual digital skills needed, the federal government can increase the likelihood of success of its digital transformation initiatives. Having elemental skills and ability to use technology are essential, but it is also critical to understand the importance of having a *digital mindset*: a broad, if relatively basic, foundation of digital skills and, more important, the instinctive and ingrained awareness of how digital systems operate, user expectations in a digital environment, and the logic that undergirds digital ways of doing things. Accordingly, besides recruiting highly specialized people with deep digital skills and people who can drive transformation and manage technology, the Government of Canada must build an inclusive workforce with a digital mindset.

TABLE 2.

Examples of Transformation Skills

Skills	Description
Change Management	The skills to apply a structured process and set of tools for leading the people side of change to achieve a desired outcome.
Stakeholder Management	The skills to build, organize, monitor, and improve relationships with stakeholders.
Strategic Thinking	The skills to intentionally and rationally analyze critical factors and variables that will influence the long-term success of a business, a team, or an individual.
Design Thinking	The skills to understand users, challenge assumptions, redefine problems, and enhance solutions by prototyping and testing them through a non-linear and iterative process.
Program Management	The skills to manage multiple streams of or adjacent projects.
Leadership Development	The skills to Improving the abilities and capacity to lead teams and increase one's confidence and the confidence of those around them to achieve their goals and perform at their best.
Talent Acquisition and Retention	The skills to attract, assess, and hire qualified talent, and develop and retain said talent.

Socioemotional Skills

The third group of skills — *socioemotional skills* — are skills and abilities needed to enable behaviours that sustain change. Socioemotional skills, which interviewees called *soft skills*, are observable human attributes demonstrated independent of context[37] and have a critical foundational role in any transformation (see Table 3). For example, while technical skills are needed to build and maintain technological systems, technological change means these skills must be constantly refreshed, something that requires socioemotional skills like adaptive thinking.

Moreover, socioemotional skills like imagination and creativity are central to the digital mindset needed across an entire organization's workforce for a successful digital transformation. It is often easier to teach someone new technical skills, like how to use a new feature in Microsoft Excel, than it is to teach someone how to collaborate more effectively.[38]

Socioemotional skills are analogous to the soft and social-emotional skills outlined in the new *Skills for Success* framework considered essential for Canadians to participate in the labour market. While these skills are more difficult to teach than technical skills,[39] they can nevertheless be enhanced through targeted interventions.[40]

There are strong reasons socioemotional skills should be prioritized for training and hiring:

1. While digital skills change more rapidly (i.e., half-life of every five years),[41] socioemotional skills have greater longevity. Therefore, their return on investment is higher because the window to gain value is much longer. The value of socioemotional skills, like communication skills and collaboration, may increase due to technological disruption as automation replaces repetitive work and the skills to complement and collaborate with technology become more important.[42]

2. The pace of change continues to accelerate; fostering talent that is more adaptable and resilient to that changing environment helps to create a government culture that is more amenable to digitization.[43] This was true with the recent pandemic-induced disruptions to the workplace, which forced employees to utilize their socioemotional skills to adapt and remain resilient.

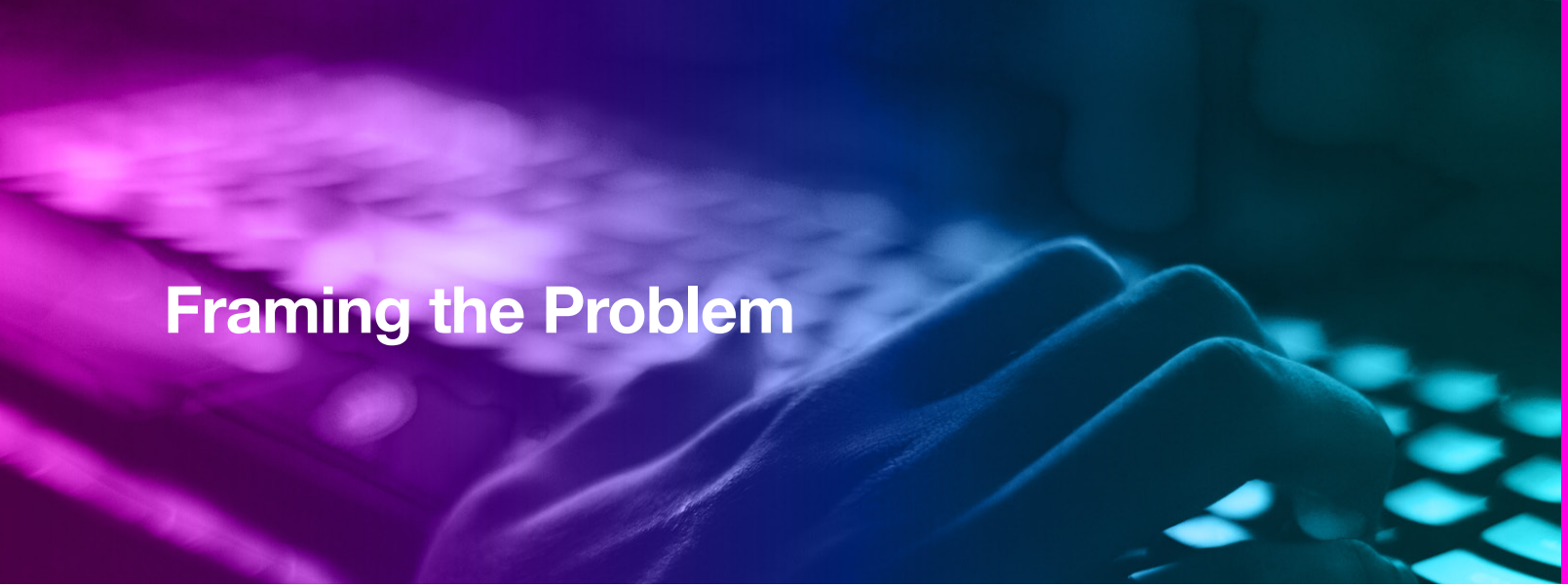
3. While disparities in digital skills are found across various equity-seeking groups, the disparities are smaller when it comes to socioemotional skills. Therefore, considering socioemotional skills when hiring can help increase the representation of equity-seeking groups in the workplace — a pattern observed in medical schools when non-technical skills are considered for entry into the program alongside technical skills.[44]

TABLE 3.

Socioemotional Skills

Skills	Description
Collaboration	The ability to contribute and support others to achieve a common goal.
Adaptability	The ability to achieve or adjust goals and behaviours when expected or unexpected change occurs. Adaptability is shown by planning, staying focused, persisting, and overcoming setbacks.
Creativity and Innovation	The ability to imagine, develop, express, encourage, and apply ideas in ways that are novel or unexpected, or to challenge existing methods and norms
Problem Solving	The ability to identify, analyze, propose solutions, and decide. Problem solving helps you to address issues, monitor success, and learn from the experience.
Communication Skills	The ability to receive, understand, consider, and share information and ideas through speaking, listening, and interacting with others. For example, we use this skill to listen to instructions, serve customers, and discuss ideas.

Source: Social Research and Demonstration Corporation (SRDC) *Skills for Success*[45]



Framing the Problem

The previous chapter identified the skills required to support digitization in the government, but how will these skills gaps be filled? The experts we consulted agreed that to obtain the required skills and capabilities, the Government of Canada needs to adjust its approach to talent management. As in many large and complex public sector environments, the Government of Canada faces talent challenges reinforced by its very own policies and talent management procedures.[46,47] For instance, when compared to other employers, the Government of Canada's job marketing strategies and recruitment and selection criteria do not meet the expectations of the labour force and create artificial barriers to accessing talent.[48] These challenges were reiterated through our consultations, where we identified several challenges that limit the government's potential to access needed skills. In this chapter, we identify the main obstacles within the organizational culture of the Government of Canada that make filling the skills gaps difficult.

Organizational Culture

Organizational cultures set the terms of "how we do things around here;"[49] the federal government's public service is no exception and has a unique culture just like all organizations.[50] The culture of an organization is defined by its values, which often go unstated and unquestioned and can imperceptibly change. An organization's culture helps individuals and institutions function more efficiently but it can also lead to resistance to change, including blind spots that prevent organizations from developing new and better ways of working. Changing organizational culture is difficult but is vital to creating durable change.

The digitization of the government entails a cultural transformation requiring openness, speed, and transparency — contrary to how many parts of the government traditionally operate.[51] Digital transformation increasingly demands a culture that encourages an innovation mindset and horizontal collaboration between departments.[52, 53] Within the federal government, departments and agencies form their own sub-cultures often characterized by

hierarchy, caution about novel approaches, and organizational silos. Despite this, interviewees pointed out that pockets exist that encourage risk taking or are less hierarchical and more collaborative. While these are the exceptions, they could show the way to successful digital and cultural transformation.

A more diverse mindset is vital to a successful cultural transformation; intensifying existing investments in diversity and inclusion in the Government of Canada can help set the conditions for transformation.[54] Research shows that companies with greater gender and ethnic diversity in executive teams outperform companies with more homogenous executive teams, demonstrating diversity can drive innovation and growth.[55] Forcing employees to think outside of themselves and to take the perspective of others can help dissolve groupthink, minimize blind spots, and challenge assumptions. An organizational culture that promotes and supports diversity and inclusion will also facilitate a culture that is adaptive, amenable to change, and ripe for growth.

The Three Orthodoxies

A multitude of challenges hinder filling of the skills gaps needed for the digitization of the government, generally corresponding to three themes consistently mentioned throughout our consultations and our review of the literature. We termed these themes *orthodoxies* to reflect how they are embedded in the culture of the federal government. These orthodoxies are ideas that permeate the Government of Canada's organizational culture, becoming embedded and manifesting in assumptions that — as they often go unquestioned and hinder change — need to be challenged and re-examined. The three orthodoxies that exist within the federal public service culture artificially limit its ability to access, build, and enable the talent needed to meet the challenge of digital transformation:

> Orthodoxy #1: Credentials trump skills; skills trump potential.

> Orthodoxy #2: Employees must complete traditional education to obtain necessary skills.

> Orthodoxy #3: Some talent management structures are impossible to change, even if they limit access to talent and the pace of change.

These three orthodoxies highlight major issues of talent management in the federal government.

Orthodoxy #1: Credentials trump skills; skills trump potential.

Accessing talent to meet demand can be challenging due to assessment, sourcing, and recruiting practices that overlook candidates who have the potential to support digital transformation. Historically, education levels and associated credentials have stood in for skills and competencies.[56] However, recognition is growing that credentials do not necessarily reflect job readiness or potential for high performance.

For example, according to a 2014 report by the Ontario Human Capital Research and Innovation Fund (OHCRIF), a skills perception gap exists between recently graduated job seekers and employers. While 91 percent of the former think they possess oral communication skills and 93 percent think they possess writing skills, employers think only 47 percent of recent graduates possess oral communication skills and 39 percent possess writing skills.[57]

Despite the discrepancy between credentials and job readiness, most jobs within the Government of Canada are limited to applicants with a post-secondary degree. Implementing skills assessments less focused on traditional credentials can expand the talent pool for selection of federal government employees, particularly for candidates from equity-deserving groups. Different groups face specific barriers that limit their access to traditional credentials even though they may possess the skills the government needs. For example, newcomers face barriers in recognition of foreign credentials.[58]

For other equity-seeking groups, gaining post-secondary education is not easy, particularly for Indigenous students who confront significant barriers.[59] This has contributed to disparities in educational attainment for Indigenous Peoples; in Ontario, 65 percent of the non-Indigenous population has some form of post-secondary education, compared with just 53 percent of the Indigenous population.[60] Similarly, Black Canadians are also less likely than their counterparts in the general population to attain a post-secondary degree,[61] which partly stems from the anti-Black racism that many experience in school.[62] Thus, credentialism prevents the Government of Canada from accessing a diverse talent pool from some of the fastest-growing groups in Canada. Emphasizing credentials rather than equivalent skills and experience in job postings discourages applicants with non-traditional resumés.[63]

Additionally, credentials outside of post-secondary education are often listed as requirements on job postings that also create artificial barriers to accessing talent. Our research strongly suggests that the bilingual requirement is a major obstacle to Indigenous Peoples, newcomers, and racialized persons. Furthermore, the languages spoken by Canada's Indigenous peoples are not recognized as part of the bilingual requirement. Similarly, security requirements can be a major barrier preventing newcomers, first generation Canadians, and racialized persons from getting federal public service jobs.

These artificial barriers also pose a problem for speed of hiring, as multiple steps are

taken to verify credentials, assess language skills, and attain security clearance. This is concerning for recruitment in the federal government; in fact, one of the key barriers that emerged from our interviews was the Government of Canada's own recruitment process.[64] A significant problem identified by the government's Talent Cloud project was that the hiring process takes too long. As a result, qualified applicants frequently find other jobs before a job offer can even be made, let alone by the time security clearances and other hurdles in the recruitment process are completed.[65]

The Talent Cloud team found numerous other barriers in the recruitment process. In job postings, credentials are often emphasized rather than the equivalent skills and experience requirements, driving away members of equity-deserving groups who may have the needed skills but lack formal credentials.[66] The lengthy and clunky recruitment process further reinforces top talent's negative impression of the working culture of the public service. While many young people may be inspired by the mission of government, the perception of an overly hierarchical workplace with an inflexible career model often acts as a deterrent; the rigid and lengthy hiring process does not help alleviate this perception.[67]

These barriers to accessing talent have resulted in an expensive reliance on contractors and temporary workers, while leaving the federal public service with insufficient skills to meet the challenges posed by the digital transformation agenda. The lengthy hiring process makes it difficult to staff up on short notice for specific projects, further limiting the government's ability to staff flexibly.

The problems caused by the overreliance on credentials in hiring are increasingly recognized in the corporate sector, where many are shifting toward a skills-based approach to training and hiring.[68] The Government of Canada needs to follow suit and emphasize skills rather than credentials in its hiring process.

Further, departments should closely examine the requirements listed in job postings to ensure they match what is required to succeed. Any unnecessary credentials listed can deter candidates from applying and unnecessarily lengthen the hiring process.

Orthodoxy #2: Employees must complete traditional education to obtain necessary skills.

Many experts we spoke with focused on the challenges created by the scale of transformation required in government; filling the talent gap requires a multi-pronged approach. With the talent shortages facing companies across industries, talent gaps cannot just be filled through hiring. The Government of Canada must also look to upskilling and reskilling their current employees.

Organizations receive a greater return on investment by transitioning existing employees into new positions, as the hiring and onboarding of new employees is costly.[69] On-the-job training not only improves job performance, but also improves employee motivation and retention,[70] which are crucial in the current environment where

many industries are facing unusually high turnover.[71] While the benefits of upskilling and reskilling are clear, barriers exist in this domain as well.

The overarching challenge is that the training now offered to federal public servants is poorly adapted to meet the challenges of digitization. Our interviewees agreed that the training resources currently available are inadequate and more needs to be spent on training. Traditional education practices (i.e., long-term, classroom-based programs) are the primary format of upskilling and reskilling. This approach has had the unintended effect of limiting the government's ability to build skills and capabilities rapidly and effectively through alternate pathways such as micro-credentialling and job shadowing.

The Government of Canada is not the only organization with these challenges, however; Canadian industry and other sectors are struggling with similar needs to rapidly upskill or reskill their workforces.[72]

Training in the public service currently focuses on degree programs and long courses that take civil servants out of their roles for considerable periods of time. A good example is the French-language program for leaders. Although it is focused on a specific skill, the program spans three months (or six if the employee fails the certification the first time around). The training is intensive and takes people away from their jobs, potentially disrupting other important work, and makes sending employees for training less appealing to managers and leaders. Providing training that lets people continue their job provides both managers and staff with greater flexibility. Just as the COVID-19 pandemic prompted Canadians to seek flexible work arrangements, how organizations train their existing employees also needs to be flexible.[73]

A related challenge that emerged from our interviews was that the Canadian public service needs to find more modern ways of engaging and inspiring its employees to partake in skills updating. Several interviewees suggested that professional development opportunities are a good incentive to keep high-performing staff engaged, yet many do not participate. Here again, we see that if the Government of Canada offered flexible training, integrated with their daily jobs, these opportunities will likely become more appealing.

Flexibility is especially key in the current working environment. Work-life balance has been a tremendous struggle for many employees where the line between work and life has blurred.[74] Modern approaches to upskilling and reskilling can also help widen access to training for a broader range of employees. Digital micro-credentials, for example, offer employees with a more flexible learning arrangement where their involvement is short, specific skills of the employee's choosing are targeted, and the training can be completed during their own selected time at their preferred pace. However, any approach to upskilling and reskilling needs to ensure that it does not place additional burdens on the employees and allow for flexibility in when, where, and how the training is completed.

Orthodoxy #3: Some talent management structures are impossible to change, even if they limit access to talent and the pace of change.

Even when equipped with the right skills, employees need to be placed in an organizational structure that allows them to use their skills. A consistent theme that emerged from background research and interviews was that the Government of Canada's talent management systems hinder public servants in meeting the challenges of digital transformation. The rigid job classification system governing federal government employment can unintentionally make it difficult to move talent around and imposes other restrictions.[75]

Existing processes and culture make it difficult to move talent across government, meaning the right skills are sometimes locked away in the wrong place when needed. Change management professionals, for example, do not fit into a specific classification and may be placed into a specific department that isolates their potential. The nature of government structures minimizes cross-pollination and cross-skilling between departments and entities – underutilizing existing skills and potential across the entire employee population. Additionally, public service culture continues to be marked by silos and a fear of failure that restrains progress on transparency and collaboration, both of which are integral to the success of many digital opportunities.[76] Many senior members in the government know of these difficulties and several promising experiments are being conducted to enable talent mobility, including Talent Cloud and the Free Agents programs.[77] Expanding and building on these experiments can improve existing structures and promote organizational culture change.

Another structural problem is the allocation of incentives. Our interviewees noted that federal government employees derive little benefit from being mobile and moving from team to team or project to project. Employees pursuing short-term opportunities outside of government lose the benefit of their civil servant pension, for example. This has a huge impact on employees who are not exposed to different ways of working outside of their team.

Thus, the current culture leaves many employees resistant to change and risk. The organization-wide aversion to taking chances can be a major roadblock on the digitization journey as change is resisted at every level, lowering the effectiveness of strategic transformation. Due to the rapidness of change, the government cannot rely on the *waterfall effect* (i.e., the benefits of one action that cascade down through the organization) for implementing change; rather, it should adopt an agile approach to change that encourages intelligent risk taking.[78]

Many experts consulted noted the severe limitations with the current system of job classification within the Government of Canada. Government employees' skills assessments are based on their classification, which can cause other skills to be overlooked or underrated.[79] Job

classification also makes it difficult for employees in one class of jobs to transition to another class, as Human Resources (HR) professionals typically view the skillsets of one job class to be limited to that class. Underpinning this challenge is the siloed nature of departments. One interviewee noted that 43 HR systems operate in the federal government. Getting a picture of overall skills of federal employees is made even more difficult by the fact that many of these HR systems are not compatible with one another.

The rigidity in the talent management structure may also deter large swaths of the Canadian population from applying for jobs with the government. Specifically, the Government of Canada has difficulty recruiting a younger workforce. From the outside, the public service is reputed to have a very hierarchical and rigid structure and is not the place where the "cool work" happens. Because the number of external positions has been reduced and older employees are delaying their retirement, the share of millennials in the federal public service is smaller than in the overall Canadian workforce.

Further, many younger workers feel rudderless within excessively hierarchical government structures, where actionable ideas are subject to many layers of approvals.[80]

Immediate Solutions

The three orthodoxies are embedded deeply within the organizational culture of the Canadian federal government, and will require time and buy-in from key stakeholders to overcome. However, the digital transformation is an immediate need, a shift already happening that is leaving large talent gaps within the government. The government needs immediate solutions that can be implemented alongside the reality of these existing orthodoxies. Even with these barriers in place, we discern opportunities to approach the problem from multiple angles, which we outline in the following section.

Framing the Solution

As the Government of Canada and the federal public service are very large organizations, the solution needs to be a multi-pronged approach where talent is sourced through multiple channels. We begin with a set of guiding principles to ensure that the proposed solution is effective, feasible, and long-lasting. We then introduce the concept of the *ecosystem*, which the government can leverage to help fill the talent gaps.

Guiding Principles

Through our literature review and consultations, we identified five key principles to guide the government as it addresses the challenges of accessing, building, and enabling talent. These five principles were established with input from our interviewees and through secondary research (see Table 4).

The Government of Canada Ecosystem

The Government of Canada operates in an ecosystem comprising organizations in the private sector, post-secondary institutions, not-for-profits, and other sectors. We define an ecosystem in this context as a collection of partners who have the resources or expertise to resolve a common challenge and achieve a shared goal. By engaging, partnering, and working together within the ecosystem, the Government of Canada can tap into a source of skills and expertise in accessing, building, and enabling skills.

The ecosystem comprises five categories of organizations in education, non-profit organizations, advisers and system integrators, solution providers, and influencers (see Table 5). Interviewees working in education, in non-profit organizations, and advisers were consulted for this report.

TABLE 4.

Guiding Principles

Guiding Principle	Why this Guiding Principle?
Inclusive in nature	• The Government of Canada needs to adequately represent and deliver prosperity for its increasingly diverse population. The government has acknowledged this and is looking to increase diversity and inclusion in the public service.[81,82] The Government of Canada has also announced support for an Inclusive Innovation Agenda.[83] • A more diverse Canadian society is also an opportunity. The Government of Canada can fill in skills gaps by accessing underrepresented groups.[84] Additionally, digital transformations require multidisciplinary and diverse teams to produce innovation.
Experiential/Work-integrated	• Several interviewees suggested experimentation with work-integrated and experiential learning models such as an apprenticeship model or a model of alternative work weeks and learning weeks. • Evidence in the literature supports a correlation between experiential work opportunities and employment outcomes in Canada.[85,86] Work-integrated learning experiences could allow employees to integrate new skills and knowledge more rapidly.
Faster time to market	• As noted by an interviewee, many of the learning solutions available to reskill government employees take the individual out of their job for a significant amount of time. • The Government of Canada can incorporate new upskilling and reskilling solutions that can be implemented much faster such as through micro-credentials.[87] With a faster time to market, existing Government of Canada employees could respond quickly to skills demands.
Continuous by design	• The Government of Canada must cultivate a growth mindset and foster a culture of lifelong learning for its workforce to respond to emerging reskilling and upskilling imperatives. Interviewees echoed the necessity of a culture of continuous learning.
Innovation mindset	• Interviewees in the public sector stressed the importance of an innovation mindset, which encourages experimentation, risk taking, and an openness to ideas outside of the current status quo. Employees with an innovation mindset are willing to innovate and try new things for a better overall user experience. An agile approach allows employees to continually experiment and work iteratively toward meeting government objectives. Additionally, an innovation mindset will benefit reskilling and upskilling efforts by speeding up adoption of new approaches.

TABLE 5.

The Federal Government Ecosystem.

Ecosystem Member Type	Definition	Examples	Contribution: What must they offer?
Education	Institutions that provide formal training and learning	High schools Post-secondary institutions Certification providers	Technical trainers Content / Curriculum Proficiency assessments Credentials
Non-Profit Organization	Organization operating for collective or public benefit– in this context, particularly those working on employment inclusion and/or skilling and reskilling	Information and Communication Technology Council Pride at work Black Business and Professional Association Immigrant Employment Council of BC	Access to diverse talent pools
System Integrators/ Advisers	Third-party organizations contracted to advise and execute, often partnering on transformations and therefore pursuing solutions to the same skills shortages	Deloitte Accenture IBM SAP	Advisory skills Subject matter expertise External perspective Potential reskilling partners
Solution Providers	Organization that supply and integrate technical solutions, also pursuing solutions to the same skills shortages	Microsoft Oracle Workday Amazon Web Services	Tools to improve workflow Understanding of skills required to implement and maintain new systems Potential reskilling partners
Influencers	Organizations doing similar work and are leaders in their field	Peers from other government organizations Major tech players and private sector (e.g., Shopify, Slack)	Technical skills knowledge and training Best practices in transformation skills

The ecosystem is already engaged to some extent. Higher-education institutions have programs geared to public service, non-profit organizations represent equity-seeking communities, and technology and system integration partners build workforces with the skills to serve the government. Partners can be pulled together and unified to generate and deploy skills more effectively to advance the solution.[88]

Each stakeholder can play a role to address the government's digital skills challenge, but each also has different motives. An effective ecosystem strategy requires acknowledging and making room for stakeholder motivations, while uniting stakeholders with a common vision and a shared goal; namely, the future Canadian public service workforce.

Collaboration between ecosystem members and the Government of Canada supports each of the Guiding Principles:

> **Inclusive in nature:** Ecosystem members are diverse and broaden the reach and impact of the solution, while working together to build a diverse workforce.

> **Experiential/Work-Integrated:** The external ecosystem offers expertise in work-integrated learning and the adoption of external best practices.

> **Faster time to market:** The increase in external ecosystem players brings an agile and user-focused mindset, centred on Canadian citizens.

> **Continuous by design:** Continued interactions with and support from the ecosystem members will ensure upskilling throughout employee employment cycles.

> **Innovation mindset:** Ecosystem partners specializing in innovation have deep experience in agile ways of working and adapting to change at a rapid pace, both of which can help the Government of Canada break out of rigid ways of thinking.

Now that we have framed the solution with the concept of the ecosystem and the importance of the five guiding principles, the following section will address the solution and its implementation.

Building a Long-lasting Solution

There is no one-size-fits-all solution for the digital skills gaps. In this chapter, we outline a process for building a long-lasting solution that supports the digitization of government.

Step 1: Identify and assess skills and capabilities

The Government of Canada should begin by assessing its current talent reservoir and associated skills to identify the required skills of the future and analyze the skills being developed through existing initiatives.

A comprehensive nomenclature for skills is suggested as the required first step for a skills assessment. As new technologies create demand for new skills while phasing out demand for other skills, the skills taxonomy must adapt to the changes, which requires flexibility and recognition that defining a standardized nomenclature is an ongoing process. Additionally, although technology-related skills may change quickly based on new developments, a long-lasting taxonomy would refocus on socioemotional skills, which are indicative of potential for skills development[89]; socioemotional skills last longer than technical skills and aid in the pursuit of lifelong learning.

The next step will be to categorize and analyze the skills in the current talent pool, which requires more data and data of higher quality. We noted that, in many circumstances, required skills are locked up in siloed HR systems. Interviewees suggested either streamlining HR systems or creating an interoperable system capable of sharing skills data among the fragmented HR silos. Here the example of Estonia is instructive: the government developed the X-Road software and procedures to enable siloed departmental systems to share data.[90] Better data sharing will make it possible to map out existing skills, skills in production, and future skills needs.

After addressing the gaps in contextualized data and skills assessment, the government can involve the rest of the ecosystem. One interviewee offered a vision where open standards are used to put skills frameworks out into the open, sharing and connecting skills data and frameworks with the wider ecosystem of contractors, educational institutions, and industry. A shared nomenclature of skills will allow for easier collaboration across the various organizations and more efficient talent allocation in the ecosystem.

Yet another set of data should be collected to bridge skills gaps successfully: data on diversity and representation. In recent years, the Government of Canada has committed to improve diversity and inclusion in the public service with some success.[91,92] In the years 2019–2020, employment equity groups had representation above workforce availability in the general workforce as well as in executive ranks[93] (see Table 6).

However, when we consider representation by occupational groups, another picture emerges. In the IT and Technical Services occupational groups—the two occupational groups that are most relevant to the digital transformation—gaps in representation are evident[94] (see Table 7).

TABLE 6.

Representation by General Workforce and Executive Ranks

	General workforce		Executive ranks	
EE* Group	Representation	WFA	Representation	WFA
Women	55%	52.7%	51.1%	48.0%
Indigenous peoples	5.1%	4.0%	4.1%	5.1%
Persons with disabilities	5.2%	9.0%	4.7%	5.3%
Members of visible minorities	17.8%	15.3%	11.5%	10.6%

Source: Treasury Board of Canada Secretariat *Employment Equity in the Public Service of Canada for Fiscal Year 2019 to 2020.*[95]

*Employment Equity

TABLE 7.

Representation by Occupational Groups

OCCUPATIONAL GROUP	WOMEN	INDIGENOUS PEOPLES	PERSONS WITH DISABILITIES	MEMBERS OF VISIBLE MINORITIES
PA: Program and Administrative Services	72.8%	6.3%	6.2%	18.6%
EC: Economics and Social Science Services	58.2%	3.6%	5.3%	23.1%
IT: Information Technology	23.0%	3.1%	5.9%	22.9%
TC: Technical Services	31.6%	4.9%	4.1%	11.2%
SV: Operational Services	20.6%	5.2%	4.5%	5.0%

Source: Treasury Board of Canada Secretariat *Employment Equity in the Public Service of Canada for Fiscal Year 2019 to 2020.*[96]

Additionally, current data lack an intersectional lens. Qualified candidates at the intersections of multiple underrepresented identities (e.g., racialized women) may face additional barriers. Expanding data collection on general representation and specific intersectional representation will help minimize skills gaps.

Step 2: Activate new opportunities to access, build, and enable skills and capabilities

This section will identify four opportunities to address the digital skills gap. The four opportunities are 1) access a broader talent pool, 2) accelerate time to skills productivity, 3) improve talent mobility across departments and roles, and 4) activate a culture suitable for the digital government.

Opportunity #1: Access a broader talent pool

Three barriers confront underrepresented groups when accessing employment in the Government of Canada: 1) security clearance, 2) bilingual requirements, and 3) educational requirements (credentialism).

Security Clearance

The first barrier, security clearance, can be managed with a sandbox environment, as per the suggestion of one interviewee in a government advisory sector. The sandbox environment sets strict limits on data flow and allows those without security clearance to participate without being exposed to sensitive data. Precedents like the Financial Conduct Authority (FCA) in the UK is the first formal regulatory sandbox and has propagated the concept throughout the world.[97] The sandbox environment allows for testing in a controlled environment, reduces time to market, and identifies appropriate consumer protection safeguards, while increasing access to new talent.

Bilingualism

Several interviewees noted the potential barriers associated with requirements of French-English bilingualism, which limits access to immigrant and Indigenous talent. Bilingualism is particularly discriminatory against Indigenous Peoples who are forced to learn two colonial languages to enter a public service career. Bilingualism is a sensitive topic and must be thought about with tact. However, as per the suggestions of one interviewee, the Government of Canada could question mandatory bilingual requirements for some roles. Some attempts at exploring the issue have been taken within Talent Cloud, for example, which explored bilingual requirements from the perspective of Indigenous People through the Indigenous Community Liaison.[98]

Credentialism

Finally, credentialism can limit access to talent, especially for marginalized populations who face barriers to the traditional post-secondary education ecosystem. Interviewees from the government and government advisory services articulated a vision of a skills-centric hiring system that could enable access to talent pools outside of the conventional circles. Talent Cloud took an interesting approach that valued skills, regardless of how they were acquired. By doing so, they sought to change how hiring decisions are made.

Research-Driven Innovation: The Talent Cloud Experiment

Talent Cloud was a three-year experimental project that explored new approaches to talent recruitment and mobility in the Government of Canada. The project concluded in Spring 2021. A comprehensive record of the project, including the goals, structure, process, and outcomes, can be found in the Talent Cloud: Results Report document.

These alternative pathways to skills could open the door for those who may have lacked the resources to access traditional pathways via higher-education institutions. Additionally, this approach will increase access to government employment for equity-seeking groups, leading to recognition of diverse and reliable signifiers that indicate specific skills in demand, such as micro-credentials. As discussed in Chapter 2, some of the skills required for a successful digital transformation are basic digital literacy skills (e.g., use of Microsoft Office and Microsoft Excel) and do not require a four-year degree.

Influencers in the ecosystem are also moving toward a skills-centric hiring system. Companies like Shopify, who do not require a university degree as a prerequisite,[99] and even large banks like Scotiabank, are heading toward an assessment-centred hiring process and moving past the resumé-based application systems of the past.[100]

This means taking a proactive and targeted approach to access talent from underrepresented groups. Diverse talent can be engaged earlier on in the recruitment pipeline through partnerships with ecosystem stakeholders.[101] For example, through various partnerships with community organizations, underrepresented communities can be involved in the design of recruitment processes to remove obstacles. Talent Cloud, for example, successfully engaged Indigenous Peoples during the design and development process for the Indigenous Talent Portal initiative.[102]

Finally, as noted by one interviewee in the public sector, the COVID-19 pandemic forced a large remote work experiment onto the Government of Canada workforce, which dispelled fears that workers cannot get work done remotely. The shift to remote work opens up opportunities for increased access to talent.[103] For example, only four percent of Canada's labour force is found in the National Capital Region, but the region accounts for 42 percent of the federal public service.[104] When Talent Cloud experimented with enabling remote work, they found that "allowing remote work increased the number of applicants by 83%."[105]

Opportunity #2: Accelerating time to skills productivity

One key problem to building up talent is the length of time required by current reskilling and upskilling options. Below, we discuss two potential solutions: micro-credentials and work-integrated learning.

Micro-credentials

Current training opportunities take employees out of work for long periods of time, making training a deterrent for managers. As several interviewees working in government advisory have suggested, shorter training opportunities, such as weeks-long learning bootcamps focused on specific skills, can be explored instead of year-long courses. Micro-credentials also validate skill- and competency-training experiences[106] and capture skills not currently identified by traditional four-year degrees. Additionally, micro-credentials provide access to learners excluded from traditional post-secondary education systems.[107] Adopting a micro-credential learning strategy will allow access to a wider, more diverse talent pool while supporting an innovative skills training ecosystem.

Work-integrated learning

Work-integrated learning (WIL) is a form of experiential learning where students or employees have working placements or work-based projects as part of a multi-modal learning experience. It includes a wide range of work arrangements including internships, apprenticeships, co-op placements, and articling and residencies for fields like law and medicine.[108]

WIL opportunities ensure that candidates and employees obtain valuable work experiences and can apply their skills in real-life contexts, all while contributing to a public service that is skilled and ready to tackle the challenges of the future. Research shows WIL can be particularly useful for underrepresented groups facing barriers in the labour market.[109]

Most research on WIL has been conducted on post-secondary graduates and demonstrates an association between WIL participation and employment.[110] WIL participants are less likely to be overqualified for jobs after graduation and have higher earnings.[111] While none of these studies speak directly to WIL in the reskilling context, they suggest that WIL experience is able to bridge the gap between abstract, textbook knowledge and practical, applied skills.

Interviewees suggested different types of WIL programs such as apprenticeship programs and programs that alternate learning weeks and work weeks, which will allow employees to supplement theory with practical experience. WIL can be brought to life by working with the ecosystem, for example, working with educational institutions like the School of Public Policy and Administration on co-op programs and partnerships.

Opportunity #3: Improving talent mobility across departments and roles

Improved talent mobility would benefit all parts of the ecosystem. For example, talent could be shared between government departments and, potentially, between government to ecosystem partners.

Flexibility and Cross-sectional Collaborations

Several interviewees noted that the siloed HR and job classification systems prevent skills spillover. To leverage its existing reservoirs of talent and skills across departments, HR policies and processes need to be updated to allow more flexibility and cross-sectional collaboration between teams. An interdisciplinary team produces innovation in digital environments,[112] but according to several interviewees, the current government employee classification system — closely tied to collective bargaining groups and HR systems — reinforces the siloed nature of government and prevents cross-disciplinary collaboration.

Interviewees suggested modifying the classification system to stimulate flexible cooperation. Removing barriers to cross-sectional collaboration could empower employees to take control of their career advancement and leverage their skills in differentiated career paths.

Influencers in the ecosystem can inspire innovation. For example, the professional specialisms approach in the UK[113] organizes groups of public servants into *specialisms*: cross-departmental groupings of valuable skill sets in areas like finance, human resources, and policy. A full-time senior leader heads the horizontal, cross-departmental specialisms and brings opinions to senior decision-making bodies. This approach benefits the organization through cross-pollination and improves retention by providing varied and interesting career paths.

Talent Mobility

Leveraging previously and currently existing programs — such as the Free Agent Program and Talent Cloud — is a place to start. Both initiatives aim to accelerate talent mobility in the public service. For example, the Free Agent Program emphasizes talent mobility and autonomy. Free Agents are hired based on attributes identified as being useful for public sector problem solving; they are given autonomy to join projects that fit their personal predilections and the skills they possess.[114]

Talent Cloud had an ambitious vision to expand the philosophy of the Free Agent program for talent in the public service more broadly with the Interoperable Talent Repository.[115] Talent Cloud advocated for a total internal repository of skills in the Government of Canada "where managers and applicants are continually validating and updating skills, and the ecosystem as a whole functions a lot more like a digital network."[116] This system would be facilitated

by portable credentials and have required a "skills framework optimized for Government of Canada."[117] The repository would allow teams to assemble as needed to address new projects and priorities.

Interviewees from various parts of the ecosystem commented that government employees would benefit from exposure to the external environment through talent exchanges. An interchange program is currently in place that facilitates temporary exchanges of public service employees to external organizations and vice-versa. However, according to one interviewee, the current interchange program is under-leveraged, and one of the barriers is manager hesitancy. One interviewee also mentioned that interchanges with the private sector needs ethical walls to prevent misaligned incentives. Additional challenges are differences in pay, pension and healthcare benefits, hierarchy, and decision-making power.

The vision of the Interoperable Talent Repository can be extended to the external ecosystem to access a potentially larger pool of talent. Talent Cloud had this vision in mind. Through portable credentials, Talent Cloud hoped to facilitate the movement of talent in and out of the government easily and allow citizens to work for the federal government on project-based opportunities to stimulate a greater diversity of ideas inside the government. [118]

Opportunity #4: Activating a culture suitable for the digital government

To take advantage of opportunities created by digitization requires not just digital skills but hybrid and change management skills. The culture of the public service is hierarchical, siloed, and tends to reward caution.[119] There were good reasons for enshrining these principles in the past to exert democratic control through the principle of ministerial accountability.[120] However, the problems of the twenty-first century require more openness and collaboration, whether it is in multidisciplinary teams or departments working together on complex issues that cut across ministerial silos.[121]

Change Leadership

While developing new policies and practices to encourage a growth culture are important, successful cultural transformations require leadership buy-in. It is also important to develop the skill sets of government leaders, whether through training or targeted exchanges with the private sector, so that leaders in the public service can learn from other ecosystem players.

We heard repeatedly from our interviewees that public service executives are often overloaded with managing day-to-day activities; this is a barrier to leading change. Departments and agencies within government need additional leaders solely dedicated to leading change, whether in the culture or in the adoption of transformational

digital technologies, to work closely with their fellow executives to integrate new practices and technologies into day-to-day operations.

Leaders provide financial and bureaucratic support for innovative or experimental projects that try new systems or ideas on a smaller scale. One great example was the Talent Cloud project hosted at the Treasury Board Secretariat, which depended on the support of the Chief Information Officer of Canada, Alex Benay, to get the project off the ground in 2017.[122] The Talent Cloud project spent the past four years coming up with innovative ways to address a whole variety of government staffing challenges.

Growth Culture

Moving toward a growth culture is essential for attracting top talent with the skills the Government of Canada badly needs.[123] However, talent with the necessary skills for digital transformation tend to be more attracted to organizations with cultures that reward experimentation and innovation.[124] We heard from interviewees in government and the private sector that what often drives talented people is the challenge of solving tough problems.

But few organizations have problems to solve that are as thorny as those confronted by national governments. For many employees, a vital part of the value proposition of working for the government is making a difference in their community or country.[125] What often makes this kind of talented person wary of working in government is the reputation of the inflexible and hierarchical working culture of the public service.[126] Further, remuneration in the public service often does not match that available in the private sector. Accordingly, it is essential to maximize incentives, such as flexibility and compensation, to attract and retain top talent in government. As the Talent Cloud project discovered in their work, it does not matter if you hire an innovative and creative employee if they do not have a supportive culture in which to work. If the culture does not support them, they will find work elsewhere.[127]

If government were to adopt a growth culture, that is, an approach that encourages experimentation, the pitfalls associated with traditional approaches—*waterfalls*, where the function is only determined at the start of a project, not assessed throughout—new solutions can be found. Pilot programs and regulatory sandboxes, combined with better data collection and sharing, have the potential to transform policy making.[128] These kinds of programs already exist at a small scale in various parts of the government; the research team heard about more than a dozen small innovative programs or offices.

Ultimately, organizational culture determines the behaviours that get rewarded. The use of monetary compensation is closely regulated by the collective bargaining rules governing the government's relationship with its staff.[129] However, the experts suggested other innovative options. Some government organizations, including the Centre for Regulatory Innovation, run contests for innovative ideas or solutions to problems with great effect, even though the only reward is recognition for a good idea.[130]

Similarly, several experts suggested using training and professional development opportunities as carrots for high-performing staff members.

Better use of metrics could help create a growth culture. Several experts suggested the federal public service use HR metrics that emphasize milestones completed rather than time invested into a project or training. This change would need to be coupled with a more open and rigorous approach to performance management and either implemented gradually or enabled by wider updates to HR systems. In either case, focusing on training results rather than inputs would improve government-wide assessment of skills.

No one action will enable a growth culture in the federal government. Rather, many small steps will cumulatively add up to major change, but hiring new staff will gradually affect the working culture of the government. Improving leaders' transformation skills and appreciation of the potential of digital technology will encourage them to lead culture change. Rewarding those who work to enable a growth culture will cement cultural change in the government.

Conclusion

The opportunities for improvement presented in this report affect the whole enterprise and are complex, therefore tackling these opportunities will require a calculated strategy from the Government of Canada.

Changes cannot be tackled all at once but focusing on the initial assessment of current and future skills will prime the other solutions for most optimal results. A gradual, phased approach will allow the government to understand its needs and take the appropriate steps supported by an Access, Build, and Enable framework.

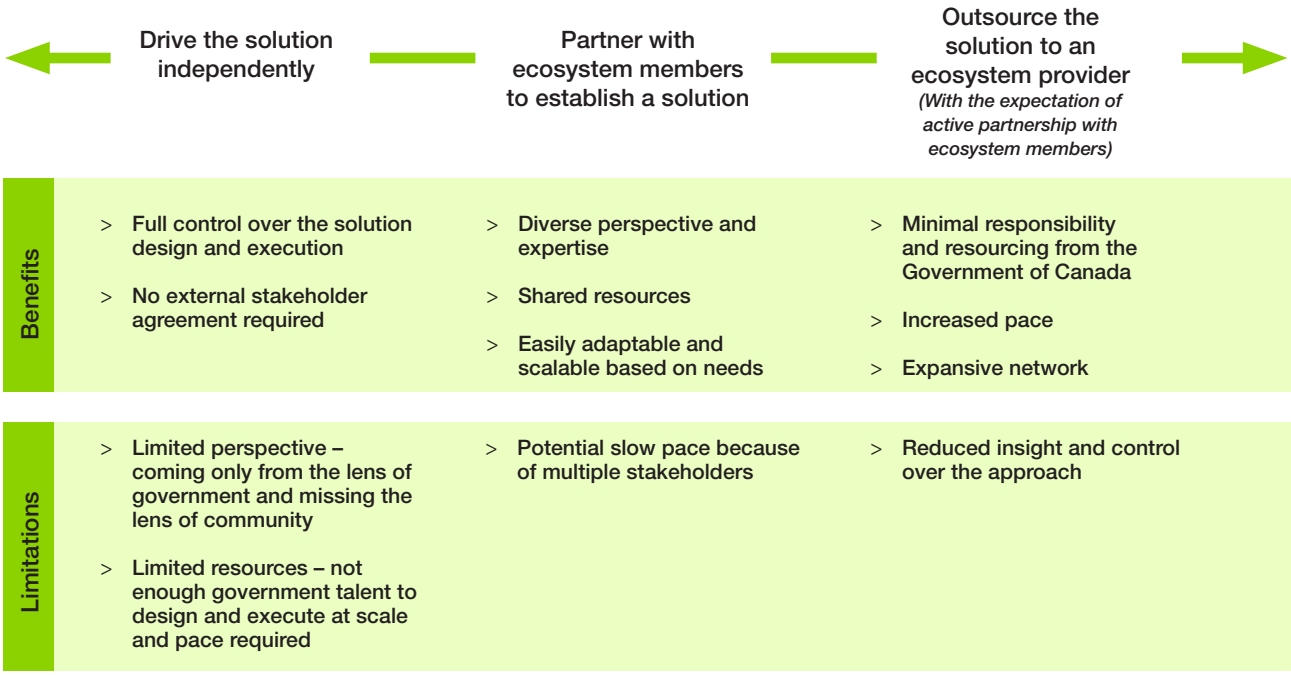
When approaching the solutions, we recommend a *try-it* versus *prove-it approach* that involves testing, learning, and scaling quickly. As evident from our analysis, a traditional waterfall approach will not achieve the desired results and the solutions will be outdated by the time they are implemented. Innovative agencies across the public service are already using this approach. Building iteratively from such programs will enable gradual, yet sustained change: Initiatives can be tried at a small scale, studied, tweaked, then rolled out at progressively larger scales.

Some initiatives may not work, but by trying many ideas out at a small scale, the government can take intelligent risks that encourage innovation. In doing so, the Government of Canada must look to its ecosystem for support. Tapping into existing and new partnerships with ecosystem members will provide access to a network of experts and infrastructure to support the upskilling and reskilling issue. How much its ecosystem members are involved can vary depending on their experience, capabilities, and capacity. The benefits and limitations of engaging the ecosystem partners are illustrated in Figure 2.

To acquire the talent and skills needed for digital transformation, the Government of Canada first needs to better assess and understand current talent skills across the public service. Accordingly, the first stage is to adopt a skills framework that includes the dynamic digital, transformation, and socioemotional skills that are needed. The second stage is to get a better handle on the skills data the government already has locked away in departmental silos. Creating an *open skills framework* will enable cross-departmental collaboration in defining skills. An open framework will also help the government access talent across the wider ecosystem.

FIGURE 2.

Opportunity to involve the ecosystem



However, within any skills framework, three broad categories of skills need to be addressed to succeed in digital transformation:

1. Digital skills

Digital skills can range from full-stack developers and computer engineers to proficiency with Microsoft Office. More of all types of digital skills are urgently needed by the federal government and any framework needs to acknowledge the range of skills in this category. Digital skills have a shelf life, however; cutting-edge knowledge can quickly become obsolete without regular upskilling efforts. Thus, any framework needs to be flexible enough to be updated regularly.

2. Transformation skills

Knowing how to effectively apply digital technology and concepts in an organization is often as important as the technological skills themselves. Knowing how to optimize organizational structures to take advantage of digital transformation takes specific skills, particularly in program management, change management, and workforce transformation-planning skills. These management skills need to be incorporated into the framework and tweaked as necessary.

3. Socioemotional skills

Socioemotional skills include creativity, collaboration, and problem solving; they are essential to the success of digital transformation. Also called soft skills or enduring human capabilities, socioemotional skills are less likely than other skills to have a shelf life. Workers need to build socioemotional skills over time with digital and transformation skills.

Four opportunities to mitigate the digital skills shortage

Each set of skills is vital for digital transformation and the government urgently needs more of each. In this report, we identified four opportunities to help mitigate the digital skills shortage in Canada's public service: access a broader talent pool, accelerate time to skills productivity, improve talent mobility, and activate a culture for digital government.

- *Access a broader talent pool*
  EDI is a priority; its principles are embedded in ministerial mandate letters. The representation of equity-deserving groups in digital occupations can be improved, however, as barriers still exist for equity-deserving groups in security clearances, the bilingual requirement, and credentialism. To access a broader talent pool, the government can take several actions:
  - Increase emphasis on skills and decrease emphasis on formal education credentials;
  - Create sandbox environments for innovation to promote participation of those who cannot get security clearance but are otherwise qualified.
  - Reconsider the bilingual requirement for some roles or more actively recruit for other languages, such as those of the Indigenous Peoples.
- *Accelerate time to skills productivity*
  Shorten the time required for training opportunities, reduce the focus on degree programs, and emphasize familiarity with more basic digital skills. For example, work-integrated learning leading to micro-credentials linked to a skills framework can help reduce the time needed to upskill employees. Such a structure is inherently flexible and allows employees to upgrade their skills while staying in a role where their expertise is important. Engaging ecosystem partners will allow the government to build its specific needs onto existing work-integrated learning solutions.
- *Improve talent mobility*
  The federal government needs to increase the internal movement of talent to meet many of its digital transformation challenges. One avenue is to increase the use of multi-disciplinary teams and bring together employees from different departments.

  Enabling shared HR data is essential for movement of specialists from department to department and project to project. Data sharing could even lead to a central talent repository and enable greater autonomy and career development for employees. Promising results in enabling talent mobility were achieved by the Talent Cloud and Free Agents programs, but these results need to be improved on and expanded.

> *Activate a culture for digital government*
Creating a culture for digital government will take time but the process will be sped up if the number of employees with transformation and socioemotional skills are increased. Leaders at various levels of government need support to give them time to develop these skills. A complementary path is giving leaders responsibility for transformation who work alongside leaders responsible for day-to-day operations.

Each opportunity has ideas to be implemented in the short term and others that are longer-term. Taking an iterative approach is essential to acquire the talent needed for digital transformation, which will lead the Canadian government to better serve the needs of Canadian citizens and residents.

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