

A Foundation for the Next Normal


Outlook of Technology
Adoption & its Impact in the
Canadian Workplace


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Executive Summary

Due to the COVID-19 global pandemic, the future of work is marked by uncertainty. The data reflected in this document was captured in a different reality than the one we face now. Rather than examining this data as we would a photograph, with clarity of picture and a solid sense of perspective, perhaps we can now assess it as we would a Post-Impressionist painting: the data that populates our vision has a blurred sense to it, but it still allows us a unique understanding of a bygone time. This document reflects results on a prospective future before a seismic shift occurred. The research we present here is no longer a good indication of what is to come, but a good indication of how things were. The world we did live in continues to provide the foundation that we hope to rebuild, rehabilitate, and re-envision.

The future of work, pre-COVID-19, was already rapidly changing due to the ever-evolving possibilities of technology. COVID-19 generated a shift in our value systems, priorities, investments, processes, access, and understanding of what is and is not possible. The Work Force¹ has shifted in drastic and devastating ways, and yet innovation and coming together in adversity is still possible. Technological innovation has enabled rapid responses to the crisis, just as it has supported the productive shifts in work and Work Culture necessitated by the impact of the crisis. It is our hope that this document can help us understand previous blind spots and opportunities and function as a springboard to discover—in this time of ambiguity, anxiety, and loss—possibilities.

The technology focus of Canadian organizations has shifted since provinces implemented lockdown measures. Previously, organizations were focused on Work Culture and how to attract, retain, and reskill the right talents. In the current context, we have seen Canadian organizations shift their attention to business continuity and the safety of their employees through investments focused on Work Space and technologies that allow for remote work.

Technologies were evaluated in terms of their ability to augment or replace human work, and while organizations have had to rethink their strategic priorities for 2020 and beyond, the penetration of technology in the workplace will not disappear. On the contrary, we have seen an acceleration of innovation in Canada in the first half of 2020 in order for organizations to remain agile and respond to the continuously evolving health and safety guidelines mandated by the various levels of government.

¹ The terms “Work Force,” “Work Space,” and “Work Culture” have been made consistent with the wording of the original survey throughout this report.

We believe that this “next normal,” typically referred to as a post-COVID-19 state, will continue to see rapid innovation and agile development of technologies to allow for continuous digital transformation. In this context, most of what we previously knew will be impacted: education as a concept and practice, the location of work and offices, and the ways organizations and their ecosystems collaborate. While human work will be augmented and replaced in some situations, human skills such as compassion, adaptability, and problem solving will be more valuable than ever.

The purpose of this paper is to look at technology adoption in Canada in relation to the future of work and workplace transformation. Even in a pre-COVID-19 world, we were witnessing workplace transformation: advanced technologies like smart digital assistants, robotic process automation, augmented reality, and artificial intelligence were already here, while more mature evolutions like remote working and smart buildings were already more generally adopted.

Even in a pre-COVID-19 world, we were witnessing workplace transformation: advanced technologies like smart digital assistants, robotic process automation, augmented reality, and artificial intelligence were already here, while more mature evolutions like remote working and smart buildings are already more generally adopted.

We see through this paper that Work Culture was the main priority for Canadian organizations, as close to 70% of them said they were finding it difficult to source the right digital skills. Reskilling and hiring new talent were the two solutions to that situation, depending on company size. In a post-COVID-19 world that we can imagine to be characterized by cost reduction and swift digital transformation investments in robotic process automation, those digital skills might be in even higher demand, and finding them an even tougher challenge.

We also look at Work Space in Canada and how offering flexible work locations was seen as a way to improve work-life balance and increase employee satisfaction. In a peri- and post-COVID-19 world, offering flexible work locations takes on an entirely new meaning: for a lot of organizations, it is now the difference between being able to operate or not. It will also increasingly be a deciding factor for workers in selecting their employers: the ability to work from home is de facto a competitive advantage.

Finally, we look at which IT skills would be the most important to rebuild in the first wave of economic recovery, with digital transformation skills leading the pack of all other IT skills.

Introduction

While, for reasons discussed above, we are unable to make strong predictions about the future of work based on the analysis conducted herein, we are confident in stating that we expect some major trends, which have been accelerated in their uptake by the pandemic, to continue. We will continue to see the digitization and the globalization of our workplaces. Further, without strong and systematic mitigation efforts, we can expect that existing inequities will be exacerbated in many cases by the introduction of increasingly sophisticated technologies. Strong policy efforts in this area can push back against this trend, but mobile and scalable efforts must be introduced in order to prevent more Canadians from being excluded from the future of work because of their inadequate exposure to and education in digital and technological skills, as well as foundational essential skills. We need to address the new inequities of the peri- and post-COVID-19 world, as well as the preexisting systemic inequities. Now, more than ever, technology offers ways to democratize education and access to work, just as it also presents and creates barriers.

The widely divergent impact of the pandemic on different demographic groups and industries has underlined the need to collect specific and detailed data in the recovery period and beyond. We need further research that tracks the changing priorities of Canadian businesses as they prepare their workplaces and staff for changed conditions and respond to a new normal. Further, we need sector-based analyses and projections to reflect the varied impact that both the pandemic and technology have had and will have on different occupational groups and industries.

The future is not yet written, and technology-enabled shifts in how we work, access education, and engage with communities and governments is neutral—neither inherently negative nor positive. Meeting Work Force and skills challenges of the future—as well as those of the dynamic present—can and must involve engagements with the technological tools at our disposal. However, evidence-based decision making about the appropriate use of technology in our transforming Work Cultures and Work Spaces will be critical to ensuring no Canadians are left behind as we advance towards the unknown future of work.

From a personal perspective, we all can attest to the fact that technologies such as cloud, mobility, and social business technology have changed how we work on a daily basis. However, technologies such as artificial intelligence (AI), data analytics, robotics, augmented and virtual reality (AR/VR), and intelligent process automation (IPA) (including robotic process automation [RPA]) are rapidly changing who—or what—is doing the work.

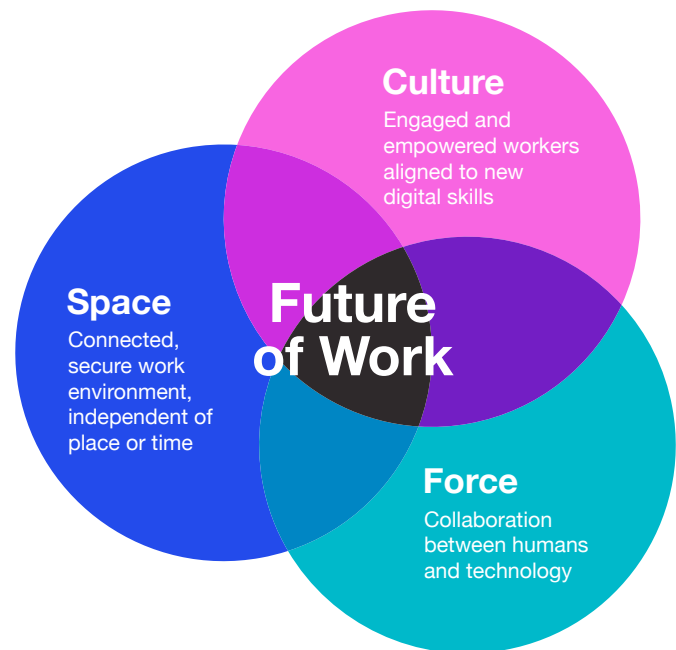
The “Fourth Industrial Revolution,” as it is called by the World Economic Forum, will impact all industries and many job functions within them. Transformation of the way we work and how work transpires will happen broadly within industry, and it can move very rapidly in some cases, as we have seen with the uptake of voice recognition solutions. In other cases, transformation can occur in bits and pieces, as we have seen with the adoption of augmented and virtual reality in the enterprise. Regardless, the role of “digital workers” is growing in our own companies and industries, and the growing presence of technology that automates tasks, processes, and jobs in the workplace is driving what IDC and others are calling the “future of work.” IDC defines the Future of Work as a fundamental change to work as we know it that:

- > Fosters human-machine collaboration
- > Transforms worker behaviours and skills as well as organizational culture and employee experience
- > Supports a dynamic work environment, not bounded by time of day or physical space

The Future of Work is an enterprise-wide imperative that applies 3rd Platform technologies and innovation accelerators (IAs) such as AR/VR, AI, and Internet of Things (IoT) to transform the concept of work and how it is done. It requires CXO leadership and intimate collaboration among IT, line of business, HR, and other departments and results in increased productivity, worker engagement, and competitive differentiation. Future of Work initiatives must be an integral component of an organization’s overall digital transformation strategy.²

The Future of Work framework takes a holistic integrated approach, encompassing three interrelated and interconnected pillars.

FIGURE 1
IDC’s Future of Work Framework



Source: IDC, 2019

² IDC, 2020. *Canada: Future of Work*. https://www.idc.com/getdoc.jsp?containerId=IDC_P39659.

Work transformation will also have a durable impact on education as a whole, from how we prepare students for agile work environments and offer them experiential and work-integrated learning opportunities, to how we deliver continuous education to existing workers. Technologies have also begun to shape the student and educator experience, from applications like Camtasia and PebblePad to the use of learning management systems (LMS) in higher education. This extends into the business world, further blurring the definition of who is an educator and expanding the boundaries of when and where education can be delivered.

Future Work Culture

Future **Work Culture** refers to the distinctive beliefs and values of an organization and its talent management practices and how effectively they achieve and retain a highly engaged and motivated Work Force that is aligned to corporate strategies and goals. It encompasses development and institutionalization of policies, metrics, and key behavioural indicators (KBIs) that are aligned with the Future of Work (FoW) vision.

Companies across all industries are increasingly adopting a borderless and agile culture. Online communities and platforms are used to acquire skills and capabilities. Talent sourcing models are expected to evolve and move toward a quicker, virtual, borderless, and task-oriented mode of working. Work culture addresses the following concepts:

> **Worker/employee experience**

Workers want to feel valued and trusted, be part of an agile and innovative team, and have the right tools to get the job done. They also want a well-balanced blend of work and life. For an organization, it is critical to create superior experiences for workers to keep them engaged and motivated. These workers, in turn, deliver great services and experiences to their end customers.

> **Talent management**

The “war” to attract and retain emerging digital skill sets and stay innovative in a fast-changing industry is drastically changing talent management models. Getting the right people and developing the skills needed for the future will be crucial for companies to succeed over time.

> **FoW metrics and KBIs**

Metrics that go beyond traditional productivity and ROI considerations, focus on worker motivations and what drives them to stay engaged, and measure skills such as problem solving, design thinking, and collaboration will be crucial for organizations to measure their overall performance and define their Work Culture (e.g., innovation, Work Force effectiveness, and other operational needs).

> **Organizational structure**

Borderless, agile, and flat companies are organized for speed, for adaptability, and to source and deliver innovation along with ecosystem partners much faster than traditional organizations. Collaboration is the glue that keeps workers highly engaged and motivated toward a common goal, and teams are empowered for decision making.

Future Work Space

The future **Work Space** is a flexible and highly connected working environment in which workers enjoy mobility, collaboration, and effective and secure access to the resources they need to contribute and innovate with speed and ease. This is critical for workers' happiness, productivity, and the overall quality of their work. Failing to equip workers with modern tools and resources prevents workers from reaching their full potential and may lead to their frustration and eventual departure.

Work is less place-dependent and time-bound, as workers are using a mix of physical, digital, and immersive technologies to transform any environment into a "Work Space." It is fundamentally people-driven and powered by technology to create experiential work.

Work Space addresses the following concepts:

- > **Mobility and immersive technologies** to empower the borderless Work Force to work securely anywhere, at any time, and from any device.
- > **Productivity and collaboration tools** to enable agility, transparency, access to information, and faster decision making.
- > **Securing the borderless Work Space** "by design and by default," with state-of-the-art security technology across the stack such as endpoint threat management, identity management, data encryption, and policy enforcement and compliance.
- > **Modern facilities** that involve redesigned office and shop floor strategies to attract and retain the best talent to support new organizational cultural values such as collaboration, creativity, and agility.

Future Work Force

The future Work Force refers to the application of intelligent technologies to reshape the way work tasks are performed and by whom (including by machines). These technologies augment and automate work while creating new opportunities for value creation within the organization.

Technology has the potential to empower people to a far greater degree than in the past—unlocking the latent creativity, perception, and imagination of human beings at every level of every organization.

Work Force addresses the following concepts:

- > **Artificial intelligence**, AR/VR, robotics, and intelligent process automation software technologies enable the automation of both physical work and information work, significantly impacting productivity and quality while freeing humans for higher-value cognitive work.
- > **Human and machine collaboration** is enabled by these same technologies, augmenting, enhancing, and expanding human capabilities.
- > **Digital workers**, enabled by a wide range of analytic and AI techniques, conduct analysis, produce insights, make recommendations, and, in some cases, make autonomous decisions.
- > **New work categories are created**, and reskilling the human Work Force to address the requirements of these new categories is both an opportunity and an imperative.

It is with this framework and context that we propose to assess the future of work in Canada through the lens of Canadian organizations. In October 2019, IDC Canada launched an online survey of 300 Canadian organizations in order to understand workplace transformation maturity and sentiment around various technology themes related to workplace transformation. The purpose was ultimately to understand the investments that organizations are making or will make in workplace transformation initiatives. Target respondents were those involved with their organization's workplace transformation initiatives. Using this existing primary research data, we examine which technologies are already having an impact on Canadian workers and which technologies are likely to have an impact in 2020 and beyond.

Key Technology Trends

Before diving into workplace transformation data, in this section, we position initiatives and investments within the larger context of the Canadian information, communications, and technology (ICT) market and technology trends in Canada.

The Canadian ICT market continues to transition from what IDC calls the 2nd Platform era to the 3rd Platform era, with technologies like cloud computing, analytics, mobility, social, and IoT powering digital transformation and workplace transformation across enterprises. Consumer expectations about product usability and pricing are reshaping business-user expectations of ICT products and digital services. New digital service providers are causing industry disruption, leading Canadian businesses to respond with organizational transformation in order to survive. Customers are integrating information technologies with operational technologies (OT) to accelerate digital transformation and innovation in solutions such as IoT, AI, and robotics. As technology becomes increasingly embedded in business processes, line-of-business executives have growing influence on technology decisions, even spending their own budgets on IT, outside of the IT departmental budget.

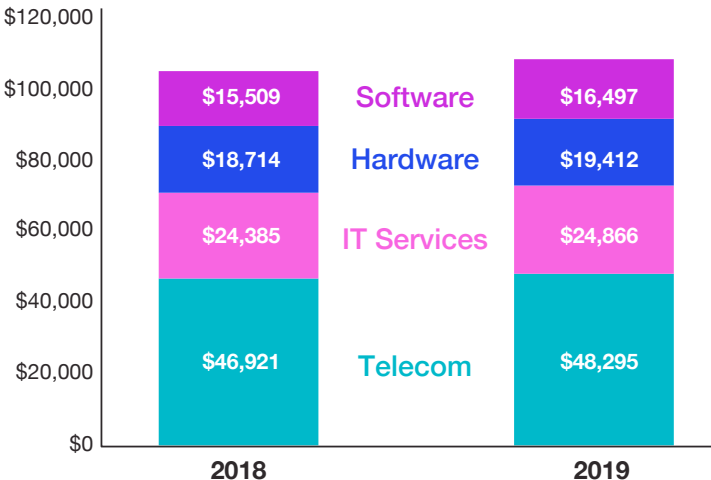
The Canadian ICT market represented 2.3% of the worldwide ICT market in both 2018 and 2019, indicating both the relative size and pace when compared to worldwide.

Figure 2 showcases ICT spending by the primary markets that currently power both foundational and technological advancements in Canada. At the end of 2019, the Canadian ICT market for external spending stood at over C\$109 billion, growing 3.4% over 2018 spending.

Pre-COVID-19, IDC had forecasted the ICT market to grow at a 3.0% CAGR for 2018–2023, meaning the ICT market would grow slightly faster than the anticipated GDP growth over the forecast period. For 2020–2023, forecasted annual ICT market growth ranged from 2.8% to 3.1%.

For IDC’s methodology for sizing and forecasting the Canadian ICT market, please see the Appendix.

FIGURE 2
Canadian ICT Spending by Primary Markets, 2018–2019 (C\$M)



Note: Telecom number excludes video communications and includes wholesale services. Data does not include all aspects of 3rd Platform spending.

Source: IDC, 2019

Telecommunications

The Canadian telecom services sector had low-single-digit growth in 2019, with spending of C\$48.3 billion, up 2.9% from C\$46.9 billion a year earlier (excluding video service and wholesale service revenue).

IT Services

The overall IT services market was expected to grow by a 2.4% CAGR over the IDC forecast period. Canadian services growth was forecasted to be driven by underlying economic growth, IT services spending associated with digital transformation (DX) initiatives, and a shortage of available IT skills that requires more organizations to turn to external service providers to complement their internal resources. From a segment perspective, growth was higher within project-oriented markets, hosted application management (HAM), and hosting infrastructure services (HIS). IT outsourcing will see negative growth in the forecast period. IT outsourcing continues to shift to selective outsourcing and the use of lower-cost delivery models.

Hardware

Hardware spending was expected to be flat throughout the forecast period because of commoditization of products, extended life cycles, and the shift from hardware ownership and corporate-run data centres to commercial as-a-service offerings. Market spending surpassed C\$19.4 billion in 2019 and was forecasted to remain at that level through 2023, with a five-year CAGR of 0.2%.

Spending on mobile phones was expected to decline slightly over the forecast period as mobile phone penetration slows. Mobile phones are the largest technology category in the client devices market, indicating the importance of the 3rd Platform. With mobile phone penetration nearing market saturation, mobile phone spending growth was forecasted to be driven by the refresh of the install base and by higher average selling values (ASVs). Spending on PCs and tablets, the second-largest client device segment, was expected to increase slightly throughout the forecast period, with notebook PCs being a source of growth in that technology segment.

Over the forecast period, cloud computing was expected to have the greatest effect on the network equipment market, both positive and negative. Public cloud adoption was forecasted to reduce spending on data centre infrastructure, while accessing cloud resources and applications will require increased investment in campus and edge switching, routing, security, and wireless LAN (WLAN).

Software

The Canadian software market end-user spend was expected to grow at a CAGR of 6.3% over the forecast period, surpassing C\$21 billion by 2023. These figures include spending by businesses for on-premise and cloud software offerings. Consumer spending on software like personal productivity applications, security, and other consumer applications are also included, while spending on gaming and entertainment are excluded.

Software represented the fastest-growing market across the four primary technology pillars, and thus is a key driver in future development of the broader ICT industry in Canada. Cloud software was expected to drive the software market with growth in the low double digits until 2023. At the same time, on-premise software spending growth was also forecasted to be positive, albeit slowing to low single digits.

Workplace transformation spending and investments can be found in all four of those categories.

The following three sections look at current and future investment plans by Canadian organizations through our three pillars of the Future of Work. We begin with Work Culture, as it represented the main area of focus for Canadian organizations at the moment of our survey, as illustrated in Tables 1 and 2 below. Work Culture was the top priority by a significant margin for Canadian organizations by both functional role and company size.

We believe this focus has been impacted by the current public health and economic situation, but it remains the case that talent acquisition to fill the skills gap was the top priority before the Canadian economy entered its lockdown phase.

TABLE 1**Workplace Transformation Pillar of Focus by Functional Role**

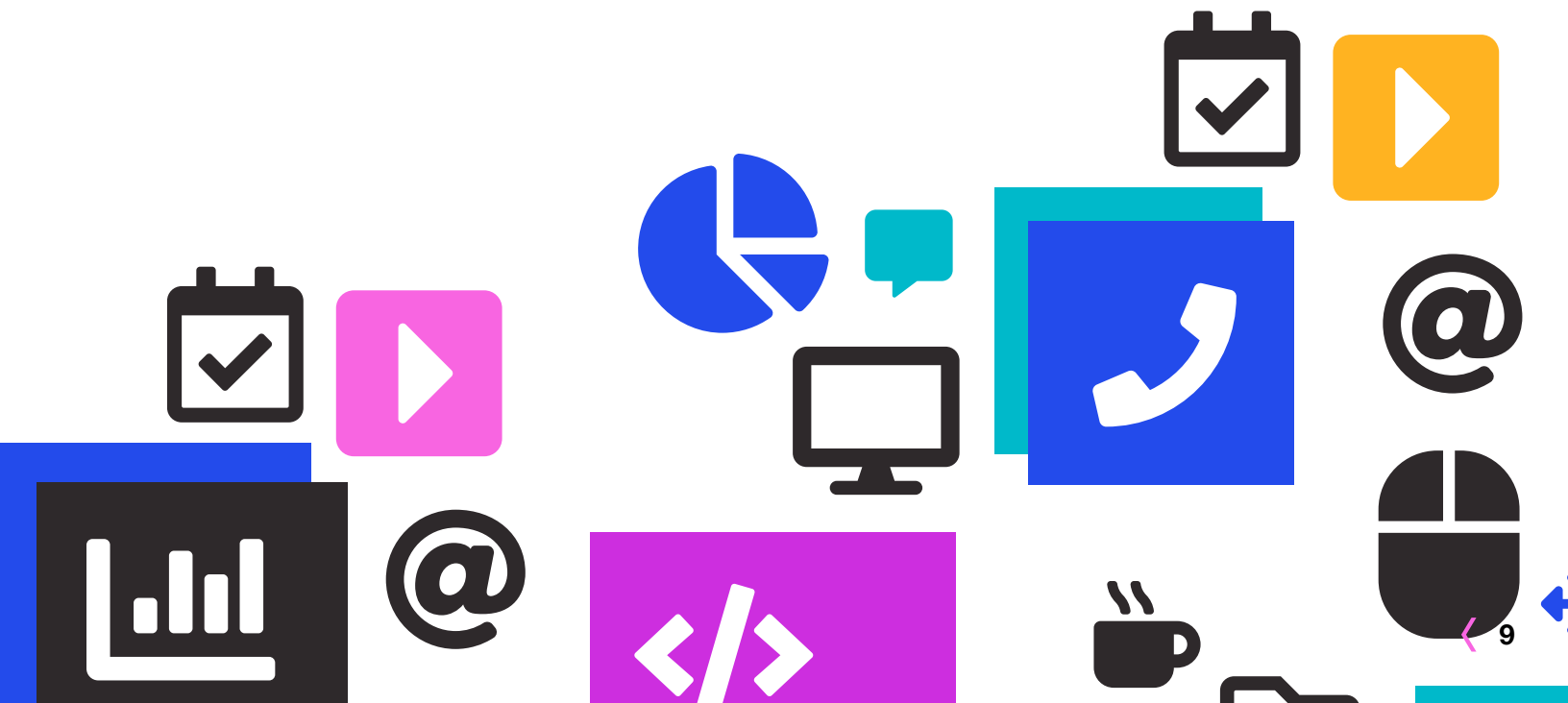
Which of the following workplace transformation pillars best describes the greatest focus for your organization in 2019?	Total	IT	HR	LOB
Unweighted sample size	300	81	68	151
Work space — connected, secure work environment that is independent of specific place or time	25.9%	34.1%	29.0%	20.5%
Work culture — talent acquisition focused on matching skills to tasks, using both internal and external resources	46.5%	38.3%	36.8%	54.3%
Work force — collaboration between humans and technology	27.6%	27.6%	34.2%	25.2%

Source: 2019 IDC Canada Future of Work Survey

TABLE 2**Workplace Transformation Pillar of Focus by Company Size**

Which of the following workplace transformation pillars best describes the greatest focus for your organization in 2019?	Total	Small (10–99)	Medium (100–499)	Large (500+)
Unweighted sample size	300	95	100	105
Work space — connected, secure work environment that is independent of specific place or time	25.9%	24.0%	34.6%	19.1%
Work culture — talent acquisition focused on matching skills to tasks, using both internal and external resources	46.5%	54.1%	40.6%	43.9%
Work force — collaboration between humans and technology	27.6%	21.9%	24.8%	37.0%

Source: 2019 IDC Canada Future of Work Survey





Transformation of Work Culture

As previously mentioned, the future of Work Culture is often associated with talent acquisition and retention. We will see that Canadian organizations are finding it hard to source the right digital skill sets and that they have applied focus to rectify this situation. We look at the present and future state in two distinct sections.

Present State

One of the biggest challenges facing organizations in Canada and beyond is dealing with a talent shortage as digital transformation is embraced. Table 3 highlights this situation across all company sizes. If we look at all of our respondents and lump together the two categories indicating difficulty in sourcing new digital skills, we find that almost 70% (68.3%) of respondents face this challenge. This significant result explains why Work Culture ranks as the top priority for Canadian organizations. It notable that small businesses are more likely than medium or large businesses to report difficulties sourcing new digital skills right across the company, though they are also more likely to report that they are not finding it difficult to recruit digital skills at all.

TABLE 3
Difficulty in Sourcing Digital Skills by Company Size

Is your organization finding it difficult to source new digital skills?	Total	Small (10–99)	Medium (100–499)	Large (500+)
Unweighted sample size	300	95	100	105
Yes, across the company	21.9%	24.5%	21.3%	19.5%
Yes, in some business areas	46.4%	40.8%	47.2%	51.8%
No, we’re not finding it difficult to recruit digital skills	23.2%	25.5%	21.3%	22.5%
Don’t know	8.5%	9.2%	10.2%	6.1%

Source: 2019 IDC Canada Future of Work Survey

The question now is to understand what organizations are doing to fill the digital skills gap. Our survey results indicate that hiring new personnel is still the method of choice, followed by reskilling the existing Work Force at a close second, and then leveraging contractors and suppliers or looking for on-demand workers. This can be seen in Table 4, which also shows that large organizations are more likely to reskill the existing Work Force than smaller organizations. We believe that this is because training costs are more affordable as the number of trainees grows, making it a more attractive option for larger organizations.

TABLE 4
Sourcing of Digital Skills by Company Size

How is your organization sourcing or planning to source the new digital skills?	Total	Small (10–99)	Medium (100–499)	Large (500+)
Unweighted sample size	300	95	100	105
Reskilling of existing workforce	58.2%	47.7%	60.1%	67.9%
Hiring new personnel	67.4%	60.0%	67.2%	75.7%
Leveraging contractors and outside suppliers	28.8%	25.0%	32.3%	29.5%
Looking for on-demand workers	15.6%	8.7%	16.7%	22.2%
Other	0.7%	2.0%	0.0%	0.0%

Source: 2019 IDC Canada Future of Work Survey

On the topic of training, we asked Canadian organizations which training programs they were using. We can see in Table 5 that traditional training methods are still the most popular. Internal knowledge sharing and online training rank first and second for all company sizes. While online training will remain, internal knowledge sharing might have to move to collaboration platforms in the absence of physical presence at work. For all the noise generated by AR/VR, specifically in the context of training, its adoption is still very low.

TABLE 5
Types of Training Program by Company Size

Which of the following training programs is your organization using?	Total	Small (10–99)	Medium (100–499)	Large (500+)
Unweighted sample size	300	95	100	105
Digital cooperatives	17.7%	14.6%	13.9%	24.8%
Hackerspaces	10.7%	10.6%	14.7%	6.7%
Fab labs	8.9%	8.9%	8.2%	9.5%
Partnership with schools and universities	20.6%	18.9%	19.3%	23.9%
AR/VR training	14.1%	7.3%	17.6%	18.3%
Internal employee knowledge sharing	45.4%	30.2%	48.8%	59.1%
Training from external third-party provider	37.2%	26.9%	31.7%	54.3%
Online training	49.8%	37.2%	51.3%	62.4%
Employees can seek training on their time/budget	30.2%	26.3%	31.6%	33.2%
Other	1.1%	3.2%	0.0%	0.0%
None	8.0%	12.5%	10.0%	1.0%

Source: 2019 IDC Canada Future of Work Survey

The last two points related to Work Culture that we want to touch on are tied to employee performance and innovation, both of which are likely to evolve in the future.

As shown in Table 6, Canadian organizations rank productivity, teamwork, and problem-solving attitudes as the top parameters used to monitor employee performance. It is also worth noting that innovation ranks higher for larger organizations than for smaller companies, perhaps illustrating that innovation is still perceived as a luxury that smaller organizations cannot afford.

TABLE 6
Parameters to Monitor Employee Performance by Company Size

What are the top parameters your organization uses to monitor employee performance?	Total	Small (10–99)	Medium (100–499)	Large (500+)
Unweighted sample size	300	95	100	105
Time management	38.9%	33.1%	36.1%	48.4%
Creativity and innovation	34.8%	23.6%	42.8%	39.3%
Productivity	55.2%	54.9%	54.4%	56.3%
Autonomy	17.9%	22.6%	13.9%	16.9%
Mastery	17.6%	17.1%	17.1%	18.6%
Flexibility	34.0%	30.6%	26.7%	45.2%
Initiative	39.3%	29.7%	44.2%	45.1%
Teamwork	52.9%	50.6%	42.8%	66.1%
Problem-solving attitude	44.8%	38.5%	49.2%	47.3%
Interaction with clients/partners	32.7%	33.6%	33.3%	31.2%
Other	1.6%	3.7%	0.9%	0.0%

Source: 2019 IDC Canada Future of Work Survey

To look at innovation, we asked what kinds of initiatives Canadian organizations were using to drive it. Partnering with technology vendors (and in this case, this could also be technology suppliers) is the top method of driving innovation in Canada. That said, partnering with universities remains very low, though it could be an opportunity for both the private and public sector to further drive innovation at a lower cost. As illustrated in Table 7, results here remain consistent with the previous findings: smaller organizations are focusing less on initiatives to drive innovation, as shown by their lower score in almost all of the survey options.

TABLE 7**Top Initiatives Undertaken to Drive Innovation by Company Size**

Please indicate the top initiatives/activities your organization is undertaking to drive innovation:	Total	Small (10–99)	Medium (100–499)	Large (500+)
Unweighted sample size	300	95	100	105
Incubation labs	13.9%	8.9%	14.8%	18.5%
Hackathons	12.5%	9.3%	16.1%	12.4%
Partnership with start-ups	17.1%	8.0%	22.9%	21.4%
Partnership with technology vendors	40.0%	33.2%	39.4%	48.1%
University projects	16.9%	10.4%	15.3%	25.9%
Ideation retreats	12.0%	9.5%	11.0%	16.0%
Customer participation	29.7%	31.1%	27.8%	29.9%
Crowdsourcing	19.3%	13.8%	14.3%	30.7%
Centrally managed innovation centers (with employees)	21.5%	18.3%	14.5%	32.4%
Other	0.6%	0.0%	0.0%	2.0%
None of these	21.7%	28.2%	25.0%	11.1%

Source: 2019 IDC Canada Future of Work Survey

Future State

Again, predicting a future state of Work Culture in Canada is difficult, but we can offer some avenues for discussion triggered by the current health and economic situation.

As unemployment rises, the cost of hiring will go down. As more employees work from home, compensation might be negatively impacted, as organizations will not need to reflect the cost of living in large cities in the same manner they used to. We might also see situations in which knowledge transfer from more seasoned employees now needs to happen in a remote setting, further pushing the adoption of collaboration tools or AR/VR for remote assistance, for example. We might also see organizations starting to offer education programs in order to fill specific digital needs at a fraction of the cost of a university diploma, further complicating matters for education institutions.

As more employees work from home, compensation might be negatively impacted, as organizations will not need to reflect the cost of living in large cities in the same manner they

Transformation of Work Space

If one were to read and follow news articles, one would find that most of the discussions nowadays reflect stress and anxiety surrounding a reopening of the economy, and more specifically how organizations will cope with new health and safety measures. Previously a last priority for Canadian organizations, the future of the Work Space is arguably the top priority these days. We will look at the present and future state in two distinct sections.

Present State

As a result of the newfound importance of the Work Space for Canadian organizations, this is the area in which we suspect the most changes will be recorded in the short to medium term, and some of our survey questions have become dated.

The first metric we examine here is work flexibility and how it is applied in organizations. Table 8 below suggests that close to 50% of Canadian organizations have some ways of allowing flexible work time (47.7%), flexible holidays (45.4%), and, to a lesser extent, flexible location (40.5%). Medium-sized businesses are most likely to offer flexible time, large companies are most likely to offer flexible location and flexible holidays, and small companies are most likely to offer a flexible role or none of these. These differences—which in some cases are quite significant, such as the difference of almost 17 percentage points between the likelihood of large versus small companies to offer flexible holiday—demonstrate that company size impacts an organization’s likelihood to offer different flexible working arrangements.

TABLE 8
Flexible Working Arrangements by Company Size

Which of the following flexible working arrangements does your organization offer or plan to offer?	Total	Small (10–99)	Medium (100–499)	Large (500+)
Unweighted sample size	300	95	100	105
Flexible time (employees choosing when they start/finish work)	47.7%	45.9%	53.3%	44.0%
Flexible location (employees choosing to work from the office, from home, or other locations)	40.5%	32.7%	43.8%	45.8%
Flexible role (employees choosing, within certain guidelines, what they do as part of their job)	32.2%	33.4%	30.8%	32.3%
Flexible holidays (employees choosing when to take time off)	45.4%	37.0%	46.4%	53.9%
None of these	11.3%	14.7%	6.8%	12.2%

Source: 2019 IDC Canada Future of Work Survey

We then asked about the benefits associated with offering this flexibility, and we found that, as a whole, larger organizations perceive more benefits than smaller ones and that employee retention and trust rank higher for larger organizations. The explanation for this is probably that larger organizations have a more formal way to engage and develop programs for their employees. In fact, when we look at the same question through the functional role of respondents, we see that respondents in HR typically rank all of the benefits higher than respondents in IT or LOB (lines of business), as shown in Tables 9 and 10.

TABLE 9
Benefits Gained from Flexible Working Conditions by Company Size

What are the top benefits your organization expects to gain from flexible working conditions?	Total	Small (10–99)	Medium (100–499)	Large (500+)
Unweighted sample size	300	95	100	105
More trust between employers and employees	36.7%	34.5%	31.2%	44.6%
Better employee work-life balance	55.8%	45.1%	59.2%	64.4%
Improved productivity	54.2%	49.5%	52.9%	60.7%
Higher employee satisfaction	55.5%	49.6%	57.8%	59.9%
Higher customer satisfaction	30.3%	32.6%	28.0%	30.0%
Employee retention	48.1%	41.8%	45.2%	58.0%
Other	1.0%	0.0%	1.8%	1.4%
No benefits perceived	5.3%	9.0%	2.2%	4.3%

Source: 2019 IDC Canada Future of Work Survey

TABLE 10
Benefits Gained from Flexible Working Conditions by Functional Roles

What are the top benefits your organization expects to gain from flexible working conditions?	Total	IT	HR	LOB
Unweighted sample size	300	81	68	151
More trust between employers and employees	36.7%	32.3%	41.1%	37.2%
Better employee work-life balance	55.8%	53.4%	60.0%	55.5%
Improved productivity	54.2%	62.5%	51.9%	50.7%
Higher employee satisfaction	55.5%	60.4%	54.0%	53.6%
Higher customer satisfaction	30.3%	26.4%	34.8%	30.6%
Employee retention	48.1%	39.5%	60.0%	48.0%
Other	1.0%	0.0%	2.3%	1.1%
No benefits perceived	5.3%	2.1%	1.7%	8.3%

Source: 2019 IDC Canada Future of Work Survey

The results of the next question are again likely to change significantly, but there is value in showing the results of a pre-COVID-19 state. We asked Canadian organizations which IT solutions they had implemented in order to increase productivity. Table 11 shows that, again, larger organizations have had the luxury of implementing more solutions and that cloud-based productivity suites like Microsoft's Office 365 or Google's G Suite are being utilized by close to half of Canadian organizations.

The other interesting point that will help us transition to the future state of the Work Space is the variance in adoption of IoT solutions by company size; only 14.9% of small organizations have deployed these solutions compared to 37.4% of large Canadian organizations. Further, small businesses were more likely than medium or large businesses to report they had not implemented any of these IT solutions to improve employee productivity.

TABLE 11
IT Solutions to Improve Employee Productivity by Company Size

Which of the following IT solutions is your organization using or plans to implement to improve employee productivity?	Total	Small (10–99)	Medium (100–499)	Large
Unweighted sample size	300	95	100	105
Cloud-based productivity platforms (e.g., G Suite, Office 365, etc.)	47.9%	42.6%	56.2%	45.4%
UCC (e.g., unified communications systems that include instant messaging with presence, voice capabilities, and conferencing)	21.5%	17.0%	20.7%	27.3%
VoIP phones (e.g., cloud-based phone systems)	24.9%	16.4%	27.5%	31.7%
Full access to enterprise content via mobile devices and apps	30.8%	29.5%	29.6%	33.6%
Outsourcing IT admin and support to a managed service provider	26.5%	21.6%	28.5%	30.0%
Mobile device management, mobile identity, etc.	32.6%	30.9%	26.1%	41.2%
IoT solutions (e.g., smart connected HVAC, lighting, blinds, etc.) for a connected workplace	27.9%	14.9%	32.9%	37.4%
3D printing	7.9%	7.6%	6.2%	10.0%
None of these	16.3%	22.1%	14.6%	11.5%

Source: 2019 IDC Canada Future of Work Survey

Those IoT solutions for a connected workplace will be essential in meeting health and safety requirements going forward and are likely the most important type of solutions being evaluated by Canadian organizations in 2020.

Future State

We would first like to remind the reader of how we see Work Space at IDC: Work is less place-dependent and time-bound, as workers are using a mix of physical, digital, and immersive technologies to transform any environment into a “Work Space.” Work Space is fundamentally people-driven and powered by technology to create experiential work.

In the current context, and for those organizations that were able, Work Space became an essential part of business continuity. Organizations had to look at collaboration tools, at securing remote access to work, at making sure their employees were equipped with the right tools (PCs, accessories, displays, but also furniture), and so forth.

We are also witnessing some form of brute force in attempting to secure the physical Work Space to allow for a return to work; the urgency of this task often outweighs the long-term opportunity to invest in the office of the future.

We are likely to see growth in robotics, AI, and automation in both physical and digital processes to offset the requirement for physical presence in cases where physical separation of workers is not possible.

Work is less place-dependent and time-bound, as workers are using a mix of physical, digital, and immersive technologies to transform any environment into a “Work Space.” Work Space is fundamentally people-driven and powered by technology to create experiential work.



Transformation of Work Force

This brings us to the future of the Work Force: how technology is augmenting and/or replacing the way we conduct work. Again, this had significant traction before COVID-19 but is now gaining more momentum because of the new ways of doing business that were forced on Canadian organizations.

Present and Future State

For this pillar of what IDC calls the Future of Work, we will be looking at both the present and future states together, as that makes it easier to see where Canadian organizations were heading prior to COVID-19.

Tables 12 and 13 look at which technologies Canadian organizations are already using to augment human work. In Table 12, we first see that technology adoption to augment human work is relatively low—or at least the perception from respondents that technology is there to augment human work is low. As an illustration, only 35.3% of Canadian organizations have deployed sensor-based staff ID and location for their employees, and this is the use case that ranks the highest. In Table 13, when looking at results through functional roles, we clearly see that IT respondents answer positively for more technologies and for more use cases. We also see that small businesses report below-average adoption of all listed advanced technologies used to augment employee skills except where they report above-average use of “sensor-based energy consumption monitoring and saving.”

TABLE 13**Use of Advanced Technologies to Augment Employee Skills by Functional Roles**

Is your organization using any of these advanced technologies to augment your employee skills?	Total	IT	HR	LOB
Unweighted sample size	300	81	68	151
Sensor-based staff identification and location	35.3%	52.4%	25.8%	29.9%
Wearables for health and safety	31.3%	33.2%	33.6%	29.4%
Wearable robotics (e.g., exoskeletons)	13.9%	21.2%	6.9%	12.8%
Sensor-based driver assistance and fleet management	16.9%	25.7%	16.2%	12.6%
Sensor-based energy consumption monitoring and saving	21.1%	24.7%	18.2%	20.3%
AR/VR for training	25.8%	36.8%	19.0%	22.7%
AR/VR for operations and maintenance (including field service)	21.4%	32.7%	19.6%	16.3%
Smart digital assistants	22.9%	32.2%	22.9%	18.2%
AI-enabled front-office functions (e.g., sales, marketing, customer support)	24.1%	42.7%	20.7%	15.8%
AI-enabled back-office functions (e.g., finance, legal, security)	21.8%	35.2%	19.5%	15.8%
Fleet telemetry	19.1%	30.5%	21.8%	12.2%
Industrial IoT for automation (e.g., Factory 4.0)	15.5%	22.9%	17.9%	10.8%
Software bots (RPA) to augment knowledge and information worker tasks	22.1%	28.2%	21.7%	19.2%

Source: 2019 IDC Canada Future of Work Survey

Tables 14 and 15 look at which technologies Canadian organizations are planning to use in the next 12 months to augment human work, and the most interesting use cases are smart digital assistants (think Siri or Alexa). We believe that this technology will continue to be on the radar of all Canadian organizations following the initial reaction created by COVID-19. When looking at both current deployment and future plans, we also see that smart wearables and both AI use cases climb above the 50% adoption/plan-to-adopt mark (see Table 14.) We will also later look at which technologies are being considered to replace human work.

To augment human work in the next 12 months, the most interesting technologies that Canadian organizations are planning to use are smart digital assistants (think Siri or Alexa). We believe that this technology will continue to be on the radar of all Canadian organizations following the initial reaction created by COVID-19.

Similar to the results shown in Tables 12 and 13, we see that small businesses report below-average plans for adoption of the advanced technologies listed to augment employee skills in all areas. Small businesses report below-average adoption plans in eight of the 13 areas, and medium-sized business report below-average adoption plans in six. There was little overlap in the technology areas where both small and medium-sized businesses reported above-average rates of adoption plans except “fleet telemetry,” a technology of significant interest to small (28.4%) and medium-sized (25.9%) business but seemingly not as significant to large businesses (20.4%).

TABLE 14
Use of Advanced Technologies to Augment Employee Skills in the Next 12 Months by Company Size

Is your organization planning to use in the next 12 months any of these advanced technologies to augment your employee skills?	Total	Small (10–99)	Medium (100–499)	Large (500+)
Unweighted sample size	300	95	100	105
Sensor-based staff identification and location	16.9%	15.8%	13.2%	21.9%
Wearables for health and safety	22.1%	27.0%	20.8%	18.0%
Wearable robotics (e.g., exoskeletons)	21.4%	23.7%	20.7%	19.5%
Sensor-based driver assistance and fleet management	26.1%	23.5%	30.0%	25.1%
Sensor-based energy consumption monitoring and saving	28.7%	26.9%	32.1%	27.1%
AR/VR for training	23.5%	23.3%	24.7%	22.4%
AR/VR for operations and maintenance (including field service)	24.8%	17.2%	26.0%	32.1%
Smart digital assistants	34.4%	34.1%	30.3%	39.0%
AI-enabled front-office functions (e.g., sales, marketing, customer support)	25.5%	25.8%	25.5%	25.1%
AI-enabled back-office functions (e.g., finance, legal, security)	27.9%	20.9%	29.7%	33.9%
Fleet telemetry	25.1%	28.4%	25.9%	20.4%
Industrial IoT for automation (e.g., Factory 4.0)	29.4%	26.7%	28.9%	33.0%
Software bots (RPA) to augment knowledge and information worker tasks	25.2%	31.1%	20.6%	23.4%

Source: 2019 IDC Canada Future of Work Survey

TABLE 15**Use of Advanced Technologies to Augment Employee Skills in the Next 12 Months by Functional Roles**

Is your organization planning to use in the next 12 months any of these advanced technologies to augment your employee skills?	Total	IT	HR	LOB
Unweighted sample size	300	81	68	151
Sensor-based staff identification and location	16.9%	11.8%	24.1%	16.8%
Wearables for health and safety	22.1%	22.1%	18.1%	23.6%
Wearable robotics (e.g., exoskeletons)	21.4%	21.9%	29.4%	18.2%
Sensor-based driver assistance and fleet management	26.1%	34.1%	18.3%	24.9%
Sensor-based energy consumption monitoring and saving	28.7%	36.9%	28.9%	24.3%
AR/VR for training	23.5%	28.7%	29.4%	18.6%
AR/VR for operations and maintenance (including field service)	24.8%	28.3%	33.7%	19.7%
Smart digital assistants	34.4%	39.4%	34.4%	31.9%
AI-enabled front-office functions (e.g., sales, marketing, customer support)	25.5%	26.0%	29.3%	23.8%
AI-enabled back-office functions (e.g., finance, legal, security)	27.9%	32.5%	32.4%	23.8%
Fleet telemetry	25.1%	19.1%	19.1%	30.4%
Industrial IoT for automation (e.g., Factory 4.0)	29.4%	39.8%	23.0%	26.5%
Software bots (RPA) to augment knowledge and information worker tasks	25.2%	30.0%	23.9%	23.2%

Source: 2019 IDC Canada Future of Work Survey

Tables 16 and 17 look at technology use cases designed to replace human work. The same trend can be seen here: In terms of adoption, smart digital assistants, software bots, and smart virtual customer service agents all rank high among Canadian organizations.

There were differences in rates of adoption by business size, with small businesses reporting below-average adoption rates of the use of advanced technologies to replace human work in all areas. Interestingly, medium-sized enterprises reported above-average rates in eight of these nine areas, while large enterprises reported above-average use in six areas. While large enterprises reported higher use rates than medium-sized enterprises in three areas, medium-sized enterprises reported higher rates than large ones in six areas, indicating that medium-sized enterprises are using a wider array of technologies more frequently. Still, the highest rate of technology use was in large enterprise adoption of “digital assistants for internal knowledge management in corporate functions and operations.” These results would suggest that large enterprises are more likely to invest heavily in a narrower range of technologies while medium-sized ones are more likely to choose to work with a wider diversity of technologies.

TABLE 16**Use of Advanced Technologies to Replace Human Work by Company Size**

Is your organization using any of the following advanced technologies to replace human work?	Total	Small (10–99)	Medium (100–499)	Large (500+)
Unweighted sample size	300	95	100	105
Smart virtual customer service agents (e.g., chatbots)	22.4%	13.8%	26.6%	27.9%
Digital assistants for internal self-service support (HR, IT)	22.6%	13.0%	26.4%	29.4%
Digital assistants for internal knowledge management in corporate functions and operations	26.0%	20.5%	22.9%	35.3%
Robots and drones for asset operations and maintenance	16.7%	14.2%	22.3%	13.6%
Robots and drones for monitoring, security, and surveillance	13.2%	10.9%	14.0%	15.0%
Robots and drones for remote hazardous operations	16.0%	11.3%	22.2%	14.9%
Robots for customer assistance	15.3%	7.7%	18.7%	20.2%
Robots and drones for fulfillment, logistics, and autonomous transportation	13.3%	10.9%	17.9%	11.3%
Software bots (RPA) for repetitive knowledge and information worker tasks	16.2%	10.1%	17.2%	22.0%

Source: 2019 IDC Canada Future of Work Survey

TABLE 17**Use of Advanced Technologies to Replace Human Work by Functional Roles**

Is your organization using any of the following advanced technologies to replace human work?	Total	IT	HR	LOB
Unweighted sample size	300	81	68	151
Smart virtual customer service agents (e.g., chatbots)	22.4%	37.2%	13.1%	18.3%
Digital assistants for internal self-service support (HR, IT)	22.6%	34.1%	17.6%	18.5%
Digital assistants for internal knowledge management in corporate functions and operations	26.0%	39.5%	22.0%	20.5%
Robots and drones for asset operations and maintenance	16.7%	27.9%	16.3%	11.0%
Robots and drones for monitoring, security, and surveillance	13.2%	20.9%	12.3%	9.6%
Robots and drones for remote hazardous operations	16.0%	21.7%	15.5%	13.2%
Robots for customer assistance	15.3%	23.1%	11.5%	12.6%
Robots and drones for fulfillment, logistics, and autonomous transportation	13.3%	22.0%	14.1%	8.5%
Software bots (RPA) for repetitive knowledge and information worker tasks	16.2%	24.2%	17.0%	11.8%

Source: 2019 IDC Canada Future of Work Survey

In terms of plans to adopt, Tables 18 and 19 show that smart digital assistants, software bots, and smart virtual customer service agents again all rank high among Canadian organizations. Small businesses reported high rates of intention to replace human work in the next 12 months, with above-average rates of intention in six of the nine areas surveyed. Further, it was small

businesses that reported the two top rates of intentions to start using technologies, with 34.1% of surveyed small businesses plan to use “software bots (RPA) for repetitive knowledge and information worker tasks” and 33.9% planning to use “digital assistants for internal self-service support (HR, IT).”

34% of surveyed small businesses plan to use “software bots (RPA) for repetitive knowledge and information worker tasks.”

TABLE 18
Use of Advanced Technologies to Replace Human Work in the Next 12 Months by Company Size

Is your organization planning on using in the next 12 months any of the following advanced technologies to replace human work?	Total	Small (10–99)	Medium (100–499)	Large (500+)
Unweighted sample size	300	95	100	105
Smart virtual customer service agents (e.g., chatbots)	25.3%	28.8%	19.4%	27.6%
Digital assistants for internal self-service support (HR, IT)	29.0%	33.9%	26.3%	26.4%
Digital assistants for internal knowledge management in corporate functions and operations	23.3%	23.5%	28.9%	17.2%
Robots and drones for asset operations and maintenance	19.0%	15.7%	19.1%	22.6%
Robots and drones for monitoring, security, and surveillance	25.8%	22.6%	25.6%	29.6%
Robots and drones for remote hazardous operations	21.6%	22.8%	19.3%	22.8%
Robots for customer assistance	20.3%	23.2%	19.1%	18.4%
Robots and drones for fulfillment, logistics, and autonomous transportation	22.4%	18.4%	25.6%	23.6%
Software bots (RPA) for repetitive knowledge and information worker tasks	31.1%	34.1%	28.3%	30.5%

Source: 2019 IDC Canada Future of Work Survey

TABLE 19**Use of Advanced Technologies to Replace Human Work in the Next 12 Months by Functional Roles**

Is your organization planning on using in the next 12 months any of the following advanced technologies to replace human work?	Total	IT	HR	LOB
Unweighted sample size	300	81	68	151
Smart virtual customer service agents (e.g., chatbots)	25.3%	24.8%	34.4%	22.2%
Digital assistants for internal self-service support (HR, IT)	29.0%	32.9%	29.2%	27.0%
Digital assistants for internal knowledge management in corporate functions and operations	23.3%	26.1%	25.5%	21.0%
Robots and drones for asset operations and maintenance	19.0%	15.3%	22.3%	19.7%
Robots and drones for monitoring, security, and surveillance	25.8%	26.6%	28.8%	24.3%
Robots and drones for remote hazardous operations	21.6%	19.3%	18.2%	24.1%
Robots for customer assistance	20.3%	19.1%	28.7%	17.9%
Robots and drones for fulfillment, logistics, and autonomous transportation	22.4%	23.4%	23.1%	21.5%
Software bots (RPA) for repetitive knowledge and information worker tasks	31.1%	33.9%	27.7%	30.9%

Source: 2019 IDC Canada Future of Work Survey

It is difficult to predict what trends or technology adoption will remain once we enter the “next normal,” and it is also difficult to make predictions about the pace of innovation. Technology that augments or replaces human work offers a certain return on investment (ROI), and typically organizations will look at that ROI and decide whether or not they will invest in that technology solution. What IDC currently sees in the market is that organizations are focusing on making sure work can be done remotely, that Work Spaces meet health and safety guidelines, and that work can ultimately continue.

In a context in which the unemployment rate is expected to grow, and given that cost cutting typically becomes a higher priority than innovation in a bearish market, replacing human work might look even more tempting than before. But in a context in which remote collaboration is crucial, in which knowledge transfer needs to happen more than ever, and in which human interaction is needed, replacing human work might not be the best strategy for organizations that want to maintain a competitive edge in the long run.



Technology Adoption Impact on Future Skills

In the following section, we look at what technology adoption in the workplace means for future human skills.

In a pre-COVID-19 state, technology investments in the workplace for Canadian organizations were motivated by a need to improve employee productivity, reduce costs, and improve work-life balance. These three drivers ranked the highest among our respondents. Table 20 shows this and the other drivers motivating technology adoption. Because in this question respondents were asked to mark all correct answers, we can infer several possible conclusions from the data set.

Interestingly, large enterprises reported higher rates of drivers across all categories than SMEs except for “other,” with one or more of every two large enterprises ranking a driver as important in four instances. In comparison, one of every two medium-sized businesses ranked the top ranked driver for that category, “increase employee productivity/work more efficiently,” as important. However, no drivers were ranked above 50% amongst small businesses, suggesting much less cohesion between small-business owners regarding what they perceive to be important drivers.

It could be that large enterprise owners are more aware of the many drivers that exist for implementing workplace transformation initiatives, or that there is a real or perceived increase in the number of drivers that need to be considered when business size increases. For example, the top rate reported across all drivers was the large enterprise rate for “increase employee productivity/work more efficiently.” 35.6% of small, 50.1% of medium, and 61.7% of large businesses recognized this category as a major driver. While a recognized driver for business of all sizes, ranking as the third highest ranked driver for small businesses and the fifth highest ranked driver for medium-sized businesses, large enterprise owners were much more likely to rank this as important than SME owners.

TABLE 20**Important Drivers for Implementing Workplace Transformation Initiatives by Company Size**

What are the most important drivers for implementing workplace transformation initiatives in your organization?	Total	Small (10–99)	Medium (100–499)	Large (500+)
Unweighted sample size	300	95	100	105
Higher employee engagement and experience	43.1%	40.1%	37.2%	52.5%
Increase employee productivity/work more efficiently	48.6%	35.6%	50.1%	61.7%
Better employee work-life balance	44.4%	38.8%	40.0%	55.3%
Business agility and decision making	29.6%	23.3%	31.6%	34.6%
Gaining competitive advantage	27.8%	27.1%	25.2%	31.3%
Cost savings	48.1%	44.7%	43.2%	57.1%
Competitive pressure (my competitors are doing it)	22.3%	16.3%	22.8%	28.6%
Requirements from work councils or unions	12.6%	13.8%	7.5%	16.6%
Regulatory compliance	25.0%	16.3%	20.6%	39.4%
Better engagement with customers and partners	40.9%	36.8%	39.6%	46.7%
Other	0.5%	0.9%	0.5%	0.0%

Source: 2019 IDC Canada Future of Work Survey

If we focus on these three top drivers, we can deduce that there are two ways of improving productivity or reducing costs: augmenting human work to increase economic output or replacing human work with something cheaper and more productive.

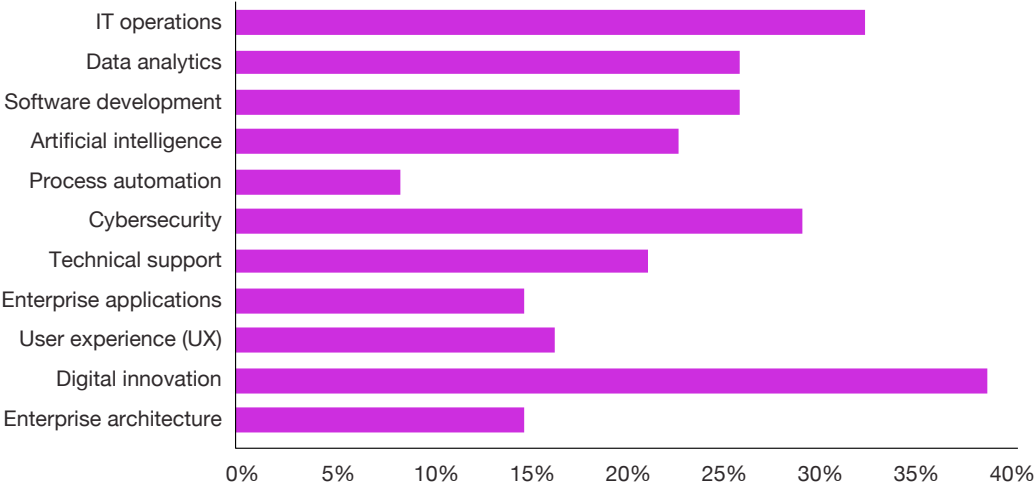
When examining the results of our survey covered in the previous sections, it would be easy to think that the future of work is less and less about humans and more about software automation, robotics, and digital assistants. The current economic and health climate might have impacted the natural course of this technology adoption and the impact on human work and skills development.

The future of work is less and less about humans and more about software automation, robotics, and digital assistants.

In a survey from June 2020 that focused on the impact of COVID-19 on IT spending, we asked IT decision makers which IT skills would be the most important to rebuild in the first wave of economic recovery. Figure 2 shows that digital transformation (DX) skills lead the pack. While we only asked about IT skills, the fact that Canadian organizations recognize the need for DX skills as the most important skills to rebuild can be interpreted more broadly. Organizations are faced with rapidly changing ecosystems: technology leaders are quoted as saying that we are currently witnessing years of innovation being compressed into months and that DX projects are being accelerated in order to ensure business continuity (business survival is a great driver for innovation).

FIGURE 2
Important IT Skills to Rebuild in First Wave of Economic Recovery Post-COVID-19:

What will be the most important IT skills your organization needs to build/rebuild/hire in the first wave of economic recovery?



Source: IDC COVID-19 Impact on Spending Survey (conducted between June 4 and June 15), June 2020
 Note: Unweighted sample size: 62

Another important question that needs to be addressed in this section relates to how training is delivered (and ultimately by whom/what) for those skills. The need to stay at home experienced earlier this year resulted in education being delivered remotely or not delivered at all. Higher education institutions are currently redesigning their offerings to allow for students to earn credits from a place outside of campus. Back-to-school plans for 2020 are still being organized, with the likely outcome of a hybrid model (classes online when possible). In that context, the future of education is also being played out. We believe that online education platforms will increasingly be adopted and that shorter and more operational certifications will be increasingly adopted as well. Digital transformation also applies to education institutions.

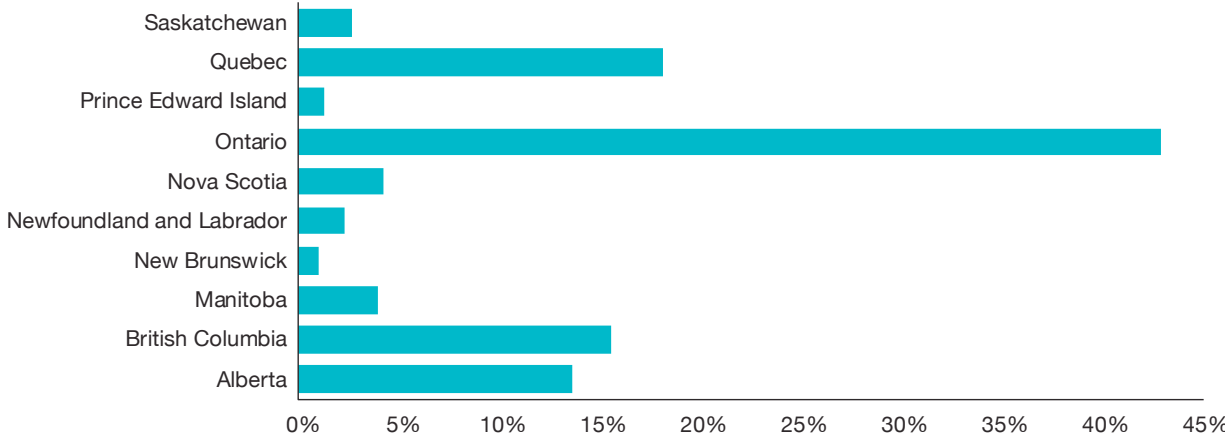
Regional Differences

After having looked at our survey results through functional roles and through our lens of Work Culture, Work Force, and Work Space, we opted to look at the results by Canadian regions.

Most regional differences in the adoption of technology and other topics around workplace transformation that we surveyed can be explained through differences in the industrial makeup of each region. For example, technology adoption is not the same in western Canada as it is in Ontario, mostly because the various industries in each region have different approaches to technology and workplace transformation.

The provincial distribution of our respondents can be found in Figure 3.

FIGURE 3
Provincial Distribution of Respondents in the 2019 IDC Canada Future of Work Survey



Source: 2019 IDC Canada Future of Work Survey
Note: Unweighted sample size: 300

For the original purpose of our research, we did not survey Nunavut, Northwest Territories, and Yukon. In the spirit of maintaining a healthy sample size, we have grouped the data in this section by region: Ontario, Quebec, West (including British Columbia, Alberta, Saskatchewan, and Manitoba), and Atlantic (including Newfoundland and Labrador, New Brunswick, Nova Scotia, and Prince Edward Island).

As previously mentioned, we did not see many significant differences across regions in Canada; when we did, we could explain most of those differences through a vertical lens. We will now look at a few data points supporting this statement.

First, we looked at digital transformation maturity by region. As illustrated in Table 21, we can see that Canadian organizations across all regions are more or less at the same point in their workplace transformation journey and in their perception of that journey.

TABLE 21
Approach to Workplace Transformation by Region

What is your organization's approach to workplace transformation efforts?	Total	Atlantic	Quebec	Ontario	West
Unweighted sample size	300	17	55	125	103
There is little or low realization for workplace transformation initiatives and its broader impact on business, and therefore there is no overarching strategy, funding, or support.	15.8%	17.1%	11.7%	15.5%	18.1%
Some departments or functional areas recognize the need for workplace transformation initiatives and understand its broader impact, but planning is short-term and funding is focused on specific tactical opportunities.	31.8%	36.5%	33.2%	30.2%	32.3%
Our organization has a defined strategy and goals have been developed, but they are only beginning to align across the entire enterprise and they are internally focused. Governance and budgets are in place to scale workplace transformation efforts, but some technologies are still siloed. Initiatives are supported at senior levels.	33.3%	24.1%	31.0%	35.0%	34.2%
Our organization's workplace transformation strategy is well established and supported by an enterprise-wide digital technology platform and long-term capital spending initiatives. These initiatives extend beyond enterprise boundaries to include external stakeholders.	11.1%	13.0%	14.4%	13.2%	6.3%
Workplace transformation initiatives are agile, adaptive, and learning, and are a core component of broader strategic, well-funded programs that are transformational.	7.9%	9.4%	9.6%	6.1%	9.2%

Source: 2019 IDC Canada Future of Work Survey

While the maturity statements appear to show us that all regions are on the same path with their workplace transformations, Table 22 outlines which initiatives have actually been introduced and reminds us that workplace transformation materializes through use cases (and through the demand for it by a specific industry). The West is lagging behind Ontario in robotic process automation, AR/VR for training, and new recruitment platforms. Respondents from the West are over-indexing (although not significantly, from a statistical point of view) on the “none of these initiatives” statement but also on the introduction of tools facilitating collaboration.

TABLE 22**Workplace Transformation Initiatives by Region**

Which of the following workplace transformation initiatives has your organization already introduced?	Total	Atlantic	Quebec	Ontario	West
Unweighted sample size	300	17	55	125	103
Facilitate better collaboration between employees and with external parties	32.6%	34.3%	25.9%	33.9%	34.2%
Task and process automation, including RPA (robotic process automation)	27.5%	26.4%	29.0%	32.9%	20.0%
Artificial intelligence and/or robotics to assist employees or augment their capabilities	23.1%	17.1%	27.2%	25.4%	19.0%
AR/VR for training and support	18.7%	13.0%	19.6%	24.0%	12.4%
AR/VR for collaboration	11.0%	13.0%	8.2%	10.2%	13.2%
Smart working in the office with space redesign	30.8%	39.6%	35.0%	30.5%	27.4%
New security policies to support new work styles	38.9%	43.7%	37.1%	44.0%	32.5%
New recruitment and talent management platforms	39.8%	51.8%	41.4%	44.2%	31.2%
Programs and tools that track employee experience	36.7%	33.2%	28.9%	41.1%	35.7%
New reskilling/training programs to bring employees up to date with digital requirements	41.7%	61.2%	47.6%	38.9%	38.5%
Other	0.3%	0.0%	0.0%	0.8%	0.0%
None of the above	8.2%	2.6%	6.7%	7.7%	10.8%

Source: 2019 IDC Canada Future of Work Survey

When looking at the same data through the various sectors, we can more easily see how industries and use cases are the engine that shapes what technology adoption looks like in Canada. Table 23 below shows workplace transformation initiatives by sector in Canada. For instance, we can see that space redesign is something that financial services organizations have deployed in greater proportion than manufacturing, for obvious reasons. Or that AR/VR has been deployed for training and support more often in the infrastructure sector than in the financial sector.

TABLE 23**Workplace Transformation Initiatives by Sector**

Which of the following workplace transformation initiatives has your organization already introduced?	Total	Financial services	Manufacturing	Infrastructure services	Distribution services
Unweighted sample size	300	27	66	42	100
Facilitate better collaboration between employees and with external parties	32.6%	40.7%	36.4%	40.5%	30.0%
Task and process automation, including RPA (robotic process automation)	27.5%	29.6%	34.8%	28.6%	25.0%
Artificial intelligence and/or robotics to assist employees or augment their capabilities	23.1%	29.6%	31.8%	19.0%	21.0%
AR/VR for training and support	18.7%	7.4%	19.7%	26.2%	18.0%
AR/VR for collaboration	11.0%	22.2%	13.6%	14.3%	9.0%
Smart working in the office with space redesign	30.8%	55.6%	19.7%	38.1%	33.0%
New security policies to support new work styles	38.9%	48.1%	37.9%	38.1%	40.0%
New recruitment and talent management platforms	39.8%	29.6%	43.9%	50.0%	37.0%
Programs and tools that track employee experience	36.7%	29.6%	36.4%	45.2%	36.0%
New reskilling/training to bring employees up to date with digital requirements	41.7%	37.0%	40.9%	33.3%	45.0%
Other	0.3%	0.0%	1.5%	0.0%	0.0%
None of the above	8.2%	0.0%	12.1%	11.9%	5.0%

Source: 2019 IDC Canada Future of Work Survey

Summary & Conclusions

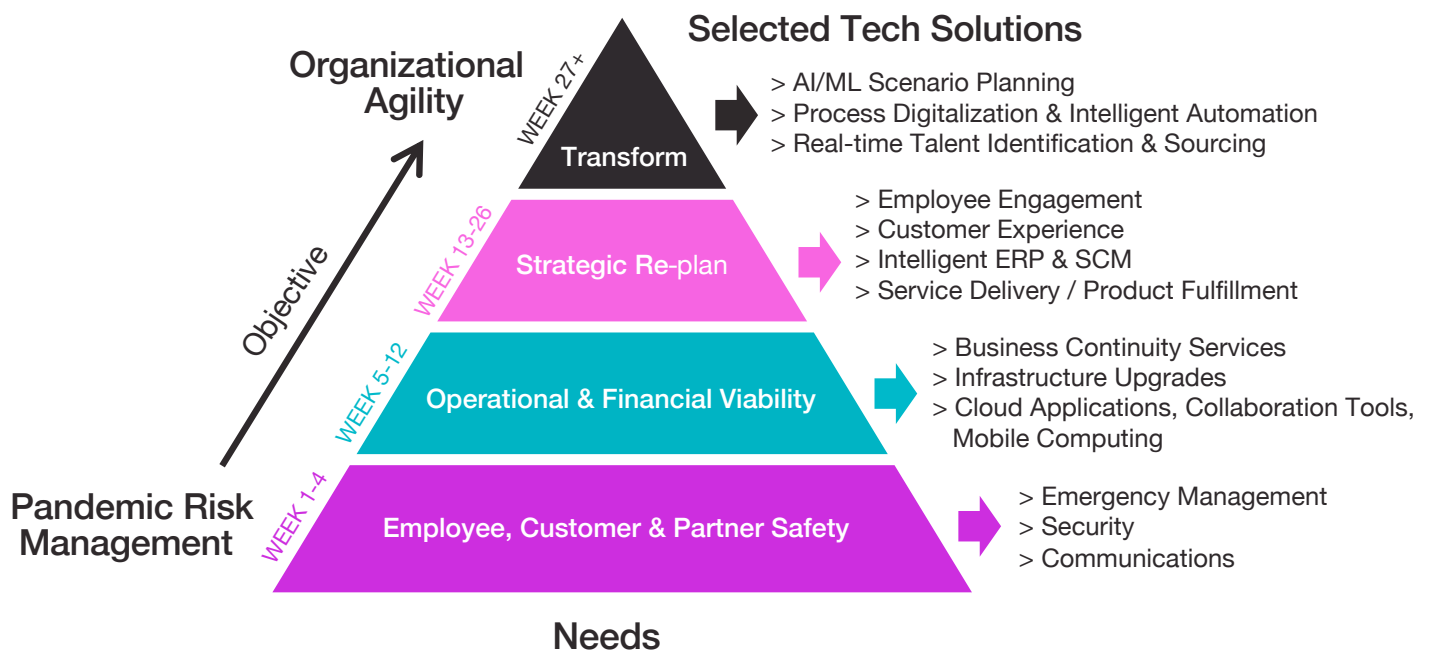
The majority of the results, analysis, and commentary in this report are explicitly unrelated to COVID-19. While the pandemic is often top of mind for many of us, looking at the results of our survey with COVID-19 in mind would be misleading. However, we can acknowledge that the pandemic has helped us understand the limitations of the survey instrument we used and has highlighted issues related to feasibility, accessibility, and necessity of many of the trends in workplace transformation.

There has been a shift in values, processes, and priorities for a global community of people trying to make it through the pandemic. As we conclude, we should note that change has become more distinct and present than before and that work transformation means something very different than it did before. Pre-COVID-19, work transformation had an aspirational association (what were companies' plans for innovating in the workplace?); now it reflects goals related to necessity and survival (how can we work safely, and can we deliver the same or better value than before in this current context?). Moving forward, the survey instrument we used in this study is no longer wholly applicable. The new reality we face was one we did not imagine, and the questions we sought answers for take on different meanings. For instance, we asked, "Which of the following IT solutions is your organization using or plans to implement to improve employee productivity?" The global pandemic may radically alter organizations' responses to this question now. Before COVID-19, organizations sought to increase the impact of IT solutions for the sake of productivity or cost reduction. Now this desire may be complemented by the need to seek creative and agile solutions for the sake of staying afloat, safe, and productive. For instance, robots may be needed to clean and disinfect, in addition to fulfilling pick-and-pack activities.

In economic forecasting and surveying, much of the value brought forth through the questions we ask our respondents is in the iterative nature of the surveying activity: We ask the same or similar questions year after year in order to understand the evolution of trends, and this is a significant part of how we generate meaning from the answers we receive. We forecast the future not just through what our respondents indicate their plans and actions are, but also by analyzing trends in their answers over time. Analysis during stable times involves getting a sense of the evolution and maturity of a concept and identifying areas of building interest within an organization or industry. The ambiguous, constantly changing reality we face because of COVID-19 makes it difficult to understand the direction we are heading in the workplace. Although this survey will not be repeated in its current form, we will nonetheless try to question and survey Canadian organizations to see how their mentality toward work transformation has shifted.

Moving forward, we suggest that initiatives and investments in a workplace transformation context are likely to follow our model of the COVID-19 Business Impact Hierarchy of Needs, shown in Figure 5.

FIGURE 5
IDC's Hierarchy of Needs



Source: IDC, 2020

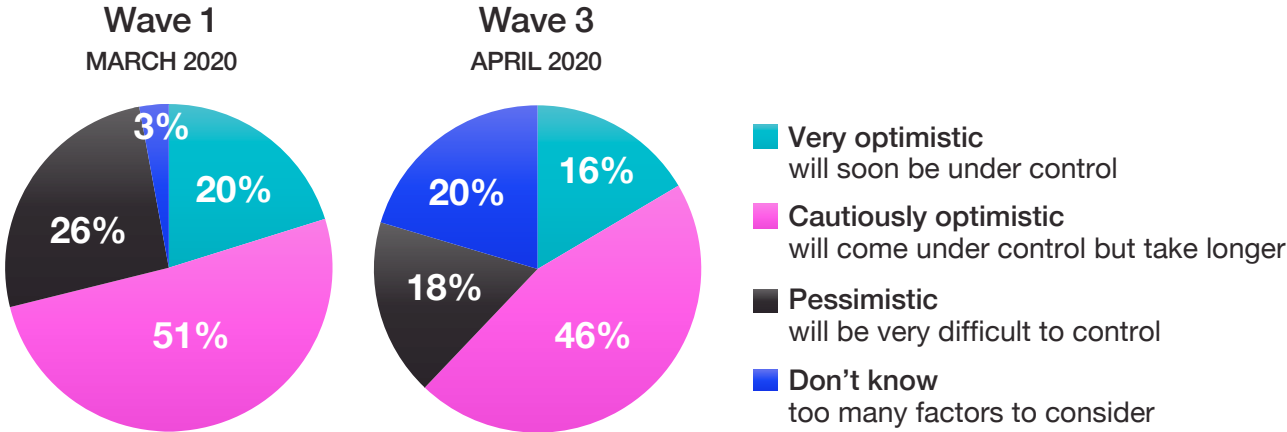
A focus on the safety of employees, partners, and clients is now central to the transformation of work. Once the rush to utilize convenient tools has passed, mobilizing and securing the virtual workplace will be a key focus. Investments will be needed for remote health solutions and for discovering and implementing ways to mobilize health care workers. Connectivity enables education, not just in higher education but also for K–12 education, and continues to be a strong strategic priority for organizations. In order for all employees, clients, and partners to be safe and have access, connectivity needs to be further democratized and brought to communities that do not have it. Furthermore, typical sources of authority over workplace transformation may be democratized—workers with disabilities and those facing chronic and/or serious illnesses should be considered valuable sources of knowledge about how to thrive through adversity.

The pandemic has helped us identify goals for making lasting Work Force transformations related to access and equity. For instance, what does self-isolation at work look like for someone who needs assistive care, and who funds this labour? Barriers to access in the workplace are now more visible than ever. Consequently, eliminating barriers may become a more central goal for Canadian organizations. Technological transformation in the Work Force may temper the focus on reducing costs for a company and shift more resources to investigating and solving systemic issues.

Since the beginning of the COVID-19 lockdowns in Western economies, IDC has surveyed organizations around the world in multiple waves. One of the statistics that best illustrates our situation is that when first surveyed in March 2020, around 71% of Canadian organizations were either very optimistic or cautiously optimistic that we—a societal “we”—would control the pandemic situation within a reasonable amount of time, as shown in Figure 6. In the wave fielded between April 22 and April 29, 2020, when asked the same question, that number dropped to 62%. The percentage of respondents saying they did not know, given the number of factors to consider, jumped from 2.9% to 20.4%. Optimism and pessimism remained, but uncertainty jumped substantially.

FIGURE 6
Canadian Expectations Around the Control of COVID-19, March & April 2020

Which of the following best reflects your expectation for the control of COVID-19 within Canada?



Source: IDC Canada COVID-19 Impact on IT Spending Survey, March 2020 (n=104) and April 2020 (n=103)

Whether or not people are afraid of this uncertainty is moot—the uncertainty offers a great deal of room for reimagining what work is. Whatever form that reimagining takes will involve a lot of trial and error. Once we have managed to secure our people, partners, and workplace, then we can build on that foundation, and reassess how to stay in business and offer value to stakeholders. Organizations may need to reconcile transformation as not only an aspirational goal but a reality that informs the way forward.

Appendix

IDC's Canadian ICT Forecast Methodology

IDC uses numerous data sources to develop macro-level and micro-level assumptions that in turn enable IDC Canada to create a comprehensive and multidimensional market model for the Canadian ICT sector. The macro- and micro-market-level assumptions are devised through several inputs:

> **IDC's primary supply-side research**

IDC analysts conduct thousands of interviews with IT-related firms to determine service and product revenue, client demographics, pricing, and other relevant information.

> **IDC's primary demand-side research**

IDC interviews thousands of end users annually in Canada, providing a powerful perspective for assessing competitive performance and identifying shifts in end-user spending priorities.

> **Secondary third-party research**

IDC utilizes information from Statistics Canada, Consensus Economics, and other financial institutions for insight into economic indicators, government expenditures, labour force data, and business count data to review and refine our insights into current strategies, revenue, segments, target markets, and other key industry perspectives.

> **Secondary financial research**

Canadian Radio-television and Telecommunications Commission (CRTC), government, and industry documentation and publicly traded vendor and telecom carrier reports are utilized to assess trends and form estimates of activity.

Each year, IDC reviews its ICT taxonomy, and while there were some small adjustments in taxonomies in this forecast compared to the previous forecast published in December 2018, the adjustments had a minor impact on the market assessment reported in this document. Please note:

- > All spending figures in this document are stated in millions of Canadian dollars (C\$M), unless otherwise noted.
- > All numbers may not be exact due to rounding.

The forecast presented in this document is based on IDC's forecast assumptions as of September 15, 2019.

IDC's Work Transformation Taxonomy

Work Force and Technologies

The Work Force pillar of IDC's Future of Work framework is related to enabling and empowering the new digital worker and embracing opportunities for human-machine collaboration. These opportunities encompass both information work and operational work and can apply to both knowledge/information workers and frontline workers.

> **Analytics and Artificial Intelligence**

Analytics and artificial intelligence software are tools and platforms for supporting the life cycle of data analysis and presentation. Software products in this category support a broad range of analytic techniques (descriptive, diagnostic, predictive, and prescriptive) and can operate on a wide variety of data, text, and rich media types. Products in this category are most commonly used by information consumers, business analysts, and data scientists rather than by professional programmers. Analytics and artificial intelligence examples include query, reporting, multidimensional analysis, dashboarding, data mining, statistics, text analysis, image analysis, video analysis, audio analysis, and AI software platforms.

> **Intelligent Process Automation**

Intelligent process automation (IPA) refers to the group of software technologies that individually or collectively manage, automate, and integrate processes to improve quality and speed while driving down operating costs per unit of work. IPA includes capture software, process-centric application platforms, robotic process automation software, integration and API management, decision automation and optimization, and process intelligence and planning.

> **Augmented Reality and Virtual Reality**

Augmented reality (AR) is a technology that aims to augment a user's reality by placing data or digital objects into his/her existing reality. AR lets the user continue to see and interact with his/her real-world surroundings. Virtual reality (VR) is a technology that aims to place the user into a new reality other than the one he/she currently inhabits.

> **Robotics and Drones**

IDC defines robotics as technology that encompasses the design, building, implementation, and operation of robots. Robotics is organized into three categories: application-specific (designed to conduct a specific task or a series of tasks for commercial purposes), multipurpose (capable of performing a variety of functions and movements), and cognitive (capable of decision making and reason). A drone (or an unmanned aerial vehicle [UAV]) is an unmanned aircraft. It may be remote-controlled, semiautonomous, or fully autonomous. In IDC's definition, a drone's key defining criterion is flight capability. Drones may require manually operated remote control or be preprogrammed to perform specific tasks on a specific flight path.

> **3D Printing**

3D printers enable the creation of objects and shapes made through material that is laid down successively upon itself through any number of print technologies from a digital model or file. They are typically used in additive manufacturing environments.

> **Secure Enablement:**

Secure enablement includes the following:

>> **Secure Work Force**

IT infrastructure software that enables organizations to manage a diverse Work Force and provision of organizational digital resources

>> **Identity and digital trust**

Solutions that provide identity-based security by enabling least privileged access while enhancing user experience by making accessing networks, applications, and data resources frictionless

>> **IoT security**

Software platforms that protect and secure networks, applications, and data for IoT devices and their supporting infrastructure, providing the security and privacy requirements across IoT technologies

Work Culture and Technologies

As previously noted, to fully leverage the opportunities of automation, augmentation, and human-machine collaboration, organizations must acquire and/or develop talent with new skill sets. Recruitment and development activities may be supported by new technology for acquisition, development, and retention. This is encompassed in the Work Culture pillar of IDC's Future of Work framework. The considerations below identify transformation in Work Culture as developed through technological applications and solutions:

> **Hire**

The hire category includes applications designed to automate the recruitment process through better tracking of applicants, screening and skills assessment, profiling and résumé processing, and identifying talent inside or outside the organization. Key features include managing skills inventories, creating and managing job requisitions, identifying appropriate employment candidates, coordinating team collaboration within hiring processes, facilitating resource planning, and deploying workers to appropriate jobs, projects, or teams.

> **Track and Pay**

Track and pay functions include Work Force management and payroll accounting applications. Work Force management applications are designed to automate the deployment of the Work Force through workload planning, scheduling, time and attendance tracking, resource management, and rules and compliance management. Key features include tracking of skills and certifications, shift and vacation bidding,

labour activity, workload planning, forecasting and scheduling, coverage, and sales resource planning, among many others. The payroll accounting functionality provides the calculations for wages, salary, and other labour-related payments including the tracking of stock option compensations, fringe benefits, bonuses, commissions, and other variable and non-variable payments. Payroll accounting also includes the calculation and withholding of payroll taxes, garnishments, and other deductions.

> **Develop**

Learning management applications are a core part of employee development and are designed to automate tracking and delivery of learning content and experiences. Learning content ranges from traditional classroom training to online learning objects to mentoring. Learning management is increasingly integrated with employee performance management to prescribe development activities to ameliorate skills gaps or gaps in performance. Key features include course cataloguing and searching, competency and skills tracking, development planning, and delivery of online learning. They also include pre- and post-training assessments and tests; online commerce for payments associated with training; tools for trainers to manage class lists, syllabi, and resources; training resource allocation; and content development tools.

> **Assess**

Work Force performance management applications are a key element of employee assessment. They are designed to automate the linking of job roles to the mission and goals of the organization. More specifically, the system allows users to automate the performance review process by using training and key performance indicators (KPIs) to continuously track and monitor progress across employees, work teams, and divisions. Key features include assessment of individual and organizational skills gaps that impede performance and job advancement, as in ability testing. They also include goal setting and tracking, employee surveys, continuous reviews and establishing milestones, 360-degree evaluation and real-time feedback, performance appraisal automation, and competency assessment and management. These tools are designed to fast-track top performers via career and succession planning, which also takes into account development and career planning as well as the alignment of Work Force and corporate objectives.

> **Reward and Engage**

Reward and engage solutions manage direct compensation as delivered through payroll, employer-paid benefits, and ad hoc compensation conveyed through bonus and rewards programs. Employer-paid benefits often include health insurance coverage and contributions to defined benefit retirement plans and deferred compensation plans. They may also include wellness programs with systems that help employees achieve better work-life balance and overall improved health. Employers are also using tools to measure employee engagement through surveys and analytics. Employee engagement also encompasses culture management

via tools that monitor and cultivate aspects of company culture while providing recommendations that help the organization make desired changes. Finally, rewards and recognition solutions feature multidirectional feedback that offers a social approach to recognizing excellence for manager to employee, employee to manager, and peer to peer. Technological applications and solutions can help implement and make accessible these human-centred concepts and initiatives.

Work Space and Technologies

The work environment must adapt to support the new Work Force and new Work Culture. The environment itself must be intelligent and agile, connected and secure, and independent of a physical place or specific time of day. The Work Space must enable access to corporate resources and support collaboration to enable all workers to effectively contribute—whether they are full-time or part-time, local or remote, permanent or temporary, and human or machine.

> **Content and Collaboration**

Technology in this category manages all aspects of the content life cycle, including authoring and publishing, enterprise content management, persuasive content management, eDiscovery, enterprise portals, and content sharing and collaboration. Collaborative applications enable groups of people to work together by sharing information and processes and include conferencing applications, enterprise social networks, and team collaborative applications. This segment also includes unified communications and collaboration software.

> **Database Management**

A database management system (DBMS) is a software entity that manages a database in such a way that it may be queried and randomly updated, including data integration and integrity software, database development and management tools, distributed data grid managers, dynamic data management systems, nonrelational database management systems, relational database management systems, and spatial information management.

> **Enterprise Applications**

Enterprise applications are designed to automate and optimize business processes that are related to resources required to meet business or organizational objectives but are not customer- or prospect-facing or specialized to various types of engineering. These resources include finances, capital, materials, suppliers, projects, contracts, orders, and facilities. This segment includes customer relationship management, enterprise resource management, supply chain management, production applications, engineering applications, and project and portfolio management applications.

> **End-User Computing Enablement/Management**

This segment includes endpoint management, network software, and physical and virtual computing software. Endpoint management encompasses solutions used to automate the operation, control, administration, and configuration of endpoint and output management devices including mobile phones, tablets, IoT devices, traditional PCs and laptops, and print devices. Network software encompasses the products and technologies that are deployed to build and support local area network or wide area network across enterprise/private and public and fixed and mobile networks. The physical and virtual computing software market forms the foundation layer for software products that collectively operate the hardware on which business applications are built, including operating systems and virtual client computing.

> **Endpoint Devices**

This segment includes endpoint and output management devices, including mobile phones, tablets, IoT devices, traditional PCs and laptops, and print devices. Storage software that manages, stores, and/or ensures the accessibility, availability, and performance of information stored on physical storage media ranging from memory-based devices to hard drive-based devices to magnetic-based devices is also included.

> **Location-Agnostic Protection:**

Location-agnostic protection includes the following:

>> **Secure connectivity**

Software platforms that provide networks, applications, and data access for remote or mobile Work Forces

>> **Secure application delivery**

Validated and authenticated delivery of applications, often agnostic of the endpoint from which the application is being accessed

>> **Data security**

Platforms that provide data-level protections to corporate data, including but not limited to encryption and digital loss prevention

> **Facilities Technologies:**

Technologies that enable “smart buildings” (i.e., solutions that enable automated processes to automatically control building operations) and location-based services software platforms that physically track location and movement of employees, visitors, physical assets, or other radio-enabled endpoints, including:

>> **Physical access control technologies** that limit access to campuses, buildings, rooms, and physical IT assets

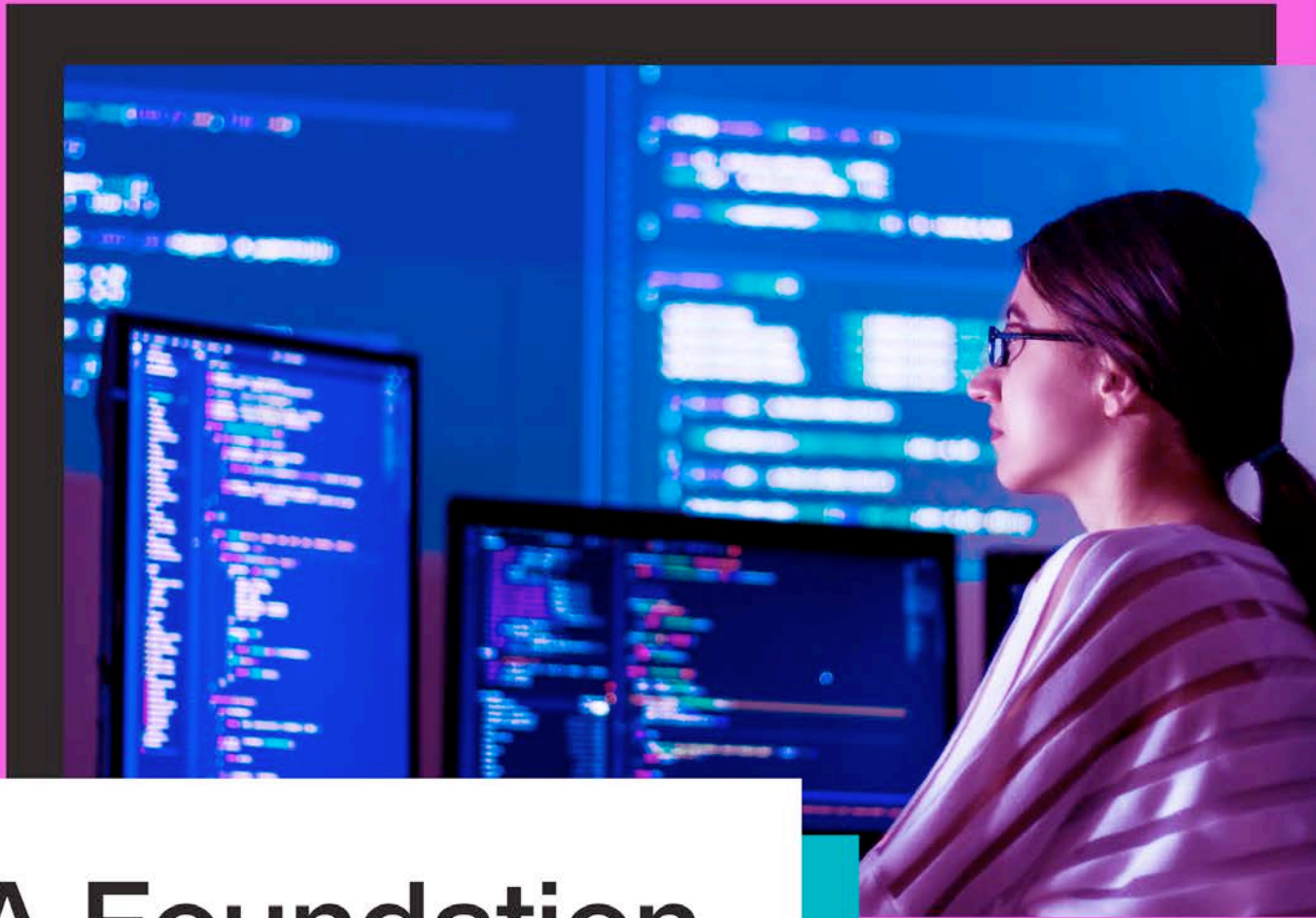
>> **Video surveillance solutions**, including cameras, recorders, storage, and video application software



- >> **Integrated workplace management software**, which helps organizations optimize the use of workplace resources, including the management of a company's real estate portfolio, infrastructure, and facilities assets
- >> **Digital signage**, which enables video or multimedia content to be displayed in the workplace for informational purposes
- >> **System and service management software** that is used to manage, orchestrate, and optimize the use of server-side computing resources
- > **Software Development and Deployment:**

The application development software market includes software, tools, and development environments used by developers, business analysts, and other professionals to create both web-based and traditional applications. Portions of model-driven application platforms include:

 - >> **Deployment-centric application platforms** that host application logic and provide common services that allow the application to operate effectively
 - >> **Transaction processing monitors** that mediate and optimize transaction processing between clients and a mainframe database
 - >> **Software quality and life-cycle tools**, which support the process of software development and deployment, including iterative, agile processes and strategies



A Foundation for the Next Normal

Outlook of Technology
Adoption & its Impact in the
Canadian Workplace