

12 Ways to Get Ahead of Disruption

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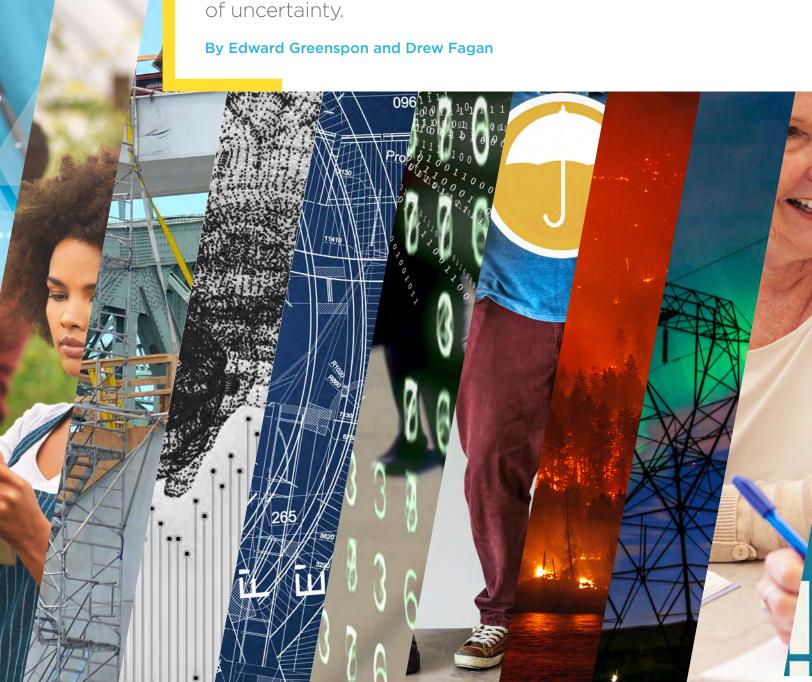


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CANADA NEXT

Introduction

Canada is in flux. Technological, demographic and climate disruption will have a profound effect on the economy, the workforce, democracy, and on public services. In Canada Next: 12 Ways to Get Ahead of Disruption, top policy thinkers suggest how Canadians can not only adapt to change but embrace new possibilities in an age of uncertainty.



In the past 18 months or so, new governments have taken power in three of the four largest provinces—British Columbia, Ontario and Quebec. The fourth, Alberta, will go to the polls this year, as will Canada as a whole. Regardless of the result of the federal election, much of the country is under control of governments new to office and rethinking things in light of new mandates.

They have plenty to ponder. The world is changing at a pace akin to the Industrial Revolution. Decision makers in all fields face intense challenges to even keep up—from geopolitical transformation, including rising U.S.-China rivalry, to the new concentrations of power and wealth caused by the sweeping innovations of the digital age, to the impacts on autonomy and the world of work sparked by artificial intelligence, to the catastrophic effects of climate change.

Phenomenal powers of insight are required not just to grasp the pace and impact of these changes, but also to anticipate and respond in timely fashion

Canada, like other countries and societies around the world, is in flux. Technological disruption will have a profound effect on the workforce and on the public services Canadians depend on. Meanwhile, climate change, shifting demographics and evolving social values are having an impact on the wellbeing of Canadians and how they interact with one another. How can policy-makers stay on top of emerging public policy trends and plan for this disruption? In this report, scholars, think tank leaders and former top public servants share their ideas on a range of topics demonstrating how policy can be nimble and responsive in an age of great uncertainty.



or, better yet, to get ahead of things and shape the future we want.

It falls primarily to two groups to represent the public interest in shaping the future: elected officials and the public servants who advise them.

Planning is one of the key functions of a non-partisan public service as exists in Canada and other countries that operate under the Westminster system. Many governments have cabinet committees focused on priorities and planning, and corresponding units in the public service to support them.

The priorities part gets most of the attention because it is about delivering on a government's programs and responding to events of the day. It's the bread and butter of government.

Planning is different. Planning entails lifting one's eyes from the messy table of daily government functions to look around the corner or out to the horizon. In some circles, the word foresight is used to describe this long-term thinking. No one can divine the future but any government is smart to try.

In addition to helping the government deliver on its current policy priorities, then, policy-makers need to plan for the medium and longer term, including developing policies and advice to address emerging trends that will affect the future well-being of Canadians.

Meanwhile, Canada's political parties and non-political public servants also consult more widely than they did not long ago as each learns, sorts and synthesizes to govern well. In the digital age, nobody holds a monopoly on understanding the future. Planning in a period of extreme change is humbling and necessary work.

It is with similar humility that the Public Policy Forum is releasing Canada Next: 12 Ways to Get Ahead of Disruption as part of Canada's planning conversation.

This report is composed of papers by professors, think tank heads, former senior government officials and respected researchers, and follows extensive consultations with thought leaders and doers. It is aimed at helping policy-makers identify potential future policy directions to address a range of emerging trends. Officials from the federal government and seven provinces also provided their perspectives about what's going to matter next and how policy-makers can best get prepared.

Two messages from those consultations were that disruption can be both positive and negative. While the contributors to this report have focused in particular on technological change, including its implications on the workforce and on the public services Canadians depend on, their preoccupations for Canada's future extend beyond planning for disruption to include the impacts of shifting social values, demographics and climate change.

Simply put, there are three ways to deal with what has come to be known as disruption:

- let it do its own thing and adjust accordingly;
- implement policies intended to hold back the tide; or
- use policy levers to manage change for competitive advantage and harm mitigation.

Under the first approach, the damage to individuals or groups (for example, residents of rust belt areas, fossil fuel-producing regions, rural areas, or those with little education) is difficult to bear. And in the internet age those individuals can be swept

Planning entails lifting one's eyes from the messy table of daily government functions to look around the corner or out to the horizon.

easily into a reactionary force fighting the tide of change. Smooth adjustments are hard. During the farm-to-factory adjustment of the 19th century, anti-market philosophies arose in response—the most notable being the writings of Karl Marx and Friedrich Engels. Communism exacted a heavy toll in the 20th century, as did fascism, which arose in response to political, economic and social pressures of 1920s and 1930s Europe. When such extreme ideologies arise, it is a sure sign that enlightened public policy leadership has failed.

Under the second approach, long-term national benefit is damaged for short-term advantage. Freedom itself—political autonomy, economic agency—is sometimes the victim. This suppression of expectations also can lead to greater shocks to the system later. Creative destruction cannot be denied without profound costs. At best, it can be channeled.

The third approach is the moderate course. It has enjoyed the greatest success, albeit by different measures in different circumstances by a varied array of social democrats, liberals and conservatives. The moderate course employs different blends of market reliance and political intervention to set free, to channel or to mitigate the process of change.

For example, the Munk School's **Daniel Munro** suggests in his article three ways to address issues arising from artificial intelligence, including a laissez-faire approach to allow AI "to develop and diffuse without limit" and a precautionary approach to restrain development until "risks are better understood and capacity to manage them is in place." Between these bookends is "a case- and context-sensitive risk management approach." This, he argues, allows space for "AI technologies and applications to develop while monitoring and managing possible risks as they emerge in specific applications."

Other writers in this report have sought to find the same sweet spot; to put forward ideas that manage disruption such that innovators aren't handcuffed and the tech savvy can ride the crest of change. But their proposals also ensure that those not so well-placed to benefit from the new economy aren't left behind.

Some papers propose strategies to ensure that Canada gets the most out of the digital economy.

Teresa Scassa writes about the value of data the new oil, or perhaps the new plastics—and the values needed to manage them, and suggests a national data strategy to grapple with the trade-offs.

Shannon Macdonald writes about how the digital environment can transform Canada's publicly financed healthcare system and make it a "playground for invention".

Lori Turnbull suggests ways to combat the prevalence of cyberattacks and fake news made easy by digital platforms, and ways to maximize the benefits of interchange between public- and private-sector employees.

Wendy Cukier suggests strategies to reduce the urban/rural divide and build the broadband infrastructure needed for citizens outside urban centres to prosper in an innovative, modern digital world.

Brian Topp proposes a sweeping strategy to reconfigure Canada's balkanized electricity system.

Glen Hodgson writes about the key implications and necessary responses to climate change from the perspective of a northern economy.

Drew Fagan suggests ways that Canada's infra-

structure spending can be made more effective through data and technology-driven planning and construction.

Other papers focus on improving Canada's capacity to prepare citizens for the digital economy.

Jon Shell proposes a multinational effort of unprecedented scale to link people with training and job opportunities.

Sunil Johal and Wendy Cukier write about achievable strategies to provide portable benefits to those working in the gig economy.

The Public Policy Forum hopes that these papers are of broad interest, but particularly to those charged with the difficult task of planning smart public policy: the elected officials and public servants making Canada battle ready for what's just around the corner or out on the horizon. Public policy is difficult to execute at the best of times but it is hugely difficult in times of sweeping change. We wish them the best of luck.

Edward Greenspon is President and CEO of the Public Policy Forum. He has worked at the intersection of journalism and public policy for more than 30 years. Before joining PPF, Ed was a journalist with The Globe and Mail, Bloomberg News and newspapers in Western Canada. He is also the author of two books on Canadian politics, policy and public opinion.

Drew Fagan is a PPF Fellow who worked for many years in the public service in senior executive positions at the federal and provincial level. For the government of Ontario, Drew was Deputy Minister for the 2015 Pan/Parapan American Games, Deputy Minister of Tourism, Culture and Sport, and Deputy Minister of Infrastructure.



Canadians are adopting digital- and data-driven solutions to improve their health, but their healthcare system lags far behind. Governments must adopt innovation, consumer-driven models and new regulatory frameworks in order to improve health outcomes for all. By Shannon Macdonald

SUMMARY AND RECOMMENDATIONS

In one century, advancements in research and technology have helped humankind to add an average 28 years to our lives. Over the past decade, healthcare consumers have become empowered by the volume and ease of access to health information. Yet the operating model for delivering healthcare has not fundamentally changed. The current model favours institutions rather than consumers, with less than 10 percent of Canadians taking advantage of e-services.

With stronger healthcare data usage, we have the opportunity to make our system more patientcentric by improving the accessibility and national portability of healthcare services.

If a publicly funded Canadian health system were created today, it would improve service delivery using human-centered digital tools. In fact, Canadians are eager to adopt digital health solutions that could dramatically improve the system.

To realize a system that enables equal access by delivering a consumer-driven model, federal, provincial and territorial governments must leverage existing performance data to:

- establish fee structures that fairly compensate physicians for their remote and virtual services,
 providing for stronger accessibility and portability
- develop a national strategy for the adoption of healthcare innovations that enable ideas and invention, and that improve the patient experience
- develop a federal, provincial and territorial policy framework for the adoption of digital healthcare solutions so that all Canadians can use their individual health data in partnership with their health professionals to identify personalized health solutions



Using Technology to Bridge the Urban-Rural Divide

Canada must unlock the vast economic and human potential of small towns and rural communities by building the broadband infrastructure needed for citizens to prosper in an innovative, modern digital world.

By Wendy Cukier

SUMMARY AND RECOMMENDATIONS

Small towns and rural areas in Canada have much to offer—access to nature, lower cost of living, lifestyle advantages—but many are declining with dwindling populations, lower education and lower employment levels. While they have the potential to drive economic growth and innovation, small towns and rural communities often lack the broadband infrastructure needed to prosper. Among our recommendations to bridge the urban-rural divide, governments need to:

- recognize the importance of rural communities in fueling innovation, testing new solutions,
 driving economic development and attracting foreign investment
- accelerate the expansion of citizens' access to high-speed networks
- support solutions that strengthen linkages between smaller and larger communities and that attract and grow businesses in rural areas
- promote smaller communities so they can build partnerships and attract investment
- consider investments to address affordability of broadband connectivity and other digital services





Canada's governments are preparing to spend historic amounts on infrastructure. To avoid creating 'white elephants', they should follow six key principles that will help the projects improve the country's productivity, competitiveness and social equity. By Drew Fagan



The Government of Canada is leading a resurgence in infrastructure spending, with a 12-year budget of more than \$180-billion and the creation of key institutions such as the Canada Infrastructure Bank. Provinces are doing their part, with long-term infrastructure plans and more spending, and municipalities are also increasing their infrastructure budgets.

But will this spending be remembered for being visionary, innovative and inclusive, for building the country's productivity, competitiveness and social equity? Or will the successes be outweighed in the public mind in the years to come by the failures?

To ensure that infrastructure funding is spent to best effect, governments should set priorities and make decisions according to the following six principles:

- SMART PLANNING that prioritizes key sectors critical to nationwide competitiveness and innovation, especially transportation and next-generation telecommunications
- 2. SMART PROCUREMENT that jump-starts the traditional procurement process
- 3. SMART CONSTRUCTION that focuses on execution and includes sharing best practices in new technologies to enhance productivity
- 4. SMART BENCHMARKING that establishes a national effort to standardize how infrastructure data is collected and used to enhance capacity
- 5. SMART EMPLOYMENT that focuses on the skilled trades and inclusion of underrepresented groups, especially in priority communities
- SMART COORDINATION that gives infrastructure a higher profile as a driver of Canadian prosperity







GOVERNING AI: Navigating Risks, Rewards and Uncertainty

To encourage innovation in artificial intelligence while minimizing risks, Canada should adopt an incremental risk management approach to Al governance, supported by two new advisory institutions. By Daniel Munro

SUMMARY AND RECOMMENDATIONS

Artificial intelligence—the ability of machines to perform intelligent tasks such as sorting, analyzing, predicting and learning—promises substantial benefits for Canadians. Businesses that develop and commercialize AI have the potential to grow and create jobs, while organizations that adopt Al technologies can improve operations, enhance productivity and generate health, social and economic benefits for all.

Yet, some AI applications pose risks for individuals and communities:

- Al-enabled automation threatens to disrupt labour markets and employment
- predictive analytics in finance, education, policing and other sectors can reinforce racial, gender and class biases
- data used in AI development and applications are often collected in ways that violate privacy and consent (see, for example, Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy, Twitter and Tear Gas: The Power and Fragility of Networked Protest, and Data Governance in the Digital Age)

Al policy makers face a tension. They must establish conditions that allow AI to thrive and deliver benefits, while recognizing and responding to the harm that some AI applications can generate or reinforce. Options for addressing the tension range from a laissez-faire approach that would allow AI to develop and diffuse without limit, to a precautionary approach that would restrain the development of AI until risks are better understood and capacity to manage them is in place. Given that AI is a platform technology with many possible applications—and thus various risk profiles it should be governed with an incremental risk-management approach that is case- and contextsensitive, rather than a blunt laissez-faire or precautionary approach. A risk-management approach allows space for AI technologies and applications to develop while monitoring and managing risks as they emerge in specific applications. To institutionalize a risk-management approach to governing Al in Canada we recommend that the Government of Canada create two new institutions:

- an AI risk governance council
- an algorithm impact assessment agency



As permanent employment declines, workers switch jobs more often, and training programs fail to adapt, the world needs an open platform for employment and training. A global effort, like the one that built the International Space Station in the 1990s, could provide the funding and critical mass of data needed—and Canada could lead it. By Jon Shell

SUMMARY AND RECOMMENDATIONS

Policy-makers today face complex issues about employment. Permanent, full-time employment is in long-term decline, workers are changing jobs at an increasing pace, and outdated training programs are failing to connect with what businesses need. Jurisdictions are wrestling with how to modernize their employment and training systems by incorporating technology. But they are coming up with small, disconnected solutions that are insufficient for the challenges ahead. We need to think bigger:

- Technology alone won't solve the challenges facing Canada's workforce. But a robust employment and training technology platform with open standards would be an extraordinary enabler for public policy innovation and the individual efforts of workers and companies. It would build resiliency into the system and give workers the tools they need to help themselves in a time of rapid change.
- The ideal system would require a new, independent and international organization. Given the failures of national governments to build technology at scale, it is unrealistic for Canada, or any one country, to build such a solution on its own. Partnerships with large technology companies are also problematic, particularly due to concerns around data ownership and privacy.
- Several countries working together could gather the funding and critical mass of data required to create a truly transformative platform—one akin in scale and ambition to the International Space Station built in the 1990s. If such a platform could be operated independent of bureaucracy, be managed like a tech company, and follow strict data privacy, a new "Space Station for Work" could help prepare us for the ongoing transformation of our labour markets.
- Canada, with its significant talent pool in artificial intelligence, large existing commitment to innovation, and strong reputation on the diplomatic stage, is well positioned to champion such a project.

Read full article

OLICY FORUM





As our economy becomes more data driven, Canadians need a national data strategy that encourages innovation, provides security and privacy, prioritizes transparency and oversight, and that transcends jurisdictional barriers. By Teresa Scassa

SUMMARY AND RECOMMENDATIONS

Companies that harvest data are increasing in power, and Canadians are understandably anxious about it. As our economy becomes more data driven—and as data becomes more valuable— Canadians need a national data strategy that provides a common framework for data security and privacy, that prioritizes transparency and oversight in the processing of data, and that transcends silos and jurisdictional barriers. Such a strategy must embrace an innovative future and, at the same time, protect our society's most deeply held values.

To develop a national data strategy for Canada, governments must begin by:

- developing a statement of values for a digital society
- reforming data-protection and intellectual property laws to meet modern needs
- setting rigorous data-security standards for big data and Internet of Things technologies
- ensuring greater transparency and oversight of the algorithms used to process data

There is no justification for practices that lead to social exclusion and discriminatory outcomes. Inadequate data governance may be more of a brake on the economy than thoughtful and responsible governance.





Protecting People in the New World of Work

In a fast-changing economy characterized by part-time work, gigs, frequent changes of employers and reskilling, Canada should consider creating a nimble benefits and pension system that is tied to the worker rather than the employer and ensures ease of access, portability, coverage and generosity. By Sunil Johal and Wendy Cukier

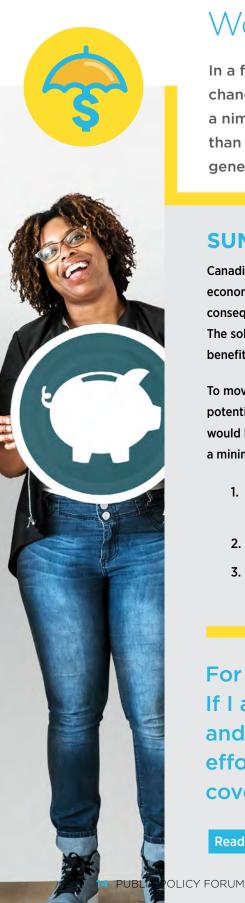


Canadians live and work very differently today than they did 50 years ago. The emerging gig economy and changing business practices are diminishing stable, full-time work and, as a consequence, more workers are finding themselves without adequate pension or benefit coverage. The solution may be to explore a nimbler, targeted model for providing benefits called portable benefits.

To move forward on this key employment issue, more information and analysis are needed on the potential costs and advantages of a portable benefits plan, as well as the impact that such plans would have on under-represented groups. Federal, provincial and territorial governments should, at a minimum:

- 1. Conduct detailed analysis of the costs and benefits as well as the feasibility (economic, operational, technological, political, legal) of a portable benefits model
- 2. Consult extensively with stakeholders to understand their diverse interests and needs
- 3. Evaluate existing models of portable benefits, beginning with the Washington State case study referenced within this policy brief

For more and more workers, the question is: If I am not able to access sufficient pension and benefit coverage through my own work efforts, and government programs don't cover me either, where should I turn?





WHAT NEEDS TO CHANGE IN A CHANGING CLIMATE: Managing Risk Requires Decisive Policy and Innovative Technology

Innovative policy, new technology, faster adaptation and ways to build public support are all needed to manage climate-change risks, which will be critically important to Canada for decades to come. By Glen Hodgson

SUMMARY AND RECOMMENDATIONS

The Government of Canada is leading a resurgence in Climate change is creating a growing array of economic and societal costs and risks, including severe flooding and forest fires, threats to infrastructure, and the risk of stranded assets in oil and gas production and distribution worth many billions of dollars. At the same time, potential opportunities exist in the low-carbon economy as public and private organizations develop innovative, disruptive technologies.

Managing climate change risk will be critically important to Canada and the international community for decades to come, as evidenced by the fact that other jurisdictions are already moving forward with effective regulatory and policy practices. Innovative public policy and technology will be required in Canada to address and manage climate change risks, and to promote faster adaptation without sacrificing robust economic growth.

While we have made a strong start in addressing the consequences of climate change, the Government of Canada needs to focus its policies on completing and implementing key transitions, such as:

- establish carbon pricing and revenue cycling, as well as complementary smart regulations where pricing requires support
- significantly expand public investment in infrastructure to reflect the increased frequency of extreme weather events and their related impacts
- enhance regulatory oversight to avoid stranded assets
- foster the development and commercialization of technologies that reduce greenhouse gas (GHG)
 emissions
- promote public and private procurement of technologies that reduce GHG emissions without relying on these technologies to meet emissions targets

FIX THE GRID: How Canada can Integrate Its Electricity Systems for a Clean, Prosperous Future

While some provinces feast on clean power and export excess to the United States, others face electricity famine. A Canada Clean Power Fund could knit together a national grid to create a competitive advantage in the low-carbon future. By Brian Topp

SUMMARY AND RECOMMENDATIONS

Canada's present and future economic success increasingly depends on access to affordable, clean, reliable electricity delivered at the lowest and most sustainable price. Dependable access to clean electricity provides a tremendous competitive advantage in a world of carbon reduction (think: the emergence of electric vehicles). However, certain historical patterns and recent developments in how we create and distribute electricity in Canada stand in the way of this country reaching its potential.

Canada's electricity story is one of feast coexisting with famine in which a patchwork of systems improvised over time has created highly disparate outcomes for the provinces. Provinces have each attempted to be self-sufficient, creating "haves" and "have-nots" in electricity generation—the "haves" being able to access affordable, relatively clean electricity such as hydroelectric power, and the "have-nots" requiring costly, polluting projects to meet public need.

There is little inter-provincial trade in electricity to take advantage of each province's relative strengths and weaknesses in production, and no national strategy in this area of provincial jurisdiction. One result has been that the "haves" are pursuing the short-to-medium term financial benefits of selling into the American market, which diverts power from the domestic market and increases Canada's economic dependence on the United States.

Canada's clean energy surpluses should be diverted into the domestic Canadian market. And, to the extent that Canadian federalism permits, a unified national grid—called the Canada Clean Power Fund—should be woven together to pool access. A pan-Canadian approach to electricity distribution provides an opportunity to turn export vulnerability into domestic competitive advantage.



Closing the Gap in Canada's Adult Education System

Canada's labour market will not have the skilled workers it needs unless we change the way we train workers today. As automation spurs rapid change, Canada needs to change its approach to education, training and skills development in order to close the skills gap. By Lori Turnbull

SUMMARY AND RECOMMENDATIONS

Labour markets in Canada and around the world are being disrupted by the gig economy and the corresponding need for diverse and shifting skill sets, as well as by artificial intelligence and technological developments. Jobs of the future will demand skill sets and competencies that we cannot yet anticipate; at the same time, many skills that have made individuals competitive in the past will become automated.

Canada's labour market will not have the skilled workers it needs unless we change the way we train workers today. Michael Wernick, Clerk of the Privy Council, has spoken about the importance of creating the right "mix of skills" in the public service; it is a top priority of his to "raise the capabilities" of the federal workforce. If the skills gap is to close, cultural and attitudinal changes will be necessary to support the implementation of a new approach to adult learning and skills development. To prepare Canadians in all sectors for the future, governments should take the following actions:

- develop a comprehensive national platform that improves the flow of information among employers, job seekers
- build partnerships with employers and post-secondary institutions to identify labour market needs
 and ensure educational programs are aligned with those needs
- harmonize employment and income supports with skills and employment services to provide appropriate incentives for upskilling
- use incentive structures to promote innovation in post-secondary systems
- emphasize training and competency building in the kinds of capabilities that are not transferable to robots
- use evidence-based approaches in working toward skills security, recognizing the important role
 of arts and social sciences as well as science-based disciplines





SKILLS AT SPEED: Why Canada's Public Service Should Grow its Interchange Program to Build Skills and Networks

The public sector should expand its interchange program with the private sector in order to diversify its employees' networks and skill sets and, in so doing, help the public service face employment challenges and disruptive technologies. By Lori Turnbull



SUMMARY AND RECOMMENDATIONS

As the labour market shifts from full-time work toward short-term and part-time contracts, workers and organizations are experiencing benefits and drawbacks. While many individuals worry about a lack job security, others appreciate the flexibility and opportunity that "gig" work provides.

Employment in the public service and gig work are at opposite ends of a spectrum: the public service offers job security and a sense of vocation, while the gig economy offers flexibility and opportunity. Job security within the government is seen to be integral to the specific role that the public service plays within Canada's Westminster system and its capacity to speak truth to power regardless of political realities and government transitions. However, government employment is also seen as rigid, hard to penetrate, hard to leave, regimented; this is the price public servants pay for protected, secure employment. The private sector, meanwhile, falls somewhere in the middle: formal employment contracts exist, but people move freely between jobs. Private sector employment is less risky than the gig economy and provides some opportunities for self-reinvention.

The public sector should strike a balance between these extremes by creating a bridge to the private sector that encourages interchange experiences among employees. Such experiences could diversify public service employees' networks and skill sets and, in so doing, help equip the public service for the employment challenges that lie ahead.

To this end, the federal government should more actively promote and encourage regular use of Interchange Canada, a program of the Treasury Board of Canada Secretariat (TBS) that facilitates exchanges in and out of the public service. Specifically, government should:

- expand the use of Interchange Canada by creating the administrative infrastructure and financial incentives needed for significant uptake of the program
- require TBS to work with interchange partners to develop a competency-based approach to interchange arrangements
- advertise targeted interchange assignment opportunities on the Canada-wide online Interchange database
- focus on securing interchange arrangements for a critical mass of public servants in key sectors, including artificial intelligence, big data and disruptive technologies

