



Employment and
Social Development Canada

Emploi et
Développement social Canada

A Glimpse Ahead

Exploring the Future of the Public Workforce at ESDC



Authors



HUMAN RESOURCES INNOVATION

Human Resources Innovation (“HRI”) is a team at Employment and Social Development Canada (“ESDC”) within the Human Resources Services Branch. HRI’s mission is to shape the development of sustainable, relevant, innovative, and forward-looking ways of working, creating value for ESDC from an organisational, employee, and client perspective.



POLICY HORIZONS

Policy Horizons Canada (“Policy Horizons”) is a strategic foresight organization within the Government of Canada that uses foresight to help the federal government build stronger policies and programs in the face of an uncertain future.



Abstract

Preparing for the future is a difficult task. But failing to do so can leave organizations susceptible to sudden challenges and lost opportunities. Conversely, having a greater understanding of what the future beholds allows for policies, programs, and strategies to be more adaptable and tactful in the face of disruption. This report highlights how three transformative forces – Remote Working, Artificial Intelligence, and Extended Reality – could impact the ESDC and demonstrates to readers the numerous ways in which the work we do and how we do it could drastically change.



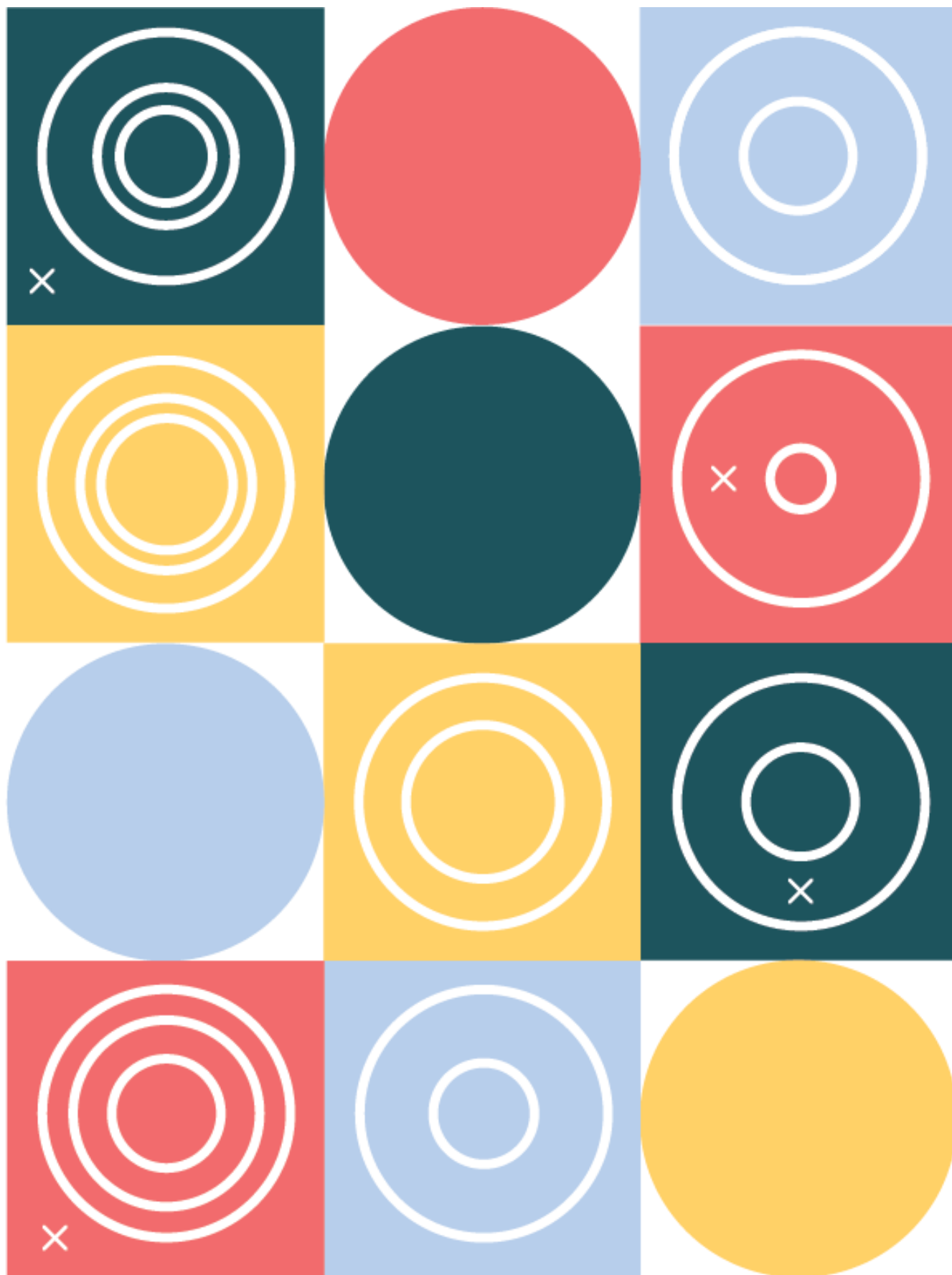
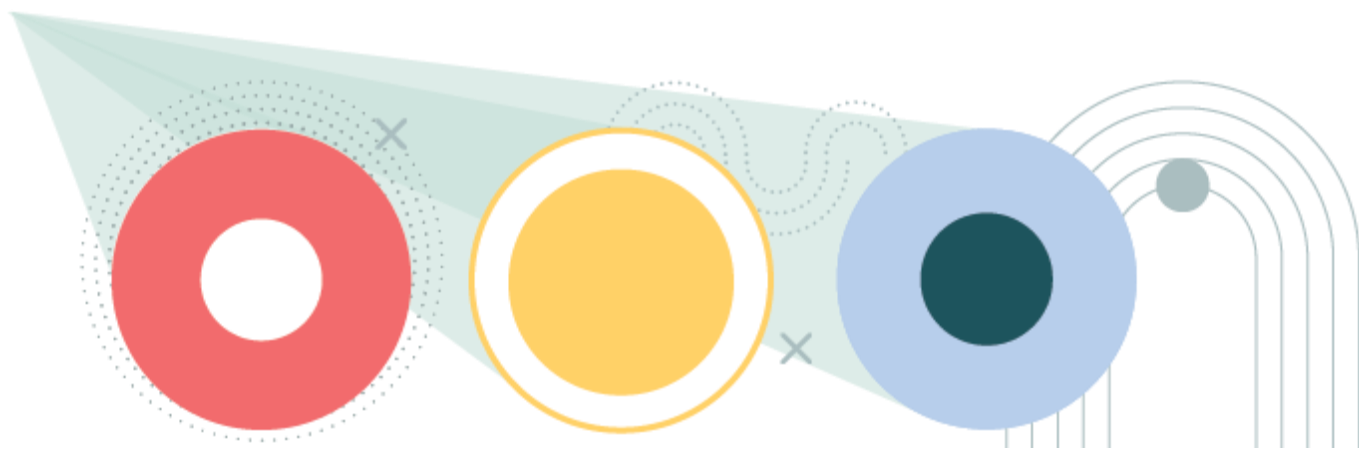


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Executive Summary

Background: Future of Work and Strategic Foresight

The “Future of Work” presents many large and looming questions for the Canadian Federal Public Service (“Public Service”). Teams across the organization - especially, following the COVID-19 pandemic - are preparing for significant change in the coming years.

These considerations are, typically, in the short-term (one to five years).

Strategic Foresight

(“Foresight”) looks at a much more distant future(s) (five to thirty years). It methodically searches for and

examines growing forces potentially leading towards transformative change.

In the Past: the Future of Oil

In the early 1970s, Pierre Wack and his team at Royal Dutch Shell used scenario planning to show executives how global oil supplies could suddenly dry up. Shell was, subsequently, less affected by the 1973 OPEC embargo and 1979 Iranian Revolution than many of its competitors.

Source: The Man Who Saw the Future



In doing so, Foresight provides leadership and decision-makers with substantial time to act.

Foresight does not state what should/will happen (certainty) in the future, but what could happen (probability/plausibility). For example, had the Taxi Industry studied the future of public-private transportation, it may have anticipated ridesharing and better prepared for the sea change.

The Project

The Human Resources Innovation Strategic Foresight Team (“HRI”), in partnership with Policy Horizons Canada, organized and facilitated several workshops with staff from across the Employment and Social Development Canada (“ESDC”) to discuss the future of work within the department.

Participants analyzed how three, large growing forces - Remote Working, Artificial Intelligence, and Extended Reality technologies – could impact the way the Public Service operates in the future.



Findings: Vulnerable Assumptions and Critical Uncertainties

The report highlights two areas of discussion that arose throughout the workshops and in the following Foresight analysis: Vulnerable Assumptions and Critical Uncertainties.

Vulnerable Assumptions

Vulnerable Assumptions are assumptions that, if proven wrong, can cause significant disruption to a system. Without revealing and testing them, organizations relying upon Vulnerable Assumptions to plan their futures are exposed to greater chances for failure or missed opportunities.

This report outlines several Vulnerable Assumptions within ESDC and the Public Service.

Vulnerable Assumption 1: The Public Service will continue to be one of Canada's largest employers of full-time, permanent employees.

Vulnerable Assumption 2: Public servants will continue to work from traditional locations (i.e. urban centers, the National Capital Region, in Canada, in-person).

Vulnerable Assumption 3: The next generation of workers will possess the necessary education and experience to work with advanced technologies.

Vulnerable Assumption 4: The Public Service will return to pre-COVID-19 pandemic ways of working.



Vulnerable Assumption 5: Digitalization and virtualization will make the Federal Public Service more efficient and effective.

Vulnerable Assumption 6: The Public Service will update and acquire new hardware and software for employees.

Vulnerable Assumption 7: The Public Service must be bilingual.

Vulnerable Assumption 8: The Public Service will rely on traditional hiring methods to attract and leverage talent.

Critical Uncertainties

Critical Uncertainties are issues or forces with a high degree of uncertainty and a potential for high impact. Policy and decision-makers can use them to test the resiliency of their current policies and prepare more adaptive ones for the future.

This report identifies and analyzes several Critical Uncertainties for ESDC and the Public Service to consider.

Critical Uncertainty 1: How will job positions and flexible work policies evolve?

Critical Uncertainty 2: How will changing workforce and workplace trends affect the natural environment?

Critical Uncertainty 3: How will advanced technologies affect transparency and information management in government?



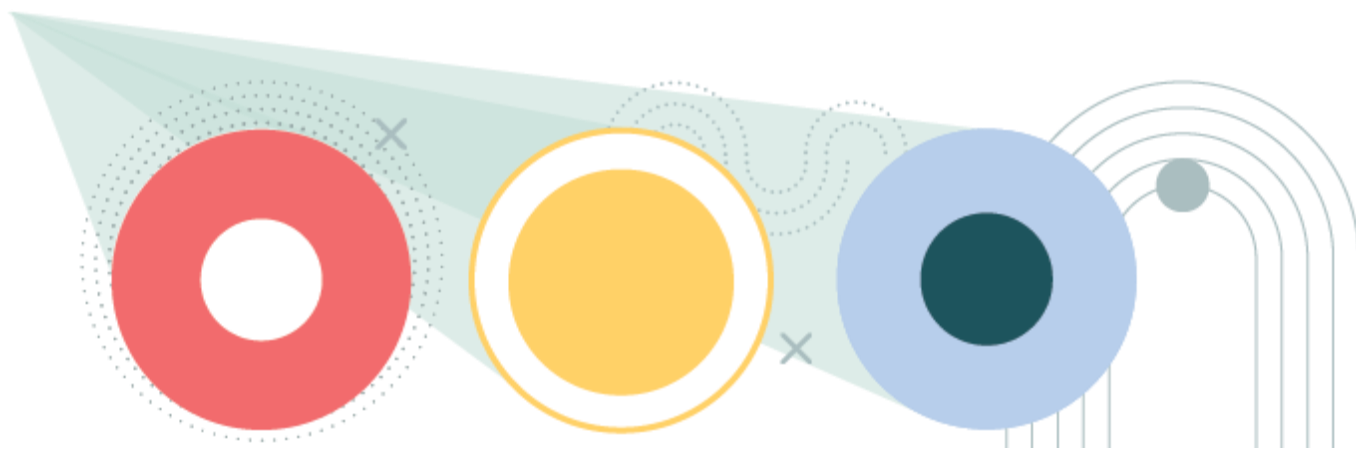
Critical Uncertainty 4: How will remote-work environments affect accessibility, bias, discrimination, and abuse in the workplace?

Critical Uncertainty 5: How will the introduction of advanced technologies affect accessibility, bias, discrimination, and abuse in the workplace?

Critical Uncertainty 6: How will remote working in the long-term affect employees' productivity and wellbeing?

Critical Uncertainty 7: How will job descriptions and classifications reflect changes in technological skills and proficiencies?





Introduction

Change has come hard and fast to the Canadian Federal Public Service (“Public Service”). In the wake of the COVID-19 pandemic, leadership faces significant questions of organizational transformation.

Those are concerns over the immediate. In the coming ten to twenty years, more rapid, seismic changes await. Some will be good, some challenging, but how they affect the Public Service and in what way remains generally unknown.

Public servants responded and improvised successfully throughout the pandemic despite, generally speaking, not having clear recourse. Leadership now recognizes the importance of preparedness for and adaptability to whatever disruption looms.

The Human Resources Innovation Strategic Foresight team (“HRI”) at Employment and Social Development Canada (“ESDC”) in partnership with Policy



Horizons Canada (“Horizons”) undertook a Strategic Foresight study to look at major forces changing the way public servants work in the coming decades.

ESDC and Beyond

The report’s analysis is from an ESDC perspective and primarily concerns ESDC’s employees and ways of working.

Nonetheless, findings from this report are significantly relevant to other departments, agencies, and governments too.

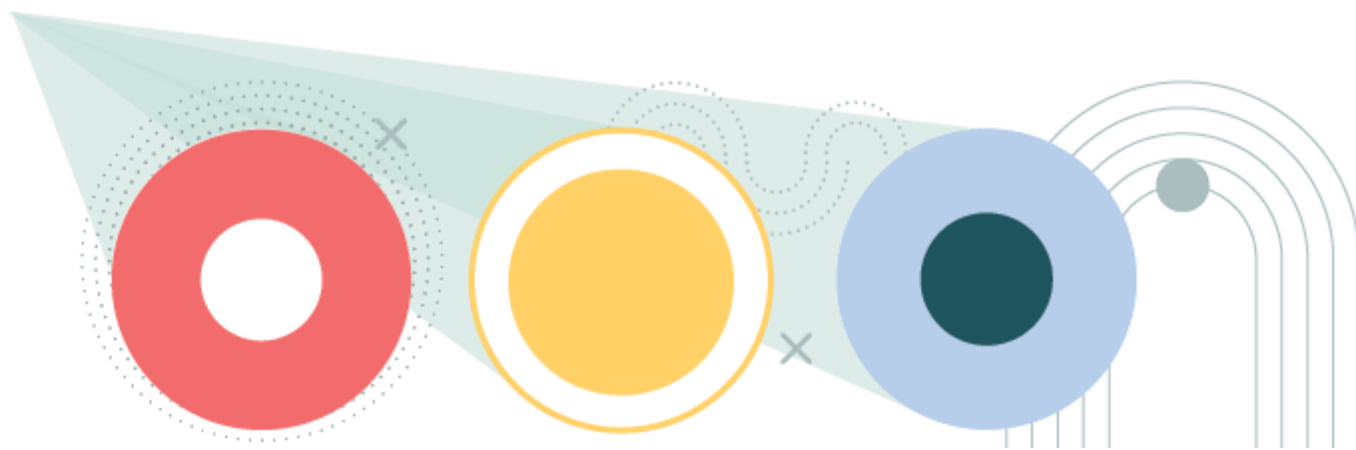
The report has two primary objectives.

First, to examine **Vulnerable Assumptions** foundational to the way we work now and in the future. Second, to explore emerging **Critical Uncertainties** and consider how ESDC, and the Public Service in general, can approach them and their potentially transformative effects.

Following this report, HRI intends to compose several smaller products exploring the implications of these findings in detail.

*To learn more about the workshops see **Appendix C**.



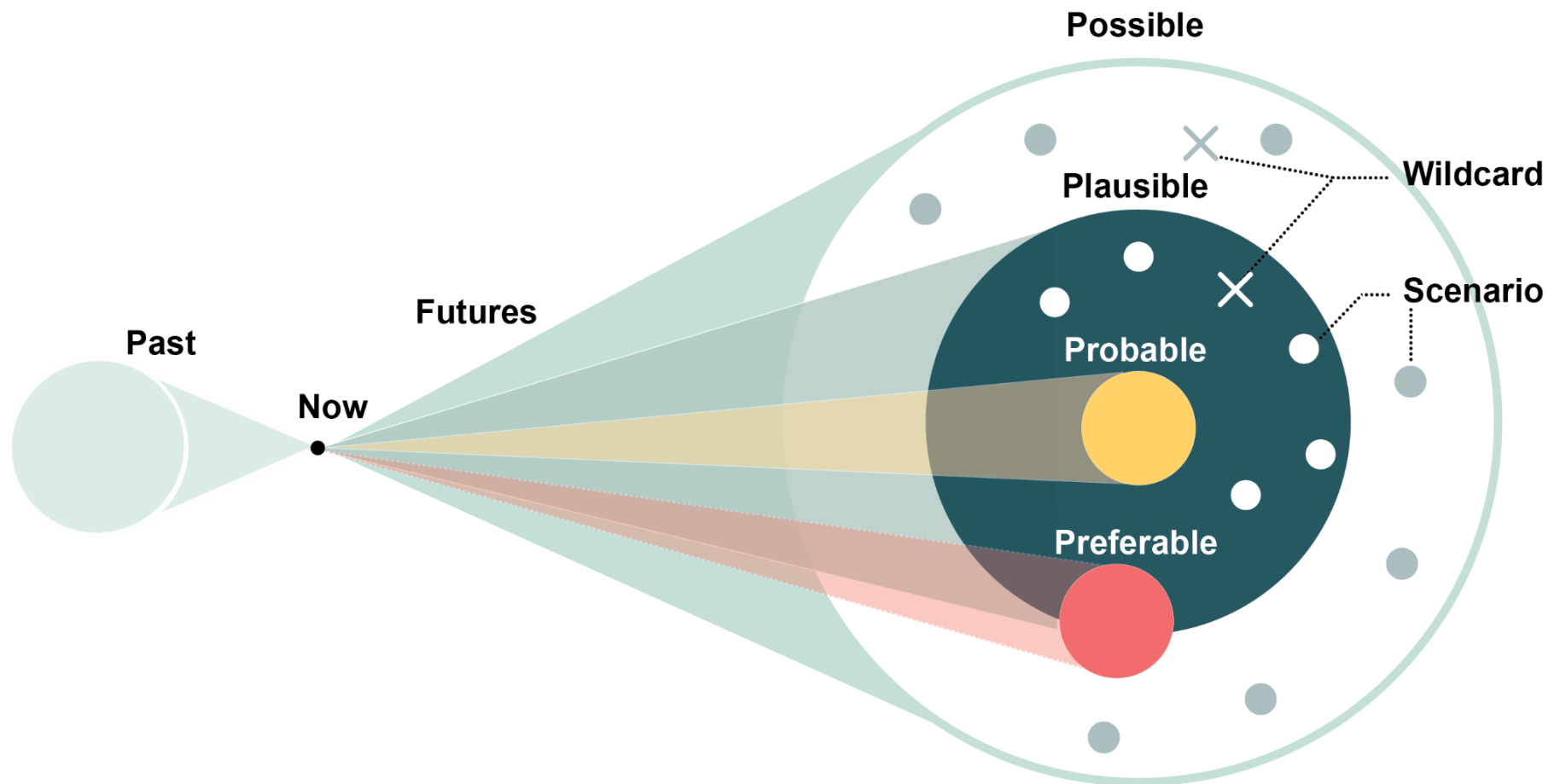


What is Strategic Foresight?

Strategic Foresight (“Foresight”) is a structured and systematic way to consider and analyze the longer-term future (typically, five to twenty years). Foresight does not predict the future. It examines growing forces and explores plausible, alternative futures with the goals of identifying potential challenges and opportunities and providing organizations with time and insight to prepare.

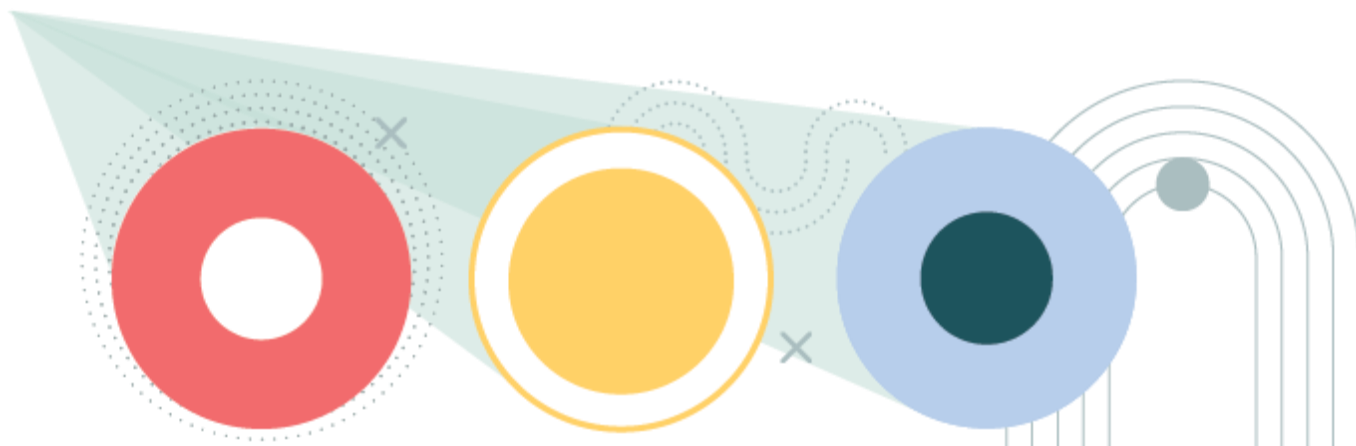
Below, the Cone of Plausibility (see page X and XI) is a commonly used concept - among many others - to visualize Foresight’s studying of the future. The “Plausible” space is, typically, where foresight analysts explore.





“Future(s)” represented by the cone of plausibility





Methodology

Strategic Foresight utilizes a rigorous, multi-faceted approach to envisioning the future. There are numerous ways to practice Strategic Foresight; this report relied on Horizons' Foresight Method.

At the initial stage of a study, foresight analysts gather and sift through information - known as Scanning - in search of indicators of change. This involves mining information from a multitude of sources (quantitative and qualitative data, expert interviews, popular culture, user-centered research, workshops etc.) across a wide-array of fields, sectors, industries, and demographics.

So Many Futures

Classifying different futures as 'possible', 'plausible' and 'probable' is a matter of perspective.

It can depend on various factors such as what the research suggests, the values we possess, and the timelines (three years versus thirty) we consider. The further out one peers, for example, the less likely a "projected future" occurs.



Following the unearthing and collection of pertinent data – called Weak Signals – that information is analyzed for growing patterns and commonalities - or Trends.

Multiple trends indicating a similar pattern, direction of momentum, and propensity to disrupt the system under study are called Change Drivers (“Drivers”). It is these Drivers that foresight analysts observe and manipulate to reveal a multitude of futures.

*See **Futures References** below or visit Horizons to learn more about Strategic Foresight.

Change Drivers

Change Drivers are major forces causing significant change within a given system. As systems behave in new or unexpected ways second, third, and fourth orders of consequences occur over time (see the **Futures Wheel** example below).

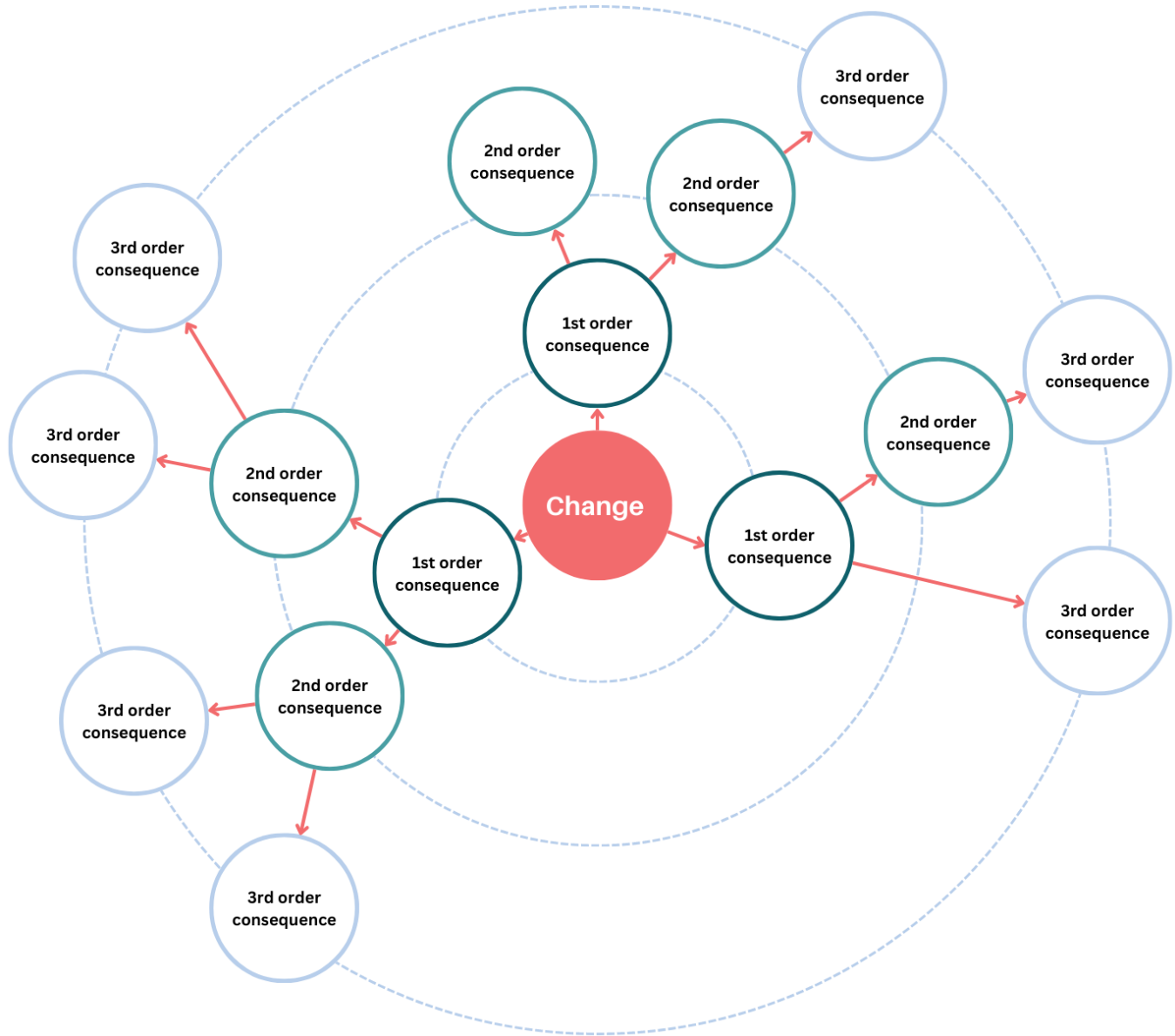
Foresight explores these sequences to consider alternative futures and their potential effects.

Horizons identified three Drivers - derived in their Future of Work: Five Game Changers and Future of Value reports - for this project:

1. **Artificial Intelligence**
2. **Extended Reality; and**
3. **Remote Work.**



Source: What is Futures Wheel?



1. Artificial Intelligence

Artificial Intelligence (“AI”) is a branch of computer science focusing on building and managing technology that can learn to autonomously make decisions and carry out actions on behalf of a human being.



2. Extended Reality

Extended Reality (“XR”) is an umbrella term for multiple types of immersive technologies. “Immersion” refers to a user’s experience or interaction with the virtual realm. Augmented Reality (“AR”), Virtual Reality (“VR”), and Mixed Reality (“MR”) are the most known types of immersive technologies.

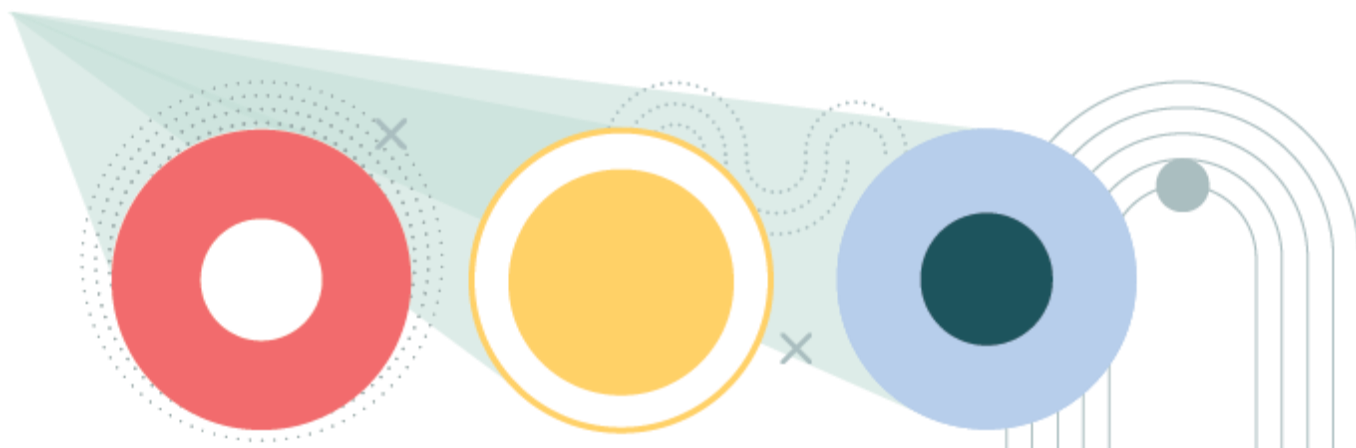
AR superimposes the virtual over the physical. It enhances a user’s physical reality with a virtual dimension of perspective, information, or manipulation. VR “removes” a user from the physical realm and places them in the virtual. MR is a blend of AR and VR and enables physical and digital objects to exist and interact in real time.

3. Remote Work

Remote Work (also known as Working-From-Home, Dispersed Work, or Telecommuting) is a type of flexible working arrangement that allows an employee to work from a location other than their employers’ base of operations.

Remote work arrangements can be temporary or permanent, flexible or regimented, part-time or full-time, occasional or frequent, or out of office, in it, or both (hybrid work). Remote working may also, particularly in the private sector, prompt more workplace innovations such as work unbundling, algorithmic management, and virtual outsourcing.





Challenging the Status Quo: Unpacking Vulnerable Assumptions

The Public Service, like most organizations, rely on widely-held assumptions - explicit or implicit - to shape policy, programs, and strategies regarding the near and distant future.

Causal Layered Analysis

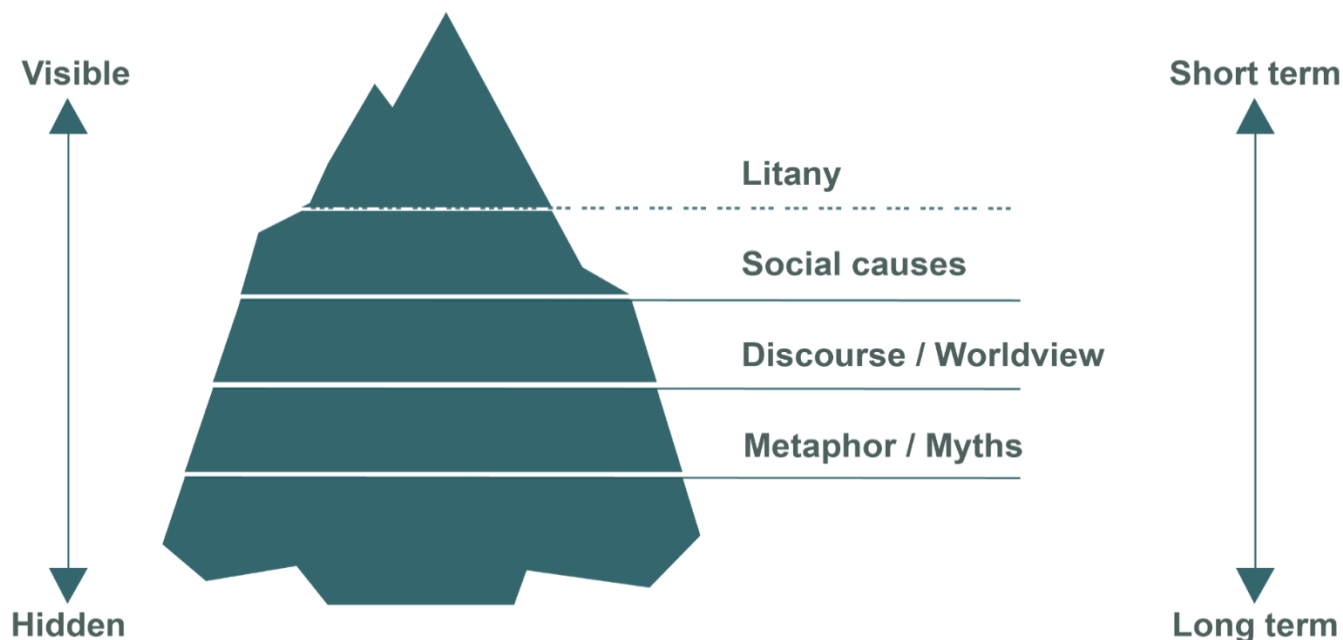
The Causal Layered Analysis demonstrates the depth and ease in which assumptions pervade our individual and societal thinking.

Source: Causal Layered Analysis: Theory, historical context, and case studies

Assumptions can be correct but often rely on heuristics, biases, historical information, and current experiences to project a related future that might not correlate.

In Foresight, assumed futures are only one of many. They are, perhaps, of greater likelihood, but not certain, and, therefore, treated cautiously.





Causal Layered Analysis diagram

Vulnerable Assumptions

Not all assumptions are worth investigating. Some are near certain; others, harmless even if incorrect.

Vulnerable Assumptions, on the other hand, are those that, if proven wrong, can cause significant disruption to a system. Relying upon them or failing to recognize them altogether is to build on an untested foundation and, possibly, expose policy and decision-makers to the unexpected.

Conversely, experimenting with alternatives to these assumptions gives organizations a greater understanding of how a system might evolve. Policies and programs undergoing an assumptions analysis will, ideally, be more resilient and adaptable to the rise of sudden, unanticipated events.



Workshop participants identified assumptions and used Change Drivers to explore and challenge them. This report examines only the most relevant Vulnerable Assumptions.

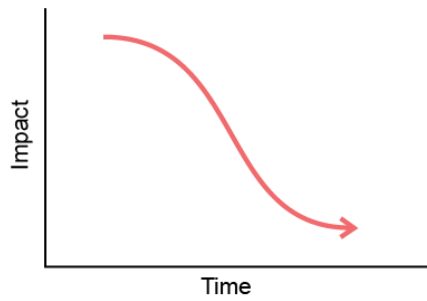
The Four Futures Framework

To help readers understand a range of possible alternatives within each Vulnerable Assumption, HRI used the Four Futures Framework (“Four Futures”) to classify the workshops’ findings.

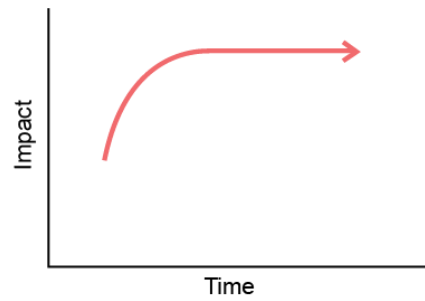
Four Futures helps imagine a single issue from multiple perspectives by providing four distinct “scenarios”. They encourage readers to shed their own assumptions and beliefs and imagine alternate realities.

1. **Decline and/or Collapse (“Decline”)**: The acute or chronic degradation of large systems (i.e. the environment, the economy, or our social structures) causes various crises.
2. **Limits and Discipline (“Constraint”)**: Society, led by government, private, or grassroots efforts, enact strict measures to obstruct progressive innovation, creation, and development.
3. **Growth and Continuation (“Growth”)**: Current trends and conditions - good and bad - continue as before at a slow, moderate rate.
4. **Transformation**: Fundamental progressive change of a society or system. The Four Futures were used to explore the Vulnerable Assumptions and present pertinent points of discussion.

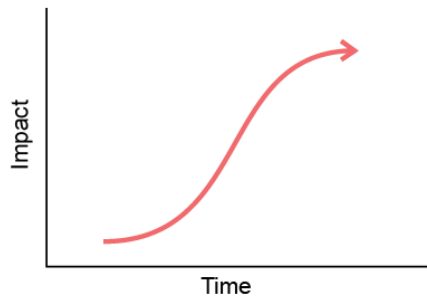




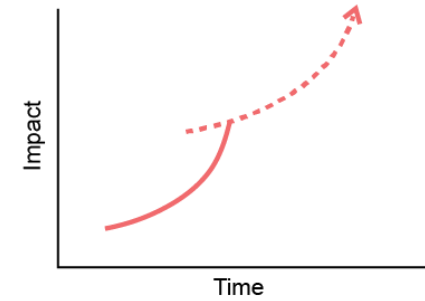
Decline



Constraint



Growth



Transformation

Dator's Four Futures illustrated: Decline, Constraint, Growth and Transformation



Unpacking the Vulnerable Assumptions

Vulnerable Assumption 1: The Public Service will continue to be one of Canada's largest employers of full-time, permanent employees.

The Unpacking

As of December 2021, the Federal Public Service (including separate agencies) employs over 300,000 employees (approximately 0.8% of Canadians). Indeterminate employees (those whose contracts are indefinite/permanent) make up two-thirds of the total workforce.

What's Changing

Technology's rampant growth in digitalization, virtualization, and automation, along with any moves by private sector into areas traditionally controlled or administered by government, could prompt a shift in the number of public servants and change the dynamics of standard contracts.

The Unbundling Ecosystem - Future Progression of Work






Source: The Changing Nature of Work



Weak Signals of Change

- U.S. Lost Over 60 Million Jobs—Now Robots, Tech And Artificial Intelligence Will Take Millions More.
- Gig economy workforce rockets to more than one in ten of Canadians; a further third are open to joining, reveals new study.

Alternative Futures to Consider:

Constraint 	Leadership devalues the public service, enacts restrictive measures, or privatizes parts of government. Full-time employees become undesired; public servants struggle to find job security.
Transformation 	Artificial Intelligence, automation, and general technological advancements enable the Government of Canada to operate more expansively. Employees avoid laborious routine work and upskill for more complex portfolios.
Transformation 	<u>Job unbundling</u> (i.e. multiple tasks once assigned to one employee are now shared amongst many) and <u>gig work</u> challenge the typical employee life cycle. Government relies on consultants (internally or externally, domestically or internationally) and advanced technologies to complete projects and deliver services.



Vulnerable Assumption 2: Public servants will continue to work from traditional locations (i.e. urban centers, the National Capital Region, in Canada, in-person).

The Unpacking:

In the past, the Public Service prioritized in-person operations. The National Capital Region, for example, has the largest proportion (42%) of federal public servants in Canada despite having the country's sixth largest population.

Locality and the willingness to relocate are attractive qualities for candidates to boast. Conversely, talent pools are limited by location requirements. Proximity to urban centres can also be a consequence of substandard infrastructure: remote areas lack sufficient internet and telecommunications to sustain federal employees.

According to a CRTC report, only 46% of rural households had access to 50 [download]/10 [upload] megabytes per second ("Mbps") internet speeds compared to 99% of urban homes in 2019.

The Canadian Radio-Television and Telecommunications Commission set 50/10 Mbps as the minimum standard for all Canadians.

Only 35% of households in Indigenous communities have similar. Whatever services are available to rural and Indigenous communities are often prohibitively expensive.

What's Changing

Improvements in technologies and shifts towards flexible work arrangements - as a result of the pandemic - heralds a new attitude towards the traditional workplace.







Increasingly, remote working is seen as a benefit to the employee and an asset to the employer.

Weak Signals of Change

- 'Crazy good': Rural Canadians are raving over Elon Musk's Starlink satellite-based internet service. Should Canada's big telcos be worried?
- Home-high-speed Internet for all of Canada
- Liberals promise to connect 98% of Canadians by 2030
- The White House caps internet prices for low-income households.

Alternative Futures to Consider:

Decline 	A lack of investment in national broadband services and infrastructure, and leadership's preference for in-person work - as opposed to the private sector's dispersed workforces - further inhibits access to a shrinking pool of talent and stifles public servant diversity and creativity.
Constraint 	All Canadians gain access to cheap and efficient broadband services. A sudden wave of mental and physical health challenges amongst remote workers overwhelms the public sector's occupational health and safety support systems.
Growth 	Companies like Starlink - a constellation of internet satellite services - <u>proliferate</u> , offering fast and affordable internet access across Canada. The Government of Canada cooperates with internet providers to ensure affordable, capped prices for low-income populations and federal employees with poor internet access.
Growth 	Employees demonstrate the efficacy of working from home and are liberated from their offices. Flexible remote-working <u>policies</u> ^x paired with the rapid expansion of collaboration-enabling technology engorges talent pools by allowing applicants to work anywhere in Canada and, eventually, the world.



Vulnerable Assumption 3: The next generation of workers will possess the necessary education and experience to work with advanced technologies.

The Unpacking

Employers either expect employees to adapt to a perpetually evolving assortment of technologies and applications or for new graduates and younger generations to be sufficiently prepared and trained for them.

A current lack of data scientists in the workforce demonstrates the potential fallacy of this assumption. This is particularly true in the Public Service where technology adoption and diffusion can be slower and more conservative than the private sector, and where competition for talent is already high.

Panic! At the Talent

A 2022 survey of 14,000 recruiters and developers by CodinGame and CoderPad found that over 50% of recruiters struggled to find qualified developers for vacant positions.

Source: 2022 Tech Hiring Survey

What's Changing

Transformative technologies in automation and robotics, biotechnologies, Artificial Intelligence, material sciences, 3D printing, Internet of Things and connectivity, Extended Reality, cybersecurity, and Big Data continue to shift the future of the workplace and the workforce. Adding additional needs for skills and expertise that may not come in any great supply.



Weak Signals of Change

- 🕒 Technology in deep time: How it evolves alongside us.
- 🕒 Technology is moving faster than ever before — here's how businesses are keeping up.

Alternative Futures to Consider:

Constraint 	Cautious leaders and managers, unions, and legacy workforces object to the implementation of transformative technologies altering their ways of work and threatening to replace/heavily reform current roles. New technology integration is slowed their utility limited.
Constraint 	The Public Service prematurely invests in a single vendor, or, worse, the wrong vendor, committing to lesser or near-obsolete technologies. The gap in private and public sector services widens.
Growth 	The Public Service supports provincial efforts to modernize secondary and post-secondary education systems and internally retools its upskilling processes to transform the Public Service into a technologically savvy workforce.
Transformation 	With AI, XR, and other emerging technologies becoming widespread, early reskilling and education initiatives make transition painless. Simple, user-friendly designs make getting the hang of things easy for public servants. Users of government services report excellent experiences.



Vulnerable Assumption 4: The Public Service will return to pre-COVID-19 pandemic ways of working.

The Unpacking

“Outlasting” COVID-19 may never happen; the optimism anticipating a “post-COVID-19” horizon, possibly, misguided.

Long Days of Long Covid

Figures from the United Kingdom’s Office for National Statistics, published on April 2022 (, estimated 1.7 million people (2.7% of UK population) experienced COVID-19 symptoms for more than four weeks - a slight rise from last month’s 2.4%. The Census Bureau of the United States reported in August 2022 that approximately 4 million Americans are out of the labour force because of Long Covid.

Source: Prevalence of ongoing symptoms following coronavirus (COVID-19) infection in the UK

Source: New data shows long Covid is keeping as many as 4 million people out of work

Instead, COVID-19 – like semi-irresolvable afflictions such as Malaria, HIV, cancer, and others - persists and continues to threaten economies, healthcare systems, and daily lives. Dwindling supply chains, inflating prices, and an insufficient labour force are also hindering the “restart”.

What’s Changing

The Public Service’s adoption of the remote-working model amidst the

pandemic illuminated the value of new ways of working. If the pre-pandemic world never returns, such experiences may disassemble work’s traditional structures. Workplaces are no longer confined by office buildings: perhaps, too, work schedules, workdays, work styles, contracts, and positions will no longer be bound to their old constructs.








Weak Signals of Change

- More than 2% of British population dealing with 'Long Covid' - one person's bout with it for over 18 months.
- COVID-19: endemic does not mean harmless.
- Climate Change increases viral cross-species transmission risk.
- Hawaii considers 4-day work weeks for state employees.
- Employees say hybrid work makes them happier and more productive, but more needs to be done to make it more inclusive.



Alternative Futures to Consider:

<p>Decline</p> 	<p>COVID-19's severity subsides, but only on the heels of a new, equally disruptive force (i.e. Climate Change events, major cyber security attacks) or virulent disease. Organizations that didn't adapt to new ways of working suffer the consequences yet again.</p>
<p>Constraint</p> 	<p>COVID-19 remains but controlled. Its existence, impact, and consequences affect decision-making and lifestyles. Additionally, a higher prevalence of "Long Covid" lingers and debilitates a large part of the populace and workforce.</p>
<p>Constraint</p> 	<p>Incessant waves of COVID-19 mutations transform pre-pandemic routines and standards (i.e. <u>work weeks</u>, summer holidays, number of sick days, etc.) and puts economies and lifestyles in a constant state of flux – multiple shutdowns and restarts – to control its harm.</p>
<p>Growth</p> 	<p>The Public Service prioritizes <u>employee-centrism</u> (i.e. wellbeing, autonomy, mobility, etc.) as it uses the disruption(s) as cause to start anew - reconfiguring the organization and redefining roles and responsibilities of employees.</p>
<p>Transformation</p> 	<p>Following the success of a dispersed workforce, the Public Service moves towards an outcomes-based approach (merit instead of seniority) to measure and reward success. Deconstruction of traditional hierarchies liberates employee movement and rewards value - in place of seniority - with rapid upward mobility.</p>



Vulnerable Assumption 5: Digitalization and virtualization will make the Public Service more efficient and effective.

The Unpacking

Most public servants consider advanced-technology adoption in the Public Service and their dramatic improvement of internal processes and external service delivery inevitable.

What's Changing

Essential to the success of these new technologies is the collection and use of private information - both from people in Canada and public servants - at an unprecedented scale. Such extensive data collection and storage poses new internal and external vulnerabilities. AI and XR also present novel opportunities for hackers, cyber terrorists, foreign agents, and thieves (“Bad Actors”) to infiltrate government.


Cybersecurity measures and policies might not adequately prepare the Public Service for these risks. Consequently, leadership and employees may not be properly informed or even aware of these Bad Actors and their methods.

Weak Signals of Change

- 🕒 Wealthy cybercriminals use zero-day hacks more than ever.
- 🕒 How much damage could a Russian cyberattack do in the US?



Alternative Futures to Consider:

<div>Decline</div> 	Radical hacking technologies compromise elements of government infrastructure or third-party providers. Government resorts to local networks and analog security systems to safely transfer and access information, slowing bureaucratic processes and services and rolling back workforce dispersion.
<div>Constraint</div> 	Bad Actors and Government remain capable foes. The Public Service is unable to progress as a workforce due to heavy investment in and focus upon security.
<div>Constraint</div> 	Major privacy and security concerns occur as large numbers of public servants utilize unregulated virtual reality spaces and non-government employees (i.e. hackers, trolls, etc.) infiltrate proprietary Federal virtual domains (think ' <u>Zoom bombs</u> ' and ' <u>Deep Fakes</u> ').
<div>Transformation</div> 	An agile and diligent cybersecurity system neutralizes Bad Actor threats and enables the Public Service to safely and effectively apply new technologies to their work.



Vulnerable Assumption 6: The Public Service will update and acquire new hardware and software for employees.

The Unpacking

The adoption of advanced technologies is a significant force influencing the “Future of Work” and they will continue to evolve at a quickening pace.

Conversations, even in this report, speak of these technologies as though adoption is inevitable despite the difficulties of achieving functional integration.

What’s Changing

Within the private sector, technological uptake can be swift and radical – challenges and failures acceptable risks to achieve transformational success. The Public Service, on the other hand, may have eyes bigger than its stomach.




Any number of factors - fear of risk (security or otherwise), high costs, slow change management, political priorities, lack of infrastructure, lack of talent, limited capacity within IT or the Public Service at-large, etc. - could inhibit experimentation and widespread adoption.

Weak Signals of Change

- 🕒 Metaverse requires 1000x more computational power than today’s output.
- 🕒 How Bitcoin mining devastated this New York town.



Alternative Futures to Consider:

Constraint 	Major deficits and/or aspirations to shrink public service budgets restrict government access to innovative technologies or, at least, limit its widespread use.
Constraint 	Legacy infrastructure is incapable of supporting transformative technologies or adapting to them swiftly, inhibiting Public Service's ability to promptly experience their benefits and widening the gap between public and private sector reputations.
Transformation 	A new dispersed workforce strategy reduces need for Real Property and other in-person infrastructure allowing more investment in technologies – such as VR and AR - that support a flexible, advanced public service.



Vulnerable Assumption 7: The Public Service must be bilingual.

The Unpacking

The Public Service is both deeply committed and legislatively required to communicate with and provide services to the public in English and French. Still, the requirements limit access to national talent pools, require significant resources for internal translations and language training capacity, burden individuals' workloads, and consume professional development time.

What's Changing

Artificial Intelligence's language processing systems are simplifying once challenging translation, transcription, and interpretation processes. OpenAI's Generative Pre-trained Transformer 3, for example, can already perform a wide-range of natural language and data sorting tasks.

Furthermore, Canada is committed to incorporating Indigenous Languages more substantially in Canadian culture, which includes using relevant languages in federal institutions.

Decolonizing the Public Service

Reconciliation includes looking past traditional European ways of learning and relying upon Indigenous ways of knowing and problem solving - including oral traditions and sharing circles - to reveal new solutions to policy problems and challenge deeply held conventions.




Source: Decolonizing the Public Service



Weak Signals of Change

- Augmented Reality glasses utilize Artificial Intelligence to provide live captioning for hearing impaired.
- Waverly Labs creates 'Subtitles' - a counter-top screen providing real-time translation for in-person interactions.

Alternative Futures to Consider:

Decline 	Natural language processing technologies favour English as a majority language and marginalize French and other languages used in Canada. Francophone culture, particularly, within the public service is endangered.
Growth 	Bilingual hiring requirements are loosened due to comprehensive translation tools. Accessibility challenges, particularly for the visually and hearing-impaired, are reduced with assistive AI technologies standardized across the Public Service.
Transformation 	Service delivery and government communications are provided in all languages with instantaneous translation technology. Indigenous languages and visual-modal forms of communication are introduced as official languages of the Public Service. Hires from disability communities rise. Fluency in English or French is not required for new recruits. Freed resources, once reserved for language training and translation, are dedicated to decolonizing the Public Service and implementing Indigenous Peoples' ways of working.



Vulnerable Assumption 8: The Public Service will rely on traditional hiring methods to attract and leverage talent.

The Unpacking

The Public Service, generally speaking, hires people and organizes its teams around fixed roles and responsibilities. Work is chunked by profile and portfolio and individuals recruited accordingly. People are often hired on a permanent basis (though, termed contracts are becoming more commonplace) with limited contractual flexibility for both employee (i.e. location, pay structure, jobs/tasks, etc.) and employer (i.e. cause for dismissal, reassigned roles, organizational changes).

What's Changing







The "gig" economy, its concurrent technologies, and the changing interests of new generations of workers present the possibility of a more fluid contractual relationship between the Public Service and talent pools. The value of flexibility on both sides urges employers to experiment with new and bespoke working arrangements.

Weak Signals of Change

- ① 'SplitZing' allows multiple employers to share one employee in long-term roles and relationships.
- ① 'Roleshare' allows multiple employees to share one job.
- ① New technology enables employees to find potential opportunities across an organization based on interests, availability, and AI-inferred skills.



Alternative Futures to Consider:

<div>Decline</div> <div></div>	Reliance upon automation and contractors shrinks the public sector and creates a negative feedback loop: more automation and contractors → fewer public servants → fewer universities offer public policy programs → smaller talent pools → fewer candidates → greater reliance on automation and contractors → fewer public servants...
<div>Constraint</div> <div></div>	The Public Service's attractive qualities as an employer (i.e. benefits, job security, quality of work/life, etc.) diminish as the private sector satisfies employees' desire for flexibility, <u>remote-working</u> , current technologies, and ethical business models. Its inability to outpace the private sector's transformation severely inhibits the Public Service's talent acquisition and retention goals.
<div>Constraint</div> <div></div> <div>Growth</div> <div></div>	Shrinking labour forces and a decrease in <u>domestic and international university enrolment</u> drains talent pools and forces the Public Service to consider alternative modes of recruitment including new and leaner hiring processes, more comprehensive internal skill development programs, vast reskilling initiatives, and greater job classification fluidity.
<div>Growth</div> <div></div>	Smaller teams unable to afford full-time staff hire freelancers to complete individual tasks and projects. The sorting of non-human and human functions with Artificial Intelligence as an assistive tool further atomizes "work", making task-oriented hiring simpler. Subcontracted work, international labour forces, and private-public team dynamics in the Public Service become the norm.
<div>Growth</div> <div></div>	Tasks are unbundled and allocated to staff with appropriate competencies and resources across branches. Diversity, equity, and inclusion values integrate into work processes and products more naturally with multi-expertise teams.



Transformation



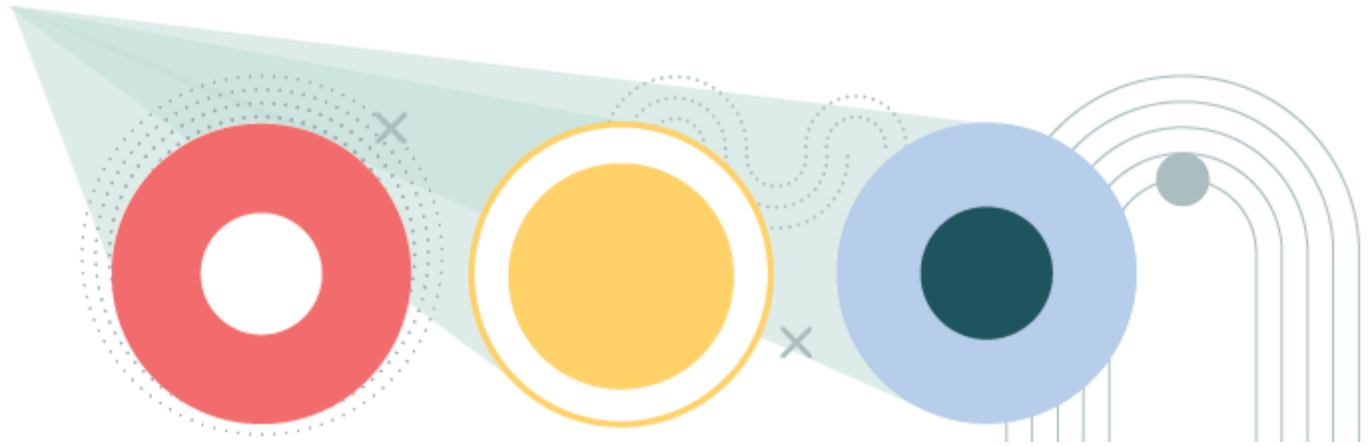
Artificial Intelligence causes further job unbundling. Employees focus on more complex tasks with AI completing the repetitive, routine, and mundane. The next generation of public servants possess a “soft” skillset - creativity, empathy, leadership, strategy, and innovation, etc. - complementing AI’s shortcomings. Public servants strike a healthier work/life balance and, generally speaking, challenges with mental health diminish.

Transformation



Hierarchical structures flatten. Collective, democratic decision-making processes emerge with cross-enterprise discussion platforms distributing authority. Promotions and talent retention become more fluid, incentivizing originality, passion, and bold initiative. A radical new workspace makes the Public Service a desired employer.





Exploring the Unknown: Critical Uncertainties

Critical Uncertainties are large issues with a high degree of uncertainty and the potential for a high impact. Failing to consider Critical Uncertainties can result in organizations missing valuable opportunities or experiencing unwanted consequences. Policy and decision-makers can also use them as a proving ground for the resiliency and adaptability of their work.

The following Critical Uncertainties were developed using the data collected and analyzed from the series of workshops.

Critical Uncertainty 1: How will job positions and flexible work policies evolve?

The Unpacking

A large portion of the Public Service now works remotely. A full transition to remote-working and the emergence of a virtually-operating workforce could remove the need for provincial, territorial, and federal positional boundaries (i.e removing the need for geo-codes [NCR, provincial regions, etc.]).

Regional Offices as Economic Drivers

Canada Revenue Agency offices in rural areas provide higher-paying jobs than average (i.e. Regional offices in Summerside, PEI and Shawinigan, QC) and are an important part of local economies.

In turn, managers could access larger talent pools and hire employees outside a team's mandated region. Conversely, candidates applying to the Public Service would no longer be limited by location.

This begs the question of how the Public Service defines and distributes job positions moving forward. Should job positions remain tied to geography, the Public Service will need to restrict remote-working, require remote workers to attend in-person, intermittently, at their own expense, or force remote workers to choose between contract-renewal and relocation or resignation.

Alternatively, were job positions locationally flexible, some regions economically and socially dependent upon public servants could suffer. Towns and cities built around or reliant upon a public servant populace could experience a population and consumption void as public servants choose to work elsewhere.



Rural communities without a public service presence, in contrast, could benefit. Local residents aspiring to work for the Public Service can do so and remain in their community; others, no longer tethered to their physical workspace, could choose to live anywhere they desire.

Remote work could also support the Public Service's efforts to emphasize other significant values such as encouraging work-life balance, improving employee wellbeing, and achieving higher diversity, inclusion, and accessibility standards.



Points to Ponder

🎯 What will be the guiding goals and strategy in developing a Public Service Remote Work Policy?

- a What principles - diversity, workplace culture, efficiency, geographic distribution, flexibility, work-life balance - will motivate the policy?
- b What stakeholder needs - employee, employer, community, businesses, environment, individual, etc. - will inform the policy?

🎯 How will the Public Service reconcile remote-working policies (location of work) with legacy job position requirements (location of position)?

- a How will the Public Service compete with private companies dispersing their workforces internationally?

🎯 How will the Public Service's policies affect communities?

- a Can the Public Service incentivize employees to live in sparse or struggling communities by offering remote work and “remote bonus pay”?
- b How will the Public Service support communities that experience an exodus of public servants?



Critical Uncertainty 2: How will changing workforce and workplace trends affect the environment?

Unpacking the Uncertainty

With such a large workforce, Public Service decisions regarding the future profoundly impact the environment. The perils of Climate Change, Canada's commitment to the Paris Climate Accords, and the Public Service's development of the Green Government Strategy all place Public Service leadership at the forefront of the organization's sustainability initiatives and emissions limits.

The Shift in Energy Consumption

The sudden shift to remote work decentralized workplace energy and infrastructure systems once operating in singular locations for thousands of people. At the same time, remote workers no longer commute, impacting public transit and other industries (i.e. hospitality) reliant on a traveling workforce.

The growing reality of Climate Change alongside the growth of advanced technologies (i.e. Blockchain, Cloud Services, Artificial Intelligence, Robotics, and Extended Reality technologies, etc.) raises new moral dilemmas between their advantages and negative impacts on environment and climate.



Points to Ponder

- ① **How will distributed workforces, new ways of working, and new technologies affect the consumption of energy and resources in:**
 - a Infrastructure (i.e. suburban/rural sprawl, office space/overhead);
 - b Transportation (i.e. decline in public transit use and rise of occasional long-distance travel);
 - c Energy (i.e. renewables versus fossil fuels; energy-saving technology versus legacy infrastructure);
 - d Industry (i.e. private vehicle consumption, housing markets); and
 - e Environment (i.e. decentralized energy use, emissions, etc.)?

- ② **What will be the carbon footprint of remote/hybrid work versus in-office work across Canada?**
 - a What will it mean for current and prospective Government-owned property and assets?

- ③ **What new technologies will adversely, or beneficially, affect government commitments to emissions reductions?**



Critical Uncertainty 3: How will advanced technologies affect transparency and information management in government?

Head(s) in the Cloud(s)!

Many Public Service departments already rely on the digital cloud to access data (i.e. Sharepoint) and use computer applications (i.e. Microsoft Teams).

Unpacking the Uncertainty

Throughout the pandemic, employees increasingly accessed more virtual tools and cloud-based platforms. Their ubiquity grows across the Public Service - Gartner forecasts worldwide public cloud spending to increase.

Other emerging advanced technologies, such as Artificial Intelligence and Extended Reality, collect, store, rely upon, and produce even greater amounts of internal and external data.

Some of that data is integral to the application's functions; other data may be tracked passively (i.e. biometric data), actively, or by happenstance. Stores of such vast amounts of data, like the Phoenix system, are vulnerable to numerous and massive security breaches and privacy violations.



Points to Ponder

- ① **The Access to Information Act and the Privacy Act provide the public with a means to access government records. Will the public have access to data generated from new technologies?**
 - a How will such a large volume of data be made accessible to the public?
 - b How will those acts apply when the data collected from VR, for example, is intimately connected to the individual public servant (i.e. personal physical and verbal expressions as data points in VR)?
 - c How will information collected or created by AI and XR be classified or protected?

- ② **What privacy and security risks do advanced technologies generate and how will the Public Service prevent and mitigate those vulnerabilities without compromising the utility of the technologies?**

- ③ **What will be the government's approach to supporting new technologies? Will it take the role(s) of innovator, creator, investor, partner, or consumer?**
 - a What will hasten or hinder the rate of technological adoption and uptake within the organization?



Critical Uncertainty 4: How will remote-work environments affect accessibility, bias, discrimination, and abuse in the workplace?

Unpacking the Uncertainty

[Virtual] Office Space

Platforms like Virbella are recreating the office experience in a virtual world.

Source: Virbella: A Virtual World for Work, Education & Events

Remote working has liberated many employees from the decades-old challenges of working in office. Many now feel safer and freer working from home. Racialized employees, for example, reported a decrease in micro-aggressive experiences typically occurring in-person.

People with disabilities or those who experience other challenges commuting or working in-office also face fewer barriers than before.

At the same time, remote working precipitates a new set of challenges and unforeseen consequences. A dispersed workforce can stratify employees in new ways - differentiating the in-office worker from the remote one or making employees feel guilty or indebted for working out of office.

Dependence upon virtual interpersonal connections can also lead to different kinds of online prejudice (i.e. Zoom room choice/noise levels, poor internet connections, etc.) and biases (i.e. the “virtually loud” and “virtually quiet” or one’s “online appearance”).



Points to Ponder

🕒 **How can the Public Service ensure equal treatment for employees working remotely and in-office?**

- a What other biases or discriminatory acts might arise as more employees work remotely and teams rely on different forms of communication, interaction, and collaboration?
- b How might “Techism” - like Ableism and Ageism - breed favouritism and prejudice amongst teams and departments?

🕒 **How can managers reconcile legacy leadership styles (i.e. reliance on physical oversight and proximity) with new remote-working relationships?**



Critical Uncertainty 5: How will the introduction of advanced technologies affect accessibility, bias, discrimination, and abuse in the workplace?

Unpacking the Uncertainty

Like remote working, advanced technologies simultaneously protect employees from certain forms of discrimination while exposing them to others.

Extended Reality and Artificial Intelligence can improve equity and accessibility across organizations by enhancing productivity, democratizing workspaces (i.e. more open forms of communication and virtual avatars), blinding hiring and retention processes, and increasing empathy among colleagues.

They also prompt various new forms of abuse and discrimination. Alongside XR's prevalence are new and novel implicit biases, accessibility barriers, and incidents of online “physical”, sexual, and psychological abuse. Systems utilizing AI - and the data feeding it - can also be affected by poor or prejudicial data sets, instructions bias, and other undetected forms of discrimination.

A Mile in My Shoes

A Michigan State University developed a virtual reality application that helps individuals recognize unconscious bias through real-life situations.

Source: Virtual reality application supports diversity, equity and inclusion



Points to Ponder

- ① **How will the Public Service review, audit, and ensure fairness in the use of advanced technologies?**
- ① **What will distinguish human work from AI work or that of an algorithm versus that of an employee (i.e. in discrimination disputes or liability claims)?**
 - a How will that affect collective bargaining agreements and hiring practices?
- ① **How will the Public Service provide fair and uniform access to advanced technologies and other necessary tools to communities with limited access to required infrastructure (i.e. high bandwidth, low-latency, highly-reliable internet)?**
- ① **How will the use of virtual platforms (i.e. new environments, unique avatars and anonymous identifiers) affect traditional dynamics between colleagues, management and staff, and recruiters and prospective employees?**
- ① **What training will be required to safeguard employees from the dangers and misuses of advanced technologies?**
 - a How will the Public Service control and monitor discrimination and harassment in virtual settings?



Critical Uncertainty 6: How will remote working in the long-term affect employees' productivity and wellbeing?

The Unpacking

Remote work and its accompanying array of new technologies has blurred the line dividing home and workplace. Disconnecting from work and moderating personal and employer expectations of productivity is becoming more difficult.

Zoom Fatigue

Professor Jeremy Bailenson from the Stanford Virtual Human Interaction Lab highlighted four reasons for video chat fatigue:

1. **High Intensity:** we experience excessive eye contact up close.
2. **Ego Exhaustion:** we see ourselves constantly in real-time.
3. **Immobility:** we move less.
4. **High Cognitive Load:** being "on camera" is more demanding than in-person interactions.

Some people find themselves working more hours than when they worked in-office - public servant supervisors reported a significantly higher level of stress from overtime and long work hours. Others move less or experience new forms of mental exhaustion emphasizing the varying positive and negative effects new ways of working create.

Source: Four causes for 'Zoom fatigue' and their solutions



Points to Ponder

⦿ **How will the Public Service discern wellbeing amongst different demographics and positions and ensure an equitable work-life balance?**

- a Does remote work benefit all employees equitably?
- b How can the Public Service monitor employees' health while transitioning to new ways of working?

⦿ **What will be the Public Service's criteria for a successful remote-working situation (i.e. productivity versus employee experience versus leadership experience versus spending/savings, etc.)?**

ESDC's Future of Work Roadmap provides a 'flexible work model' to public servants wishing to work from a variety of spaces. It suggests considering the principles Connect, Create, and Celebrate when choosing to head to the office or not.

Source: ESDC's Future of Work Roadmap

⦿ **How will remote work affect the natural human interactions that boost a team's morale and cooperability (i.e. rituals, bonding, support, mentoring, informal exchanges, etc.)?**

⦿ **What policies will help or hinder the promotion of a healthy work-life balance for a diverse workforce?**



- ① **How will Occupational Health and Safety (“OHS”) policies and practices adapt to advanced technologies and non-traditional work environments (i.e. XR chronic injuries, inappropriate AI outputs, etc.)?**



Critical Uncertainty 7: How will job descriptions and classifications reflect changes in technological skills and proficiencies?

The Unpacking

The private sector has leveraged Artificial Intelligence to save enterprises time and resources. The Public Service could use similar tools to automate and optimize routine processes, separate rote/lower-value work from complex/higher-value work, and, generally, support employees and leadership.

As the nature of work changes, essential qualifications and assets will have to be adapted to reflect job tasks. Job classifications may change, become redundant, or disappear altogether as technologies surpass human capabilities. Recruiters may need to change their processes and profiles to reflect the new ways of working (i.e. Microsoft Office competencies are “new” but, may, become “old” soon).

Automating Our Time

Alberta Health Services automated 16 “hated [by employees]” processes freeing up 20,000 annualized hours (or the capacity of 22 full-time employees) in just 15 months.

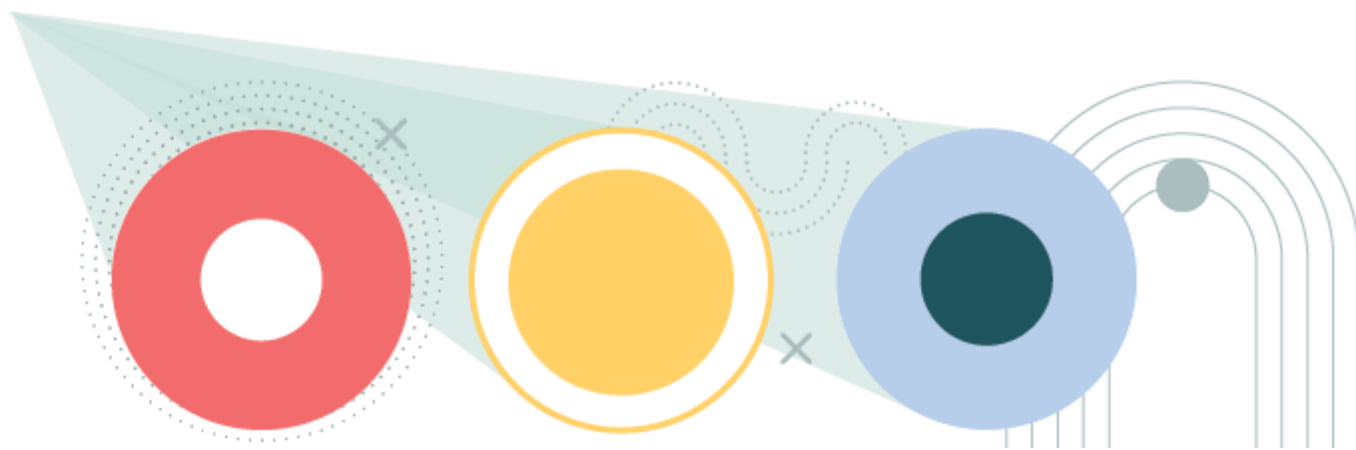
Source: Canadian public sector organisations drive efficiencies and boost creativity through intelligent automation



Points to Ponder

- ⦿ How could job unbundling and an increase in gig work in the Canadian economy lead to shifts in the skillsets of individuals in the workforce?
- ⦿ What are strategies to prevent employee resistance to adopting and using new technology, tools, and ways of working?
- ⦿ How will unions react to radically new job profiles, the automation of tasks, and resulting sudden redundancies in human work (i.e. the rise of natural language processing and translation technologies)?





Next Steps

Next Steps for HRI

The Public Service is certain to undergo substantial change in the coming decades. How those changes will occur and what their implications might be remains uncertain. Some may be slow and minor; others fast and radical.

This report highlighted some potential changes and challenged readers to consider how their assumptions about the future and their current ways of working might be affected. What this report did not provide, however, is an in-depth look at what these alternative futures might actually look like.

Scenarios tell the ultimate story - through various forms of media - of a Strategic Foresight project. They help people, who lack a big imagination or doubt a project's findings, more tangibly envision alternative futures and reflect on their implications.



Following this report, HRI intends on developing scenarios to consider, in greater detail, how the Vulnerable Assumptions, alternative futures, and Critical Uncertainties interact in the future.

Next Steps for You

In the meantime, HRI encourages other teams to apply this report's findings to their own work. One useful - and painless – way to do this is through Wind Tunneling.

Wind Tunneling “stress tests” strategies, policies, and programs (“policies”) by placing them in different hypothetical scenarios - or, in this report's case, Critical Uncertainties and alternative futures.

Wind Tunneling Origins

Traditional Wind Tunneling is used in aircraft design to observe how models fly under various weather conditions scenarios (i.e. different winds and air pressures).


Source: What Are Wind Tunnels?

The goal is to observe policies' performances under a diversity of extreme conditions. Wind Tunneling challenges the assumptions used to create policies (i.e. Planning Fallacy) and assesses their flexibility and adaptability when facing unanticipated circumstances.







Wind Tunneling Example

To keep the exercise simple, use the aforementioned Dator's Four Futures as your four scenarios (see below).



A diagram showing a red airplane inside a blue wind tunnel with air flow indicated by arrows.

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Strategy 1 	✓	✓	✓	✓
Strategy 2 	✗	✗	✓	✗
Strategy 3 	✗	✓	✗	✓
Strategy 4 	✓	✓	✗	✓

Source: From Scenarios to Strategy: Top Three Methods

Then take your policy - and a Vulnerable Assumption if it's relevant to your work - and examine its success, or failure, in the various scenarios like the following example demonstrates.



Example

One of our HRI priorities is: “model and support a matrix management approach”.

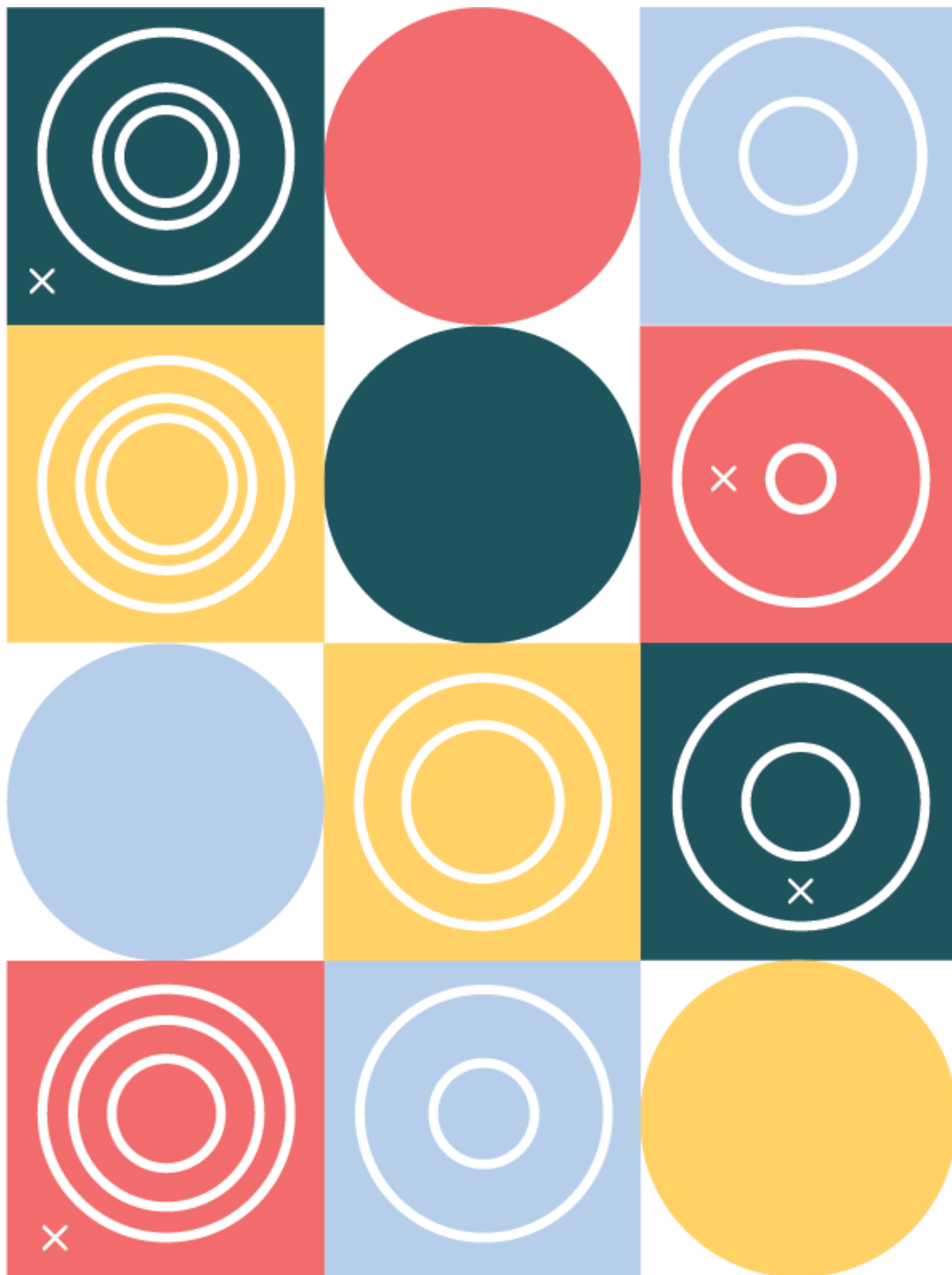
If we take that priority and pair it with one of the report’s Vulnerable Assumptions - “The Public Service will rely on traditional hiring methods to attract and leverage talent” - we can see how the priority performs by running them through the Four Futures framework.

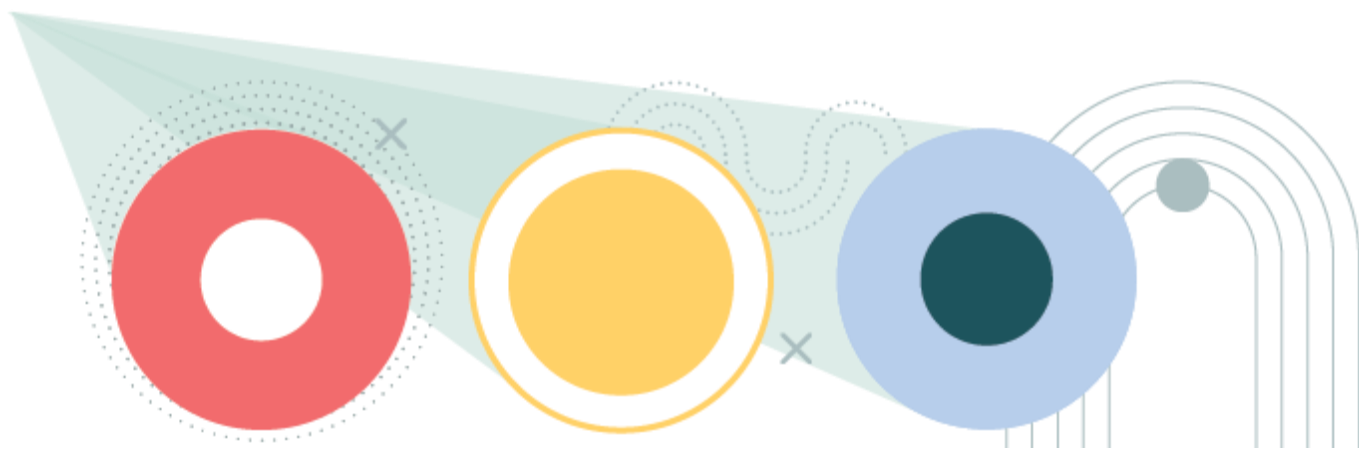
Vulnerable Assumption: “The Public Service will rely on traditional hiring methods to attract and leverage talent”

Priority	Collapse	Constraint	Continuation	Transformation
Model and Support Matrix Management	Public service shrinks to basic service delivery functions. HRI’s resources for “innovation” are drastically reduced and traditional ways of doing things enforced.	Diminished talent pools limit candidates. HRI’s new hirees are unable to sustain or fulfill a matrix network’s potential.	HRI’s matrix persists, but fails to inspire new ways of working within the Public Service as hiring practices remain challenging.	HRI’s matrix example inspires others and spans branches, ministries, and governments. Recruitment and retention processes are made more user-friendly.

The Four Futures broadly reveal the priority’s weaknesses and strengths when relying on that assumption. A greater in-depth analysis can also pinpoint a policy’s limitations or opportunities in these different scenarios.







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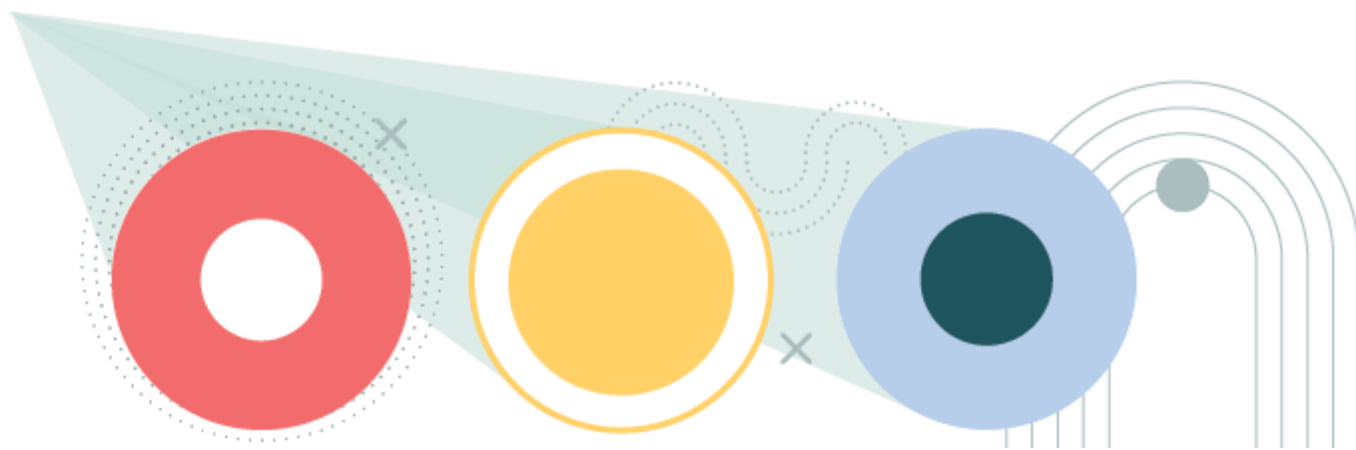


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Futures References

Learn more about Strategic Foresight and its methodologies with the following resources online.

🕒 **Policy Horizons Canada: Resources**

Policy Horizons Canada shares its foresight process for public service in easy to understand modules.

🕒 **Foresight University: The Foresight Guide**

This online book is a comprehensive intro to general futures thinking and professional foresight practice (by Foresight University).

🕒 **United Kingdom's Government Office for Science: The Futures Toolkit: Tools for Futures Thinking and Foresight across UK Government**

A futures toolkit with design and facilitation steps of various foresight tools and methods.



📍 **United Kingdom's Government Office for Science: Features of effective systemic foresight in governments around the world**

A report by School Of International Futures containing case studies of how some countries integrate foresight in a comprehensive way across policy-making.

📍 **Institute for the Future: Featured Projects**

Some featured foresight projects by IFTF.

📍 **Association of Professional Futurist: Compass Magazine**

Compass magazine shares diverse voices of professional futures from around the worlds and provides a platform for futurists to share their insights.

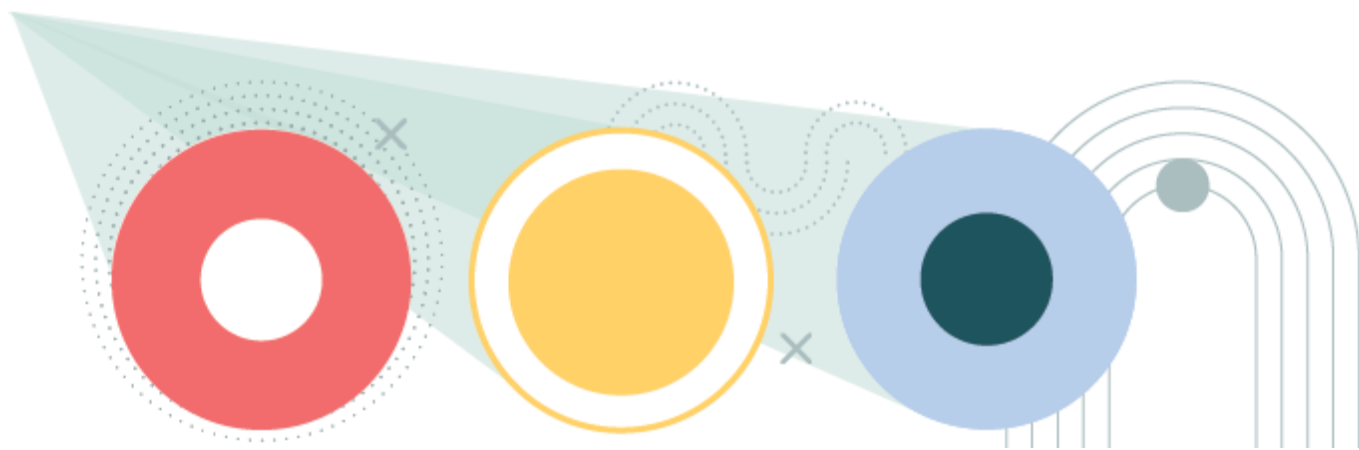
📍 **Association of Professional Futurists: Member Podcasts**

Foresight related podcasts by APF members.

📍 **Global Business Network Kees van der Heijden: Scenarios, Strategy, and the Strategy Process**

Professor Kees van der Heijden's discussion on the use of scenarios in strategy and introduction to the use of the wind tunneling process.





Appendices

Appendix A: Project Process

HRI and Horizons presented their respective research to dozens of employees from ESDC and other departments (i.e. Real Property from Public Services and Procurement Canada) in a series of workshops held in February and March 2022.

Participants were asked to think about the research and explore its potential implications.

ESDC in Full Force

ESDC teams involved in the workshops included:

- Human Resources Strategic Branch
 - Policy and Programs
 - Learning Service Delivery
 - Workforce Strategies
 - Classification and Organizational Design
 - Executive group services
 - HR Service Centre
 - Future of Work Secretariat
 - Strategic Management Services.
- Innovation and Information Technology Branch
- Skills and Employment Branch
- Learning Branch
- Service Canada
- Labour Program
- Various ESDC employee networks.



Appendix B: Establishing a Domain Map

Domain Maps are foundational elements of a Strategic Foresight project. They reveal, broadly, the space and boundaries of the study.

Horizons and HRI conducted domain mapping exercises and outlined three important components of the human resources system in the public service:

- A. Employee Experience
- B. Organizational Culture and Management
- C. Technology, Physical Infrastructure, and Environment

The Domain Map was circulated to several stakeholders for validation and then sent to all participants prior to the workshops.



Appendix C: Workshops

HRI and Horizons hosted four separate workshops and asked participants to address the following:

1. What is the “expected” future of work at ESDC?
 - A. What common assumptions does ESDC/Public Service hold regarding this “expected future” considering the three identified components of the HR system:
 - i. Employee Experience
 - ii. Organizational Culture and Management
 - iii. Technology, Physical Infrastructure, and Environment?
2. How might the Change Drivers (AI, XR, and Remote Work) challenge those assumptions and create alternative futures?
3. What opportunities or challenges might these different futures present to the ESDC/Public Services’ future ways of working?



