CCI

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Buying Ideas

Procuring Public Sector Innovation in Canada

A POLICY REPORT BY THE COUNCIL OF CANADIAN INNOVATORS

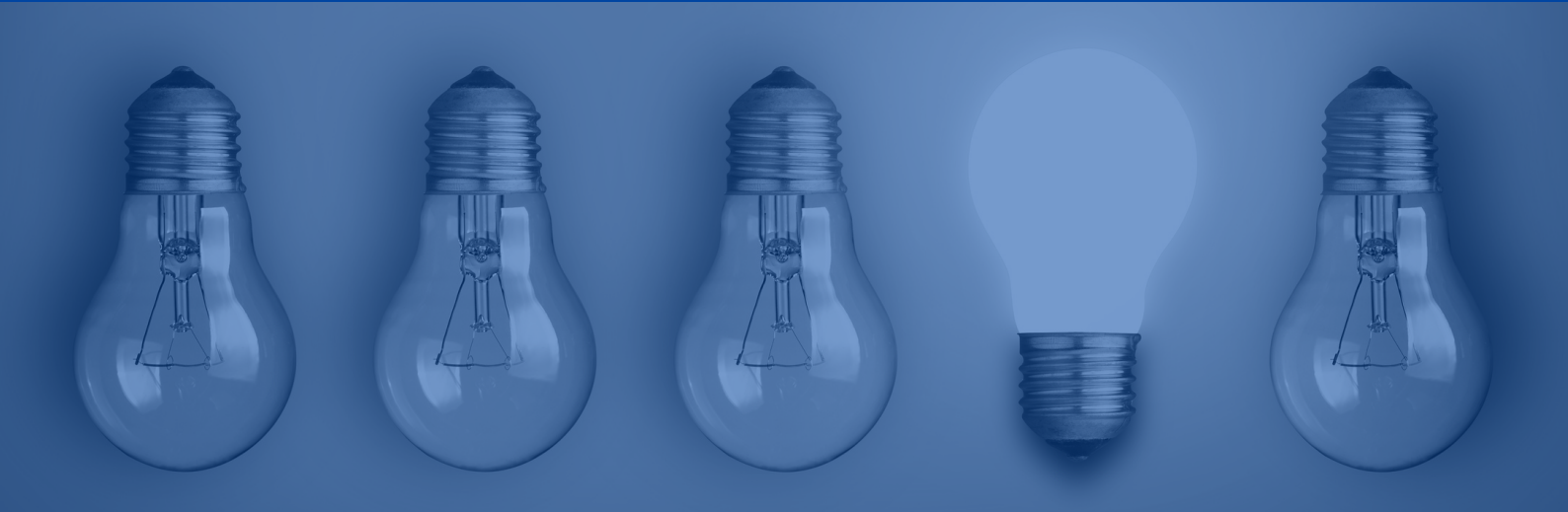

Table of Contents

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Buying Ideas is hard –
but the status quo
has a price.

Executive Summary

It's difficult to overstate just how much money Canadian governments spend buying stuff. Procurement amounted to 14.6% of Canada's GDP in 2021; this is hundreds of billions of dollars, and a meaningful force that shapes our economy.

So when Canadian governments do a poor job of buying innovative technologies and cutting-edge digital services, that significantly undermines our innovation economy. And when the government disproportionately relies on large foreign technology service providers to offer sub-par solutions, that impacts Canadian companies' ability to compete and succeed globally.

The fact is that the current culture of government procurement — both federally and provincially — is not serving the Canadian economy, and it is not serving the government's own purposes. A recent Auditor General report found that about a third of the 1,480 mission-critical government digital applications are rated to be in poor health.

With high-profile procurement scandals like the Phoenix payroll system and various misadventures with marquee military procurement contracts, the state of affairs can seem hopeless. But the reality is that we can study and diagnose the source of our problems, and come up with tangible steps to improve our outcomes.

Government's procurement failures fall into a few key categories:

- Overspecification at the outset of a procurement process, and a lack of ongoing dialogue with vendors who may be able to innovate to better meet government's needs
- Long and cumbersome procurement processes that discourage nimble innovators to invest time and effort for an uncertain outcome that may take months or years to fully play out
- Lack of in-house capacity and expertise among public servants to meaningfully engage with vendors
- Institutional culture and career incentives which create a risk averse culture that steers government buyers towards the "safe" choice

Looking around internationally, we can see examples of how to do things better. In the United States, the Small Business Innovation Research program has a long history of success. In the 2000s, the United Kingdom pioneered the Forward Commitment Procurement model which has been adopted around the world. In Finland, a network of agencies have created an ecosystem for government procurement that routinely leads the European Union.

While no one can simply snap their fingers and fix Canadian procurement with a single agency or a policy change, we can learn lessons from all of these countries. We can imagine policies which bend the curve, score tangible wins for government innovation procurement, and create a culture of success that we can build on.

As a first step, CCI has a suite of 6 recommendations that Canadian government leaders can implement today.

1. Create a Small and Medium Enterprise Procurement Target

2. Create a Framework for Forward Commitment Procurement

3. Develop and Recognize an Innovation Procurement Standard

4. Prioritize Commercialization in Procurement Programming

5. Empower the Industrial Research Assistance Program to drive Innovative Procurement

6. Create a Federal Procurement Concierge

The stakes are high. Public procurement of innovation is an important lever on Canada's innovation performance and contributes to correcting our historic innovation underperformance. More than a quarter of all government spending goes to buying goods and services. We should want that spending to create real value for the public.

About CCI

The Council of Canadian Innovators is a national member-based organization reshaping how governments across Canada think about innovation policy, and supporting homegrown scale-ups to drive prosperity.

Established in 2015, CCI represents and works with over 150 of Canada's fastest-growing technology companies. Our members are the CEOs, founders, and top senior executives behind some of Canada's most successful 'scale-up' companies. All our members are job and wealth creators, investors, philanthropists, and experts in their fields of healthtech, cleantech, fintech, cybersecurity, AI and digital transformation. Companies in our portfolio are market leaders in their verticals, commercialize their technologies in over 190 countries, and generate between $10M - $750M in annual recurring revenue. We advocate on their behalf for government strategies that increase their access to skilled talent, strategic capital, and new customers, as well as expanded freedom to operate for their global pursuits of scale.

Learn more about our members and our initiatives at www.canadianinnovators.org.

Introduction

Modern governments deliver services, develop policies, tax and spend. To support all of the countless activities of the modern state and needs of the public servants who staff it, governments also buy. They buy staplers, chairs, computers, as well as guns, tanks, jet fighters, and ships. And they buy software and digital services of all kinds, from office software to cutting-edge cybersecurity services.

Across all levels of government in 2021, procurement amounted to 14.6% of Canada's GDP. Typically procurement amounts to more than a quarter of all public sector spending.[1] In a time of rising interest rates, when governments are trying to reduce deficits and operate as efficiently as possible, how well they spend procurement dollars is a pressing matter of public interest.

Long experience has taught governments to buy office supplies efficiently and fairly, but Canadian governments have run into serious problems in defence and digital procurement over the years – including troubled high-profile, high-dollar projects like the Phoenix pay system[2] and the Canadian surface ship program.[3] A recent report from the Auditor General of Canada found that two thirds of all government IT applications were in poor health, including many "mission critical" applications critical to health, safety, security and the economic well-being of Canadians.[4]

Canadian governments especially struggle to buy innovative, novel products and services, and Canada has a long-standing innovation problem. Canadian businesses spend less on R&D as a percentage of GDP than Portuguese businesses, and as a country we are often slow to adopt new technologies. Low rates of business expenditure on research and development (BERD) have contributed to stagnating productivity and lower national wealth.[5] This is a public policy problem, not a failure of entrepreneurship. For generations, governments have focused on supply-side science and innovation policy in the form of research funding, and this approach has not managed to close the innovation gap between Canada and leading advanced economies.[6] In its 2017 Skills and Innovation Plan, the Government of Canada aimed to double the number of high-growth Canadian firms from 14,000 to 28,000. In 2020, however, Canada had taken a step back, recording only 10,700 high-growth enterprises.[7] A purely supply-side innovation policy suite has not worked. Policymakers have under-examined our considerable public sector procurement spend as an opportunity to create demand-side pull for innovation.

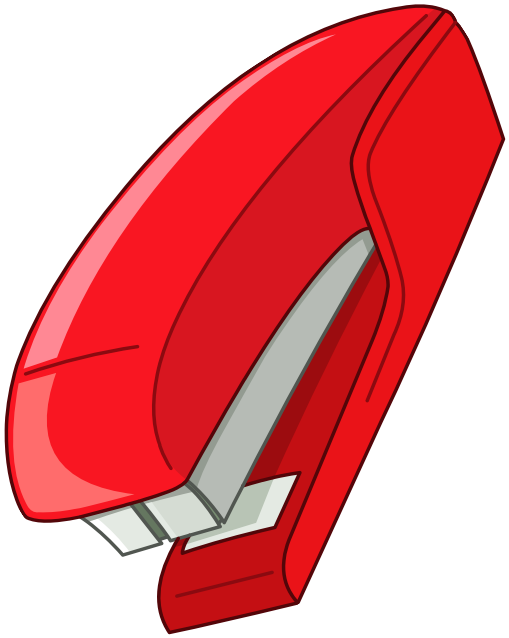
Beyond the macroeconomic implications of better innovation procurement, public servants want tools that help them do their jobs better. Canada's most innovative scale-up technology firms want to contribute their expertise and ideas to solving public problems. All too often, however, they run into significant barriers and opt out of selling to Canadian governments, even while continuing to sell abroad. To take the fast-growing cybersecurity sector as an example, Canadian firms sell three times as much to governments abroad as they do to public sector clients within Canada.[8]

Buying ideas is harder than buying staplers, but other countries manage. How can we do it better?

This CCI Innovation Policy Report will define some of the key issues around innovation procurement, outline the challenges innovators face in selling to government, and identify reforms based on international best practices and the experiences of Canada's most innovative companies.

[1] OECD National Accounts Statistics, https://www.oecd-ilibrary.org/sites/18dc0c2d-en/index.html?itemId=/content/component/18dc0c2d-en.
[2] See e.g., Auditor General of Canada, "Report 1 – Phoenix Pay Problems," 2017 Fall Reports of the Auditor General of Canada to the Parliament of Canada, https://www.oag-bvg.gc.ca/internet/English/parl_oag_201711_01_e_42666.html.
[3] See e.g. Parliamentary Budget Officer, The Cost of Canada's Surface Combatants: 2021 Update and Options Analysis, February 21, 2021, https://distribution-a617274656661637473.pbo-dpb.ca/b2559c27bdd1bb8703d979c8a3dafc7ad10460acdd7d3b87c223e1b58bd09018.
[4] Auditor General of Canada, "Report 7 – Modernizing Information Technology Systems," Office of the Auditor General of Canada, October 2023, https://www.oag-bvg.gc.ca/internet/docs/parl_oag_202310_07_e.pdf, iv.
[5] OECD.Stat, "Main Science and Technology Indicators: BERD as a percentage of GDP," https://stats.oecd.org/Index.aspx?DataSetCode=BERD_STIO and Jonathan Deslauriers and Robert Gagné, "The low productivity of Canadian companies threatens our living standards," Policy Options, Institute for Research on Public Policy, April 17 2023, https://policyoptions.irpp.org/magazines/april-2023/the-low-productivity-of-canadian-companies-threatens-our-living-standards/.
[6] Jakob Edler, "A Costly Gap: The Neglect of the Demand Side in Canadian Innovation Policy, IRPP Insight, Institute for Research on Public Policy, May 2019, no. 28, p. 2.
[7] Steven Denney et al., "Do Winners Pick Government? How scale-up experience shapes entrepreneurs' assessments of innovation policy mixes," Science and Public Policy 2023, p. 4.
[8] Howard Solomon, "Canada's allies buy more Canadian cybersecurity products than Ottawa does, parliament told," IT World Canada, March 13, 2023, https://www.itworldcanada.com/article/canadas-allies-buy-more-cybersecurity-products-than-ottawa-does-parliament-told/532412.

What's the difference between an idea and a stapler?



To change how the public sector buys ideas from the private sector, advocates first have to answer three very difficult questions:

1. **What exactly is the difference between an idea and a stapler?**
2. **Why is it important to buy ideas well?**
3. **Why is government good at buying the former and bad at buying the latter?**

A stapler is a solution to a defined problem whose dimensions are very well understood. Government buying processes are perfect for buying staplers and things like staplers: departments define their needs in great detail, and sellers submit documentation demonstrating that their product meets the requirements at the lowest cost to the public purse. Buyers carefully peruse the options, score them on several metrics, and make their choice.

Ideas, in the form of software and other services or novel physical devices, are harder to pin down. Public servants might face a problem and think, "It would be nice if a solution to this existed," and look to the private sector for it. However, the procurement process as it exists is not well-equipped to guide these kinds of projects from inception through development to deployment.

This is a major failing. Governments, by their nature, have to deal with any number of unsolved, thorny problems that other organizations don't deal with.

Canadian governments are large and complex organizations, but they do not have the in-house expertise or the mandate to undertake a bespoke process of producing innovative products or services. To take software as an example, of the approximately 17,000 IT professionals who work in the government of Canada, few are software developers, and their ranks thin out even more among senior job classifications.[9]

As a result, usually the best option for government is to procure solutions.

Commonly in Canada, governments use a 'waterfall' approach to procurement, where design is done all at once at the outset, and this is captured in a scope-of-problem definition. But this approach has long been identified as a problematic way of operating, and other governments around the world often avoid this kind of process. Because the scope needs to be defined ahead of time, they are inflexible and do not account for emergent problems. This approach also leads to 'gold-plating' projects with every requirement that might be needed in anticipation of potential challenges. With onerous requirements comes an elevated chance of

[9] Sean Boots, "Why are there so few senior developers in government?", May 26, 2020, https://sboots.ca/2020/05/26/why-are-there-so-few-senior-developers-in-government/.

failure. Software projects with budgets over $10 million succeed on time and on budget only 8% of the time, while smaller projects – those under $1 million – succeed 70% of the time.[10]

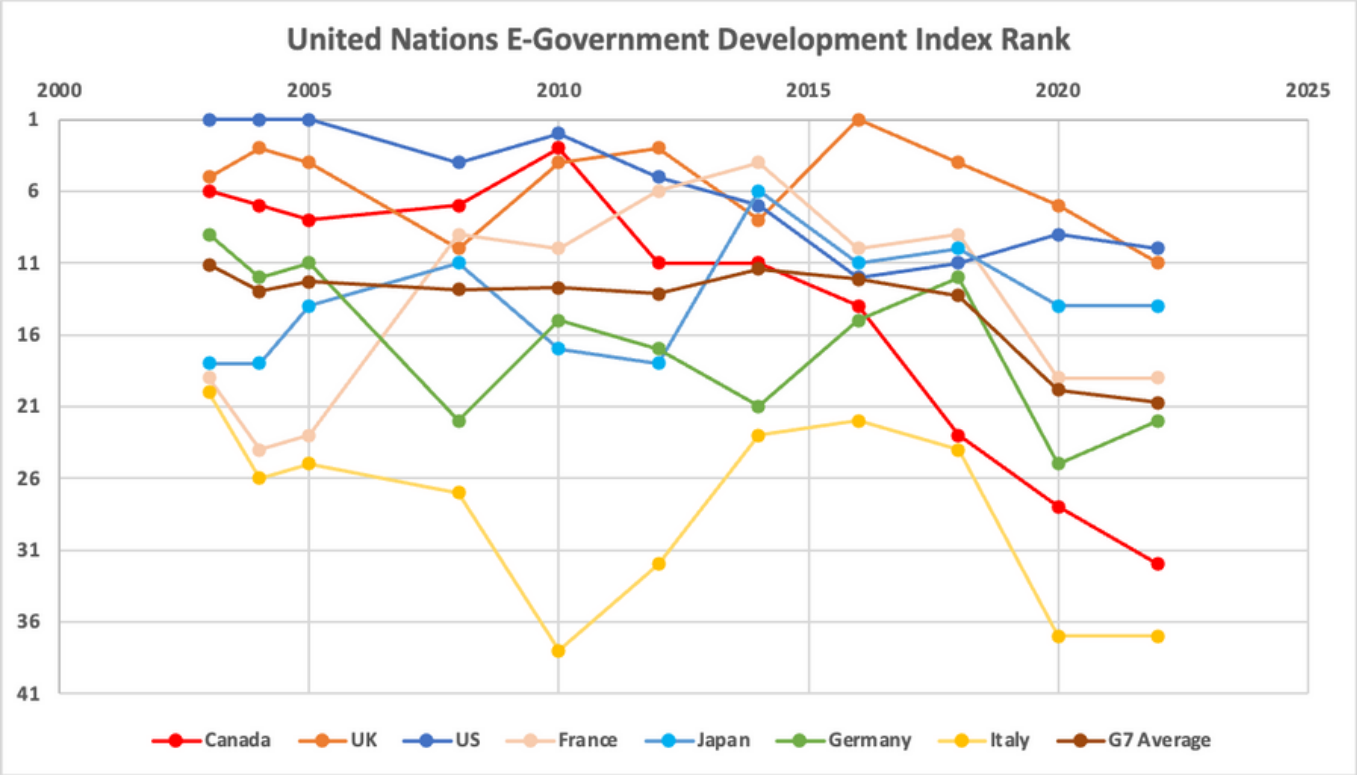
Shrinking projects down and embracing iterative development methods has been important to making routine software procurement more successful. Following a 2011 report from the UK Parliament's Public Administration Committee – provocatively titled "Government and IT: A Recipe for Rip-offs" – new scope and cost management practices have successfully saved their government $2.3 billion over five years.[11]

Federal government IT procurement spending has grown from $3.5 billion to $4.5 billion from 2018 to 2022.[12] Despite that, Canada's governments have slipped behind many of their peers on digital maturity. In 2003, Canada was ranked 6th in the UN's E-Government Development Index, but slid down to 32nd in 2022, losing ground where peer countries have either improved or maintained strong positions.[13] The only G7 country to rank lower is Italy, at 37th.

It's interesting to note that our lack of progress is partially a product of our early success. Canada put into place many key systems in the early internet era, but these legacy systems have aged poorly and stymied the emergence of more modern approaches to digital government.[14] Public servants are acutely aware of this, with 62% indicating in a survey that unreliable technology affects the quality of their work.[15]

For routine enterprise software needs, there is a strong consensus that reforms aiming to shrink projects down, develop in-house expertise, avoid vendor lock-in and embrace agile development would solve many problems. But for the procurement of genuinely innovative products and services, this likely won't be enough.

There is a need for culture change to address barriers to industry participation in procurement processes, and public servants need the right tools for government to confidently buy new ideas that can make a difference to how government serves Canadians. A new approach to buying ideas could also have a serious impact on Canada's historically poor performance in the innovation economy.



[10] Amanda Clarke and Sean Boots, "A Guide to Reforming Information Technology Procurement in the Government of Canada," House of Commons Standing Committee on Government Operations, October 2022, https://www.ourcommons.ca/Content/Committee/441/OGGO/Brief/BR12052189/br-external/ClarkeAmanda-GuideToReformingInformationTechnologyProcurementInTheGovernmentOfCanada-e.pdf, p. 3.
[11] House of Commons Select Committee on Public Administration, Twelfth Report, "Government and IT- 'A Recipe for Rip-Offs': Time for a New Approach," July 18, 2011; Clarke and Boots, "Guide," p. 6.
[12] Carleton School of Public Policy and Administration, "Government of Canada Contract Analysis," https://govcanadacontracts.ca/.
[13] Creig Lamb, D. Munro and V. Vu, Byte-Sized Progress: Assessing Digital Transformation in the Government of Canada, The Dais, 2023, https://dais.ca/wp-content/uploads/2023/09/Byte-Sized-Progress-FINAL.pdf, p. 7, and UN E-Government Knowledgebase, Data Center, https://publicadministration.un.org/egovkb/Data-Center.
[14] Amanda Clarke, Opening the Government of Canada, UBC Press, 2019, pp. 19-20.
[15] Lamb, Munro and Vu, Byte-Sized Progress, p. 8.

How does the government buy?

While details of the procurement process vary from place to place, the process is fairly common:

Needs Identification and Definition: Procurement typically begins with identification of a need. In the Canadian context, this often translates to public sector bodies recognizing a gap or requirement for a specific project, service, or good. Consultations with internal stakeholders including technical experts, policy makers, or front-line workers, help to refine the exact specifications and scope.

Budgeting and Financial Approval: With the need clearly defined, the next step is to secure resources. In Canada, this means navigating the multi-tiered budgetary approval process. Departments may need to solicit approval from Treasury Boards or similar financial oversight bodies, ensuring alignment with fiscal policies and constraints.

Development of Procurement Documents: Once departments have secured approval, the drafting phase begins. In Canada, this can involve generating tender documents, Requests for Proposals (RFPs), or other similar solicitations. These documents, which are often made available on platforms like Canada Buys or provincial equivalents, detail the project's requirements, evaluation metrics, terms, and conditions.

Supplier Outreach and Bidding: Canadian governments emphasize transparency and fairness. Procurement solicitations are publicly advertised to ensure that a broad pool of potential suppliers have the opportunity to bid. This phase aims to ensure the government is able to draw on a wide pool of bidders to ensure low cost.

Evaluation and Award: Post-bidding, proposals undergo a thorough evaluation. In Canada, this assessment is based on the criteria specified in the RFPs, ensuring a fair and transparent selection process. Once the evaluation concludes, the contract is awarded to the most suitable candidate, adhering to both value-for-money and quality-of-service principles.

Contract Management and Delivery: Upon awarding, the Canadian public sector's focus pivots to ensuring timely and quality delivery. Oversight mechanisms, often rigorous, are in place to ensure vendors adhere to contractual terms and deliver as promised.

Review and Feedback: After contract fulfillment, the Canadian government typically conducts a post-project review. This evaluation, often involving feedback from various stakeholders, helps refine and optimize future procurement endeavours.

Why is it important to be good at buying ideas?

Buying ideas through a more agile, modern procurement system would have positive impacts for both government and industry.

Getting digital procurement right would empower public servants to get the tools they need to do their jobs more effectively and save money through more efficient operations in critical public services like health care. Procurement of innovation more broadly can also be a powerful tool of economic development and industrial growth. Companies that successfully sell to governments send an extremely valuable signal to the rest of the market, one that helps attract new customers and orders and can have profound impacts on innovation in entire fields of emerging technology.

The paradigmatic example is the role of the United States Department of Defence as an early customer of American aircraft manufacturers[16] as well as semiconductor and computer firms.[17] Finland was a farsighted public buyer in telecom, and this became an important factor in the development of Nokia as a globally competitive innovator in telecommunications equipment. The same can be said of the Swedish telecommunications authority and Ericsson.[18]

More recent empirical research on suites of policies in Europe have demonstrated links between public procurement of innovation (PPI) measures, reported innovation outcomes and firm success.[19] Some research even shows stronger innovation impacts from procurement compared to grants and tax credits.[20] Other research indicates that PPI policy design is critically important: overcoming the inertia and other barriers that characterize traditional procurement and bringing the cultures of government and innovative businesses into sync is key to success.

Supply-side policies like tax credits and subsidized research lower the cost of research and development inputs, while well-designed demand-side measures de-risk genuinely innovative activity and increase the reward for successful innovations.[21] Given that Canada's historic weakness in innovation is not in science and research inputs, governments should explore demand-side measures further. But getting design right to overcome the principal challenges of culture and policy that innovators currently face in selling to governments is key.

[16] Claudia Ghisetti, "Demand-pull and environmental innovations: Estimating the effects of innovative public procurement," Technological Forecasting and Social Change 125 (2017), p. 179.
[17] Paul Ceruzzi, Computing: A Concise History, MIT Press, 2012, pp. 55-56.
[18] Christopher Palmberg, "Public technology procurement in the Finnish telecommunications industry," European Commission Targeted Socio-Economic Research program, March 1998, pp. 5-6; Pierre Bitard, Charles Edquist, Leif Hommen and Annika Rickne, "Reconsidering the paradox of high R&D input and low innovation: Sweden," in Charles Edquist and Leif Hommen, eds., Small Country Innovation Systems: Globalization, Change and Policy in Asia and Europe (Cheltenham: Edward Elgar, 2008), 266.
[19] See e.g. Birgit Aschhoff and Wolfgang Sofka, "Innovation on Demand – Can Public Procurement Drive Market Success of Innovations," Centre for European Economic Research, 2009, Discussion Paper No. 08-052, 17; Silvia Appelt and Fernando Galindo-Rueda, "Measuring the Link between Public Procurement and Innovation," OECD Science, Technology and Industry Working Papers, 2016, 7; Claudia Ghisetti, "Demand-pull and environmental innovations: estimating the effects of innovative public procurement," Technological Forecasting and Social Change 125 (2017), p. 184; Marci Guerzoni and Emilio Raiteri, "Demand-side vs. supply side technology policies: Hidden treatment and new empirical evidence on the policy mix," Research Policy 44(3), December 2015, p. 19.
[20] Guerzoni and Raiteri, "Demand-side vs. supply side technology policies," 19.
[21] Luke Georghiou, Jakob Edler, Elvira Uyarra and Jillan Yeow, "Policy instruments for public procurement of innovation: Choice, design and assessment." Technological Forecasting and Social Change 86 (2014), p. 10.

What makes it so hard to buy an idea?

Buying ideas is hard for government. This section will dive into five key challenges, exploring their implications for both the public sector and vendors.

To ground this analysis and better understand each problem, over the past year CCI has conducted interviews with leaders at leading high-growth technology companies. These conversations, supplemented by existing research literature, reveal several barriers in the current procurement landscape that impede innovation, flexibility, and access for vendors. Each of these challenges is connected with and compounded by the others to make the procurement ecosystem in Canada very difficult for domestic innovators.

1. Overspecification & Lack of Dialogue
2. Length of Procurement Process
3. Lack of In-House Capacity & Expertise
4. Lack of Commercialization Pathways
5. Risk Aversion

What makes it so hard to buy an idea?

1 Overspecification & Lack of Dialogue

In the Canadian innovation landscape, a significant challenge is the lack of mechanism for direct and ongoing feedback within procurement programs. Governments prioritize process over outcomes in procurement, leading to an adherence to rigid specifications and protocols that stifle open communication.

This environment hampers the dynamism needed for true innovation. Innovations, at their heart, are usually the products of iterative processes built on a continuous cycle of prototyping, testing, and refining technology solutions based on real-world feedback. In procuring innovation, success rests on the end user and vendor working collaboratively throughout the product's development phase to ensure it is not only functional but also user-friendly and capable of evolving in response to changing requirements. Economist and governance expert Mariana Mazzucato emphasizes in her analysis of innovative procurement around the world that this approach is vital to ensuring that the final technology solution precisely aligns with the evolving needs and objectives of public entities.[22]

A recent survey of UK businesses about their experiences with public sector procurement found that 79% identified a lack of interaction with a procuring body as a significant barrier to doing business with government. More than two-thirds of businesses also pointed to overly prescriptive specifications of products and services and the inability to allow variants to the specification as significant barriers. On the other side of the equation, businesses said that when they got early interaction with procurers as well as outcome-based specifications, those factors were significant drivers of innovation.[23]

In Canada, challenge-based procurement programs like Innovative Solutions Canada (ISC), which recently had its funding reduced by over $90M, and Innovation for Defence Excellence and Security (IDEaS), have structural shortcomings that hinder iterative development from occurring. These programs have Q&A functions that participating companies may use, but departments, in the experience of CCI member companies, are hesitant to reveal specific information related to a posted challenge. Innovators have stressed that even when questions are raised related to an issued Request for Proposals (RFP) or Request for Information (RFI), there is often no guarantee of receiving meaningful, actionable answers. This has also been the case for unsuccessful applications. When companies inquire about why they were not successful, procurement officials are often arbitrary and unhelpful. This prevents a useful feedback loop from being established and ultimately impacts the ability of companies to secure approval and develop tailored solutions.

Overly prescriptive disclosure requirements are also a disincentive to pursue innovation. Many key procurement programs require the public disclosure of all inquiries made by companies, creating a dilemma for innovators. While they need to seek clarity to develop effective solutions, having their inquires made public might inadvertently reveal their strategic and technical approaches to addressing challenges, potentially placing them at a competitive disadvantage or revealing trade secrets. This has dissuaded many companies from participating in the procurement process.

[22] Mazzucato, M. (2020). Mission-oriented public procurement: lessons from international examples. UCL Institute for Innovation and Public Purpose, Policy Report, (IIPP WP 2020-20). Available at: https://www.ucl.ac.uk/bartlett/public-purpose/wp2020-20

[23] Luke Georgiou et al., "Policy instruments for public procurement of innovation," p. 9.

2 Length of Procurement Process

Canada's extended procurement cycles present a significant obstacle for domestic innovators. This challenge is magnified by a series of systemic inefficiencies. Layers of bureaucratic approvals, while individually justifiable, collectively stretch the process beyond timelines that are reasonable for commercial entities.

The Canadian procurement process, as detailed on page 9, is broadly divided into seven phases. Between these phases, vendors can wait for months. Such delays are particularly taxing on the resources of SMEs and start-ups with thin financial safety nets. This protracted inactivity disrupts the continuous dialogue crucial for refining solutions to meet the fluid needs of government bodies. When dialogue halts, innovation falters.

An example of this stagnation occurs in security clearance procedures. Instead of running these clearances alongside the early stages of product development with the vendor, they typically start after much of the development has been completed. Consequently, SMEs and start-ups are forced to suspend their work and wait, incurring unnecessary costs and risking their viability. It is understandable that these clearances demand thorough review and scrutiny, but the failure to parallel-track the assessments with product development creates severe bottlenecks, halting the momentum of innovation.

Lastly, lengthy procurement cycles have effects on investor confidence. Tech sector investors recognize Canada's protracted procurement process, often for the wrong reasons. When domestic tech companies announce their intention to engage with procurement, it elicits caution from potential investors and deters investment. This not only limits financial support for domestic tech ventures but also potentially diminishes the global appeal of Canada's tech landscape.

3 Lack of In-House Capacity & Expertise

Another pressing challenge with Canada's procurement ecosystem is the government's limited in-house technical capacity. Procurement officers and other actors across government are not well-equipped to properly assess innovative solutions within the scope of procurement.

Public procurement of innovation demands a balance of both technical knowledge and business insights. Innovators have found themselves in situations where their cutting-edge solutions, despite being perfectly aligned with public necessities, are sidelined due to gaps in understanding.

This expertise void has resulted in Canadian governments overconcentrating procurement dollars in large, incumbent firms whose main skill is navigating procurement procedures. An analysis of federal government IT procurement contracts reveal that the top 5 vendors received 30% of all IT procurement dollars.[24] From an economic perspective, this means that significant taxpayer funds are being channeled to global firms, sidelining local innovators who have a deep-rooted stake in Canada's progress.

The situation grows murkier when we delve into the tech frameworks governing numerous government departments. They often operate with fragmented and siloed systems, complicating the integration of innovative solutions from domestic technology providers – as mentioned above, a recent Auditor General investigation determined that over 60% of government IT systems are in poor health, including many critical to human health, security and economic well-being.[25]

[24] "Government of Canada Contract analysis," Carleton School of Public Policy and Administration, https://govcanadacontracts.ca/
[25] Auditor General, "Modernizing Information Technology Systems," iv.

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The government's professional development programs are also concerning. As technological advancements continue at an unprecedented pace, limited opportunities for internal upskilling have contributed to procurement issues. This not only widens the gap between innovative domestic solutions and their adoption but also reinforces the cycle of dependency on external expertise.

Addressing these concerns is not merely a matter of hiring and training. Government must cultivate an ethos of continuous learning, equipping the workforce with the latest tools, and recognizing the value of domestic innovation in driving both technological and economic progress.

4 Lack of Commercialization Pathways

In Canada, the government is often narrowly focused on the purchase of an innovative product for its own use, and once the purchase is complete, that is the endpoint. In fact, if the government's technological tools and software platforms are widely used by the marketplace — other governments, institutions, and large private sector enterprises — this has several important benefits. For one thing, it creates obvious economic benefits for the company that created the software. It is also more likely that government systems will be interoperable if the software or technology is widely adopted. And if a software system or technology is widely used, it is more likely that professionals will be familiar with it, and not require specialized training in order to use it in a government context.

Procurement of innovation, at its best, is about more than just buying a product or service. It should be a bridge that takes bright ideas to real-world solutions — products and services that thrive in the marketplace, not just in one specific government application. In Canada, there is a gap in that bridge.

After navigating the complex procurement labyrinth and securing government contracts, companies often face a void where they should find opportunities for expansion. Without a clear path to commercialization, they are unable to scale their innovations, limiting their growth and potential returns. This not only hampers their development but can also discourage future innovation efforts, knowing that government support does not extend beyond initial validation. Consequently, companies are deprived of the chance to realize the full commercial and societal benefits of their products, which could have been amplified by a comprehensive government-backed commercialization strategy.

For the government, this approach is counterproductive. It does not allow for the realization of the return on investment from procurement dollars. By not cultivating a path for commercialization, the government misses out on the economic benefits that come from the widespread market adoption of these innovations, benefits that could far exceed the initial procurement investment.

Ideally, while defining their own needs at the outset of an innovative procurement process, the government would give consideration to broader market needs, and define a flexible system to avoid an overly specific procurement that may have little or no applicability beyond a narrow government context.

5 Risk Aversion

Innovation involves taking risks, trying new ideas, and being open to potential failures in pursuit of transformative successes. Procurement programs aim to avoid risk for the buyer, which is laudable when it comes to buying staplers – but an approach focused on risk minimization is not compatible with pursuing innovation.

Risk aversion is the common denominator with all of the challenges outlined above, manifesting in exhaustive risk assessment frameworks with overly complex tendering processes, heavy bureaucratic documentation requirements, and stringent qualification criteria. Canadian innovators unanimously highlighted a fear of risk as a major issue, and survey research from the UK found that 65% of companies agreed that public sector customers were more risk-averse than their private customers in general and 73% disagreed that public buyers were willing to take risks in procuring innovation.[26]

In general, the fear of discretion and need for accountability in public administration oversight bodies results in the steady growth of new rules. As scholars of public administration have discovered, however, there is a point where the very complexity of interlocking sets of rules actually becomes a source of discretion on the part of officials.[27]

Overcomplicated process and an emphasis on low bids leads to a "winner's curse" wherein the winning bids are more likely to be outliers that have mis-estimated the scope of work. Pre-qualification, a well-intentioned measure to avoid situations like these, has unfortunately ossified, in the experience of innovators, into a system with extremely high front-loaded costs for prospective vendors and an uncompetitive market. If left unaddressed, this approach could undermine the vigor and resilience of Canada's tech sector and innovation performance in the long term.

Procurers are discouraged by culture and capacity and constrained by process to analyze risk holistically. Very little weight is assigned to the opportunity cost of the status quo. In innovation and technology, not taking a step forward can mean falling multiple steps behind.

The status quo in procurement has a price, evident in shortcomings with procurement outcomes and sluggish innovation performance. Government is not alone in shouldering the cost – innovators and the innovation ecosystem pay dearly. For Canada to truly embrace innovation, our institutions must be willing to be flexible.

[26] Luke Georgiou et al., "Policy instruments for public procurement of innovation," p. 8.
[27] Joseph Heath, The Machinery of Government: Public Administration and the Liberal State (Oxford: Oxford University Press, 2020), pp. 262-264.

Public Procurement of Innovation Best Practices

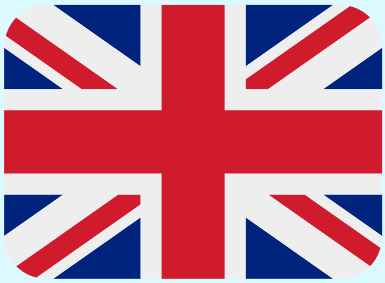
Government procurement of innovative products and services, both as a demand-side innovation policy measure and as a means to solve pressing and practical public sector problems, does not have a single best global practice. Different programs across the world, however, have emerged as practical answers to the challenges identified in Canada.

USA

Small Business Innovation Research (SBIR)

FINLAND

Innovative Public Procurement, Handi and KEINO



UK

Forward Commitment Procurement

Small Business Innovation Research (USA)

The US Small Business Innovation Research (SBIR) program, a venerable program first piloted in the late 1970s and implemented as a full program in the early 1980s, is a workhorse of American demand-side innovation policy. It is a grant-based, pre-commercial procurement program that requires American federal agencies that conduct over $100 million in external research to set aside a portion of their overall R&D spending for small businesses through a competition-based granting system. Around $2.5 billion in SBIR awards are disbursed annually.[28]

Grants are awarded in three subsequent phases. Companies use Phase I grants of $50,000-$275,000 to establish feasibility of a product or service and Phase II grants of $750,000-$1.8 million allow them to continue research and development efforts. The structure of the program also defines Phase III grants oriented around commercialization, but these are not funded by the SBIR programs themselves. Instead, federal entities can enter into sole-source agreements with companies that have successfully completed Phase II projects (and are thus pre-qualified for procurement) to extend the project towards wider commercial uptake both inside and outside of government.

Of course, any program can spend money easily. But SBIR has actually driven important innovation outcomes. 2023 Research from the American National Academies of Sciences found that SBIR-backed companies are three times more likely to have scientific publications and eight times more likely to patent. They are also five times more likely to subsequently attract angel or venture capital (VC) funding and three times more likely to pursue an initial public offering (IPO) or be acquired.[29]

Critical to the program's success is an unusual appetite for risk. SBIR awardee companies are actually more likely to fail compared to their non-awardee counterparts, indicating that federal agencies are taking chances on novel technologies. SBIR awardees are also more widely distributed by economic sector, with biotechnology, hardware and medical devices better represented than in the software-heavy venture capital-funded control group, demonstrating that demand-side government policy can correct for weaknesses in capital markets.[30]

Of funded projects, between 40-70% eventually reach the market, a figure that likely has a baked-in lag based on timing of surveys, and 70% of awardees indicated that the program had a "transformative or strongly positive impact" on their company's overall trajectory.[31] The Department of Defence's SBIR funding alone is estimated to have generated $183 billion in new economic activity between 1995 and 2018 and to have returned $39.4 billion in tax revenues to federal coffers.[32]

SBIR has come a long way from its modest origins as a granting pilot to an impressive demand-side pre-commercial innovation procurement program that generates substantial innovative activity and essentially funds itself through economic returns.

[28] TechLink, "National Economic Impacts from the DOD SBIR/STTR Program, 1995-2018," 2019, p. 7.
[29] National Academies of Sciences, Engineering, and Medicine, Review of the SBIR and STTR Programs at the National Science Foundation (Washington, DC: National Science Foundation), 2023, p. 91.
[30] National Academies, Review, p. 94.
[31] Robin Gaster, "Impacts of the SBIR/STTR Programs: Summary and Analysis," Incumetrics, May 2017, pp. 2-3.
[32] TechLink, "National Economic Impact," p. 39.

Innovative Public Procurement, Handi and KEINO (Finland)

Finland has developed an impressive policy suite around the public procurement of innovation – a 2021 European Commission report ranked it first in the European Union (EU) and as the only strong performer in the Union.[33]

Business Finland is a state agency created in 2018 by merging TEKES, an innovation agency founded in the 1980s with Finpro, an export promotion corporation. It currently houses the Innovative Public Procurement (IPP) program, which is an application-based effort to encourage public sector innovation procurement by covering the costs of public sector entities seeking to buy innovative products or services.

Public sector budgeting is often inflexible, and an external source of funding – particularly in its early stages like needs definition – can substantially de-risk the effort for buyers. IPP funds and advises on projects that build public sector capacity to procure novel innovations. They focus on co-development with vendors, and prioritize innovations that have a reasonable prospect of having a market-opening impact.[34] Evaluations of predecessor program Smart Procurement (operated by TEKES from 2013-2016) found that the program had a serious incentive effect, with no surveyed participants indicating that their project would have gone ahead without support from the agency, as well as positive impacts on network and capacity building across the public sector and with vendors. Participants singled out the value added by TEKES staff advisors as particularly important.[35]

Other initiatives in Finland build on each other to create an interlocking network of expertise and incentives to improve procurement of innovation. These include a mandate to publish needs well ahead of time, an action plan on innovative public procurement emphasizing management, information sharing, skills development and tools to manage risk, and the Competence Centre for Sustainable and Innovative Public Procurement (KEINO) that actively works to build skills and promote a culture of innovation in procurement.[36]

Forward Commitment Procurement (UK)

The United Kingdom pioneered the Forward Commitment Procurement (FCP) model in the mid-2000s as a means to address the lack of environmentally focused innovations on the market hampering the government's ability to meet its own environmental targets. The government's Environmental Innovation Advisory Group perceived the problem not as a classic 'valley of death' problem for innovators (i.e., the peril of moving from a low-cost research phase to a high-cost commercialization phase before earning significant revenues) but instead as a "mountain of risk" in light of the uncertainty of actually achieving revenues through sales.[37] As the government's manual on FCP puts it, solving public problems often requires solutions that don't exist because there might not be a normal market for them – and consequently, governments should make

[33] European Commission, "The strategic use of public procurement for innovation in the digital economy: Final Report," Directorate-General for Communications Networks, Content and Technology, 2021, p. 25.
[34] Business Finland, "Innovative public procurement – Business Finland," Business Finland, https://www.businessfinland.fi/en/for-finnish-customers/services/funding/research-and-development/innovative-public-procurement
[35] Jari Romanainen et al., "Programmes Changing Practices for Innovation: Evaluation of Smart Procurement, Built Environment and Witty City Programmes," Business Finland, 2019, pp. 42-46, 53-54.
[36] European Commission, "Final Report," pp. 307-312.
[37] Gaynor Whyles, Hendrik van Meerveld, and Joram Nauta, "Forward Commitment Procurement: a practical methodology that helps to manage risk in procuring innovative goods and services," Innovation: The European Journal of Social Science Research 28(3), June 2015, p. 4.

Public Procurement of Innovation Best Practices

it clear that they are willing to be a buyer well ahead of when those solutions might be needed.[38]

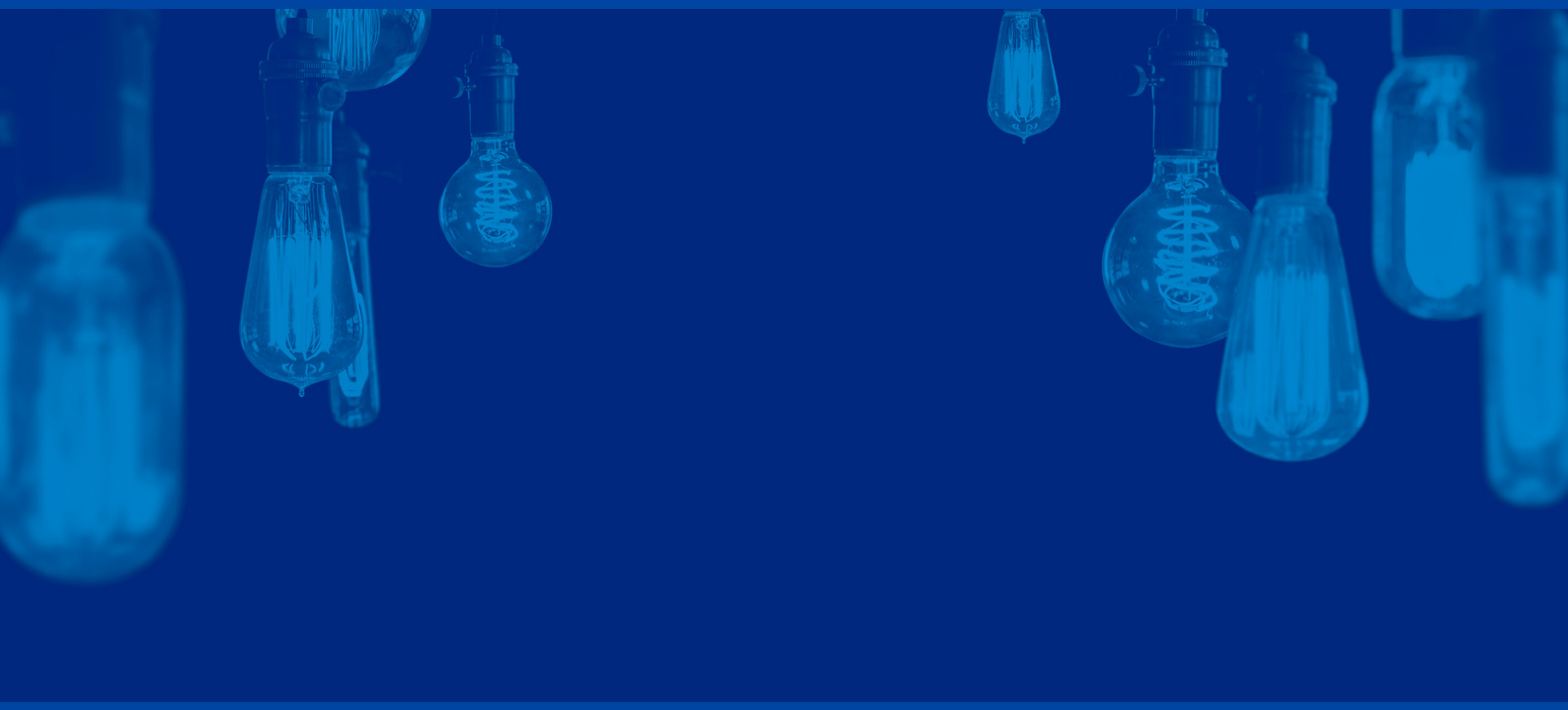
FCP works as both a long-range signal of public sector demand for a solution to a set of problems, as well as an opportunity for early engagement and refinement of potential ideas between vendors and buyers.

The FCP process takes place in three distinct phases. In Phase 1, potential buyers identify and express an identified need as a desired outcome rather than as a granular specification for a product or service. End users and other stakeholders then participate in consultation to refine the desired outcome and ensure that senior leadership understand and support the project.[39]

In Phase 2, the project moves to market engagement to determine if private firms have the capacity to deliver on the buyer's desired outcomes. Interested potential suppliers have an early opportunity to communicate with potential buyers as well as get signals about future public sector priorities. From information gathered during the process of market engagement sounding, the buyer might adjust or refine the scope of their project, and potential vendors can also find channels to cooperate with each other to solve discrete elements of complex problems.[40]

Phase 3 is an open, competitive procurement. Vendors have a very good outline of the problem they are trying to solve, a clear understanding of the future market, and have had the opportunity to assess the fit between their proposed solution and the scope of the project.

FCP projects work because a clear, well-defined process oriented around innovation outcomes reduces the risk of innovation for buyers and the staged approach allows for off-ramps that don't leave departments saddled with troubled projects that are too big to fail. Other countries like the Netherlands have also experimented with the FCP model, with promising results.[41]



[38] Department for Business, Innovation and Skills, "Delivering Best Value Through Innovation: Forward Commitment Procurement, Practical Pathways to Buying Innovative Solutions," HM Government, November 2011, p. 4.
[39] Whyles et al., "Forward Commitment Procurement," pp. 6-7.
[40] Ibid., pp. 7-8.
[41] Ibid., pp. 9-11.

Policy Recommendations

There is no single solution to improving our performance in buying ideas. Instead, governments should begin with a view to tackling the big problems – excessive risk aversion, processes that don't allow for iterative innovation, low capacity and expertise, and a lack of pathways from procurement to the market – and use a variety of policy tools to address them in concert.

Ultimately, governments need to build a culture where empowered public servants are able to look for novel solutions to the problems they face, where innovators are confident that selling innovative products and services to government will be worth their time and help grow their business, and where the public ultimately benefits from more agile, solutions-oriented government.

1

The federal government should create a national procurement agency, or empower an existing agency like the Industrial Research Assistance Program, to operate on the model of Business Finland, which acts as a bridge between government and innovative Canadian companies, fostering procurement of innovation and building capacity across government.

2

Create a Small and Medium Enterprise Procurement Target

3

Create a Framework for Forward Commitment Procurement

4

Develop and Recognize Innovation Procurement Standards

5

Prioritize Commercialization in Procurement Programming

6

Create a Federal Procurement Concierge

Policy Recommendations

1 The federal government should create a national procurement agency, or empower an existing agency like the Industrial Research Assistance Program, to operate on the model of Business Finland, which acts as a bridge between government and innovative Canadian companies, fostering procurement of innovation and building capacity across government.

This national procurement agency should be mandate to closely collaborate with federal and provincial government entities to spearhead several key activities:

- Financial and Behavioral Incentives: An expert agency with a budget to support procurement can reduce risk and give other government entities the confidence to pursue innovative procurement. With constrained public sector budgeting, an external source of funding can substantially de-risk the effort for buyers — for example, by paying for an innovation-oriented needs assessment process at the outset.

- Streamlined Application Process: An expert procurement support agency could develop a streamlined application process that emphasizes iteration and collaboration, while also ensuring that this process works at the speed of business. The agency could then lend their expertise and support to help government departments and agencies to implement this process, accommodating the needs of both government agencies and suppliers.

- Capacity Enhancement: An expert procurement support agency could prioritize the development of technological expertise across government, as well as supporting capacity-development in the skills and sophistication needed for managing an iterative and flexible technology procurement process. This investment in skills and capacity development will enable public buyers to effectively identify, assess, and manage innovative procurement opportunities.

By entrusting IRAP with this pivotal role, Canada could leverage its contacts with industry and unique technological and business expertise to accelerate the adoption of innovative procurement practices, fueling economic growth and reinforcing the ability of Canadian businesses to innovate and successfully bring their ideas to market.

2 Create a Small and Medium Enterprise Procurement Target

Procurement has historically been difficult for SMEs to navigate. In addition to more targeted policy levers to help overcome public sector risk aversion, government should consider a blunt instrument in the form of an ambitious procurement target for small- and medium-sized enterprises. This is a common practice adopted by many of our peer economies and trading partners.

A target would require departments and agencies to identify and contract with SMEs and require government purchasers to track their success in driving more innovative SME procurement. By setting ambitious targets, government sets a clear goal, and creates an obligation for tracking progress and reporting to the public on success or failure.

3 Create a Framework for Forward Commitment Procurement

The UK's Forward Commitment Procurement is a proven, powerful and flexible model of outcomes-based procurement to fulfill public sector needs with innovative solutions in the private sector. Governments should build on the global success of FCP and allow for the use of this flexible and powerful model wherever feasible.

Policy Recommendations

4 Develop and Recognize Innovation Procurement Standards

Innovators recognize that the processes governing procurement are too prescriptive and onerous and do not enable innovation outcomes. Existing processes have demonstrated that they are not producing the kinds of outcomes that governments are both looking for either.

We need alternatives. Standards are governance tools more flexible than regulation that are built collaboratively and that better balance procedure with ultimate outcomes. Governments across the country should undertake efforts to develop or recognize a suite of innovative procurement standards that could serve to lighten administrative burden, reduce perception of risk, and allow for more harmonized procurement processes across jurisdictions. Adopting the new Agile and Open Procurement of Digital Solutions standard, for example, would be an excellent start.

5 Prioritize Commercialization in Procurement Programming

Procurement programming should not conclude with the acquisition of a product or solution. The true economic value of 'buying ideas' is in the ability to sell into the wider marketplace after a first purchase from government. Procurement programs should reflect this reality.

Procurement should recognize the importance of intellectual property in the commercialization process, and the role it serves as a legal safeguard to ensure that innovators can reap the rewards of their ingenuity. Procurement should also consider broader commercialization pathways, ensuring that the government is not seeking bespoke and highly specific technological tools that have limited utility beyond a specific government application.

By prioritizing IP in tandem with commercialization pathways, Canada can further optimize its investments in innovation. If a tool used by government is widely adopted in the marketplace, that has an obvious economic benefit, but it also likely makes that tool more useful for government, because it is widely used and understood by professionals both inside and outside the public service.

6 Create a Federal Procurement Concierge

The government should implement a procurement concierge modeled on British Columbia's Concierge Program. At the federal level, this program could liaise with IRAP to act as a centre of expertise and training within the public sector on innovation procurement. A procurement concierge would also be mandated to help innovative companies navigate the bureaucratic process of procurement, and when the concierge identified persistent bottlenecks or sources of failure, the program could make recommendations for improvement.

A Procurement Concierge could be a missing tool to help programs like IDEaS and Procurement Assistance Canada in meeting their policy goals.

Conclusion

Buying ideas is hard – but the stakes of getting it right are high.

Public procurement of innovation is an important lever on a country's innovation performance and could contribute to correcting Canada's historic innovation underperformance.

Governments use more than one dollar of every four they spend buying from the private sector – and nearly one dollar in six spent across the entire economy.

We should want that spending to create real value for the public.

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