

# TECHNATION 2020 FEDERAL PRE-BUDGET SUBMISSION

## *Accelerating Canada's Digital Economy*

As Canada's national Information and Communications Technology (ICT) business association, the TECHNATION champions the development of a robust and sustainable digital economy.

More than 41 000 Canadian ICT firms create and supply goods and services that contribute to a more productive, competitive, and innovative society. The ICT sector employs 1,000,000 people and invests \$6.2 billion annually in research and development, more than any other private sector segment in Canada.

In this *2020 Pre-Budget Submission*, industry submits three themes, and following recommendations that it wishes to see in Budget 2020: Digital Government, Digital Economy, and Responsible Technology. TECHNATION would welcome the opportunity to present its recommendations to the Standing Committee on Finance when hearings begin.

---

## 1. Digital Government

### A. Digital Transformation and Modern Procurement

The federal procurement process for IT products and services has long been acknowledged as a barrier that limits small and medium-sized enterprise (SME) participation, slows deployments, dampens innovation and increases costs for government and industry alike. Driving a digital-first agenda, innovating procurement and ensuring a pragmatic approach towards a public-private partnership is mission-critical to building a modern digital government, fueling innovation and improving Canada's competitiveness. – elaborate on security.

#### **Budget 2020 Recommendations:**

1. **Expand funding for digital experiments.** Create a government funding portal for digital experimentation under Innovative Solutions Canada (ISC), Innovation for Defence and Security (IDEaS) and the Canadian Digital Service;
2. **Invest in Government's Digital Transformation.** Modernize office services that support government innovations and digitizes operations to allow for the delivery of digital services to Canadians;
3. **Innovate contracts, terms and conditions** to align with industry norms focusing on fairness, sharing in the allocation of risk, and opening the possibility of negotiations with bidders to access confidential inputs. The Centre of Expertise articulated in the mandate letter to the Minister of Digital Government is ideally situated to lead this work;
4. **Modernize data classification and security requirements** to allow a more efficient and effective process of incorporating the ICT workforce in building out the digital government;

5. **Consistent Engagement: Provide a mechanism and requirement for Government to engage with industry at the idea stage** to ensure business cases are developed with a broad understanding of the marketplace, emerging technologies and delivery methods, *before* procurements are constructed;
6. **Collaborate with industry on the design and implementation of a socio-economic development strategy that works for all suppliers;**
7. **Work with industry to develop and implement an annual refresh cycle for the federal procurement process** so that each year government evolves in its engagement with industry on what it buys;
8. **Advanced Connectivity for the Government Enterprise: invest in secure and agile WiFi networks for government organizations** so that they can manage the technologies available today and expected tomorrow; and
9. **Modernize from CapEx to OpEx and budget allocation cycles between SSC and line departments** to provide consistency in the purchasing process for civil servants and industry.

## B. Government's leveraging new technology

Embracing cloud computing – in which software, platforms, and infrastructure are services accessed via the Internet – will allow government to modernize its IT infrastructure and deliver citizen services more efficiently and cost effectively. IT modernization also offers a huge opportunity for innovation and technological competitiveness, more efficient use of energy, more robust security, and significant savings.

Best practices for moving toward a cloud environment have been established and can be leveraged by Canadian governments. Holders of the most sensitive data in the world, including the CIA, NASA, financial institutions, and many governments worldwide (US, UK, Australia to name a few) have already adopted Cloud First policies and are reaping the benefits.

The risk of the Government of Canada falling behind is real: in October 2019, the Public Policy Forum published their report, *The Risk of the Digital Status Quo*, which cites the risks of legacy systems, cyber security, culture and people, and service failure. The Government must act in Budget 2020 to mitigate these risks.

### Budget 2020 Recommendations:

1. **Follow a Cloud First policy.** Rethink and remodel data classification schemes across partners and move up to 80% of government data to the private, hybrid, or public cloud.
2. **Support cloud-native software development.** Ensure all future software development is designed specifically to take advantage of the cloud delivery model;
3. **Ensure interoperability of systems between all levels of government and ministries** through digital solutions to government problems;
4. **Adopt Artificial Intelligence and Machine Learning technologies in all ministries of government** through streamlining the procurement process and education of public servants.

### C. Up- and Reskilling the Public Sector

We live in the digital age. Canadians expect their government to provide services to them of the highest quality and to reach them where they are. Technology is the medium through which these goals can be met.

However, the training of hardworking and devoted public servants is currently insufficient in preparing them to use digital technologies to solve government problems. The Government of Canada is unable to keep pace, not only with the adoption of technologies but training their staff about what is available to them.

Without the knowledge of what could be and how it will impact the current and future workforces, the risk averse culture continues. To overcome this, we must empower civil servants with knowledge about how technology can help them serve Canadians. Further, the Government, public service unions, and industry must work together to prepare Canada's workforce, writ large, for tomorrow.

This problem extends beyond computer scientists and engineers. Every sector, every ministry, and every job is being and will be impacted by technology.

#### **Budget 2020 Recommendations:**

1. **The Government of Canada must adopt training curricula for new technology and offer it to all civil servants.** Further, the Government of Canada should engage with training service providers in the private market in lieu of creating its own learning platform;
2. **The Government of Canada must create a culture of lifelong learning in the public service.** In regulation or through collective bargaining, the Government should implement the **Learn375 program** which reserves 37.5 paid hours per year for training;
3. **The Government of Canada must contribute to creating a partnership ecosystem of technologists in Canada.** By restarting the **Interchange program** but with a limit of six-month terms, employees can gain experience in both the private and public sectors.

## 2. Digital Economy

### A. Invest in Data and Modern Technology

#### **Invest to Position Canada at the Fore of a Technology Renaissance**

Technology impacts all sectors of the economy and is the engine for Canada's economic growth. In other words, the digital economy is the entire economy. As such, with the appropriate investment in a data driven digital economy, Canada can expect its business sector to grow.

#### ***Data and Artificial Intelligence (AI)***

AI stands to become one of industry's most disruptive forces, but it's the ability to access this data that will enable Canadian businesses to compete. Canada must accelerate its adoption of AI and related technologies to support the Canadian AI industry and ecosystem or risk losing these innovative start-ups.

#### ***Smart Infrastructure***

Investments in infrastructure with imbedded sensory technology provides longer-term view of value on taxpayer outlays. The data generated can provide for preventative maintenance and can support a plethora of additional policy or public benefits including human mobility and city planning. It will ultimately provide timely data for AI-based analytics. The government should require funding applicants to consider opportunities to embed "smart technologies" into new infrastructure projects.

#### ***Smart Cities***

The *Smart City Challenge* is a great initiative, but participation allowance is limited. Canada should create a ***Smart City Superfund*** of at least \$100M as a flexible, ongoing resource that municipalities or private developers can leverage.

#### ***Technology for Health***

Leveraging health and pharma data and combining data sets could lead to AI analytics and precision health care, providing better health outcomes for Canadians and more cost-effective delivery of healthcare. Governments have struggled to use patient data collected over decades to better address health issues facing Canadians. There's a clear need for governments and regional health services to collaborate more across agencies and provincial borders to create better policies for improved health of all residents.

#### ***Fifth Generation (5G)***

To leverage the tools to develop the data for AI, modern hyper-connected networks will be required for transmitting 5G networks, which are: predicted to revolutionize the way we use and leverage technology; make possible new classes of advanced applications; foster business innovation; and spur economic growth.

#### ***Investments in Commercialisation, not just R&D***

Reports about Canada's ICT sector repeatedly suggest that the Government has elicited a strong research and development ecosystem, with homegrown companies and entrepreneurs leading the way in artificial intelligence, machine learning, and the Cloud. The Government must now

pivot towards helping businesses commercialise their goods through both public procurement and private partnerships.

#### **Budget 2020 Recommendations:**

1. **Invest in “Data for AI” projects** integrating data from multiple private and public sources;
2. **Allocate increased funding to build test beds for data analytics and innovation corridors** based on 5G;
3. **Establish an engagement plan for roll-out of 5G networks** and broader connectivity
4. **Introduce a “Smart Infrastructure Lens” for all federal infrastructure investments**, including investments made by the Canada Infrastructure Bank;
5. **Mandate patient-first health data sharing across the entire healthcare system** to improve care across multiple jurisdictions;
6. **Require health transfer funding supports and sustains digital healthcare innovation**, including funding to organizations (e.g. Canada Health Infoway, Canadian Institute for Health Research), specifically targeted at developing better use of telehealth practices and new technology opportunities;
7. **Continue to support the R&D of the ICT sector** through the maintenance of support for educational institutions, tax credits, and partnerships. This includes investment in quantum and high-performance computing.
8. **Continue investment in the Global Affairs Canada Trade Commission Service** that helps Canadian companies position themselves to succeed in international business communities.

## **B. Diverse, Skilled and Educated Workforce**

Talent is the foundation of Canada’s ICT sector and of innovations in every sector of our economy. Beyond meeting projected demand for ICT talent, Canada needs to double down on its proven ICT strengths.

People with the right ICT skills – combined with expertise in business, complementary technologies, innovation and leadership – are a magnet for investment. Canada can gainfully employ a high share of its workforce in export-oriented technology-based products and services. This can help offset the disruptive impacts of automation.

While Canadian educational institutions rank among the highest in the world, there remains a skills gap and a dearth of talent available to ICT companies in Canada. As an example, research from Employment and Social Development Canada found that employers seeking eight out of eleven ICT occupations (computer and information systems managers, computer engineers, information systems analysts and consultants, database analysts and data administrators, software engineers and designers, computer programmers and interactive media developers, web designers and developers, and information systems testing technicians) will be faced with labour shortages in Canada.

Some companies have linked diversity to the labour skills shortage, suggesting increasing participation of under-represented groups—particularly women and immigrants—would help

offset the declining enrolments in STE(A)M programs, considered the principal pipeline to the ICT profession.

The Innovation and Skills Plan in Budget 2017 included steps to address Canada's opportunity, yet the Government must continue to do more to support our ICT sector workers.

#### **Budget 2020 Recommendations:**

##### **Double Down on Canada's Diverse Tech Talent Competitive Advantage - 2025 targets**

- **Increase the number of employed highly-qualified ICT professionals** from 550,000 (2018) to 750,000 (2025), by increasing the average compound growth rate from 2.5 per cent to 4.5 per cent per year;
- **Increase the proportion of women and Indigenous Canadian employed** as highly-qualified ICT professionals by 25 per cent over the same period.

#### **Further Budget 2020 Recommendations:**

- **Conduct national/regional consultation and strategy development projects** to identify, prioritize and develop ICT-related post-secondary education program capacity expansion priorities, strategies and plans;
- **Work with TECHNATION to develop and conduct a four-year national/regional ICT career awareness and comprehension program** that targets secondary school teachers and students;
- **Support the Business/ Higher Education Roundtable (BHER) Work-Integrated Learning recommendations** to the federal government;
- **Consult with Indigenous organisations** to develop a strategy and plan for increasing participation in ICT-related career paths;
- **Expand Student Work Placement Program (SWPP)** to include funding of foreign students;
- **Review current Canadian and global best practices for the use of educational technologies** to support skills upgrading and career transitions from the Future Skills Centre commission. Budget to be drawn from existing Centre funding;
- **Develop strategies to encourage underrepresented groups to participate in the ICT workforce.** The European Union offers examples of positive discrimination recruitment techniques, specific career development opportunities, and the maintenance of work-life balance, including through childcare programs;
- **Invest in skills programs that help Canadians succeed** including the Global Skills Program, and the Canadian Benefit Training Program.

### **C. SMEs and Scale-Ups**

The time for a review of the SR&ED tax credit system is overdue. A wholesome review would identify the issues that are counterintuitive, such as when scale-ups begin to grow and compete, we scale back their credits. By contrast, we should encourage innovative companies to scale-up,

create market-based mechanisms to guide tax-payer investments in R&D; and increase access to risk capital.

Issues identified by TECHNATION include:

- **Supporting Scale-up:** Reward successful innovators by reducing the SR&ED Grind Down for growing companies.
- **Encouraging Collaborative Innovation:** Allow large firms to access a portion of unused SR&ED credits to fund collaborative R&D with Canadian SMEs – increasing risk capital and providing access to global supply chains.
- **Encouraging SMEs to grow through mergers and acquisitions:** Help create larger, competitive businesses by creating 3-5 year “SR&ED holiday,” so the merged company can still access credits at rates previously available to smaller entities.

#### **Budget 2020 Recommendation:**

- **Finance Canada and ISED work with ICT industry experts to advance recommended adjustments to SR&ED.**
- **The Government of Canada should standardise information collection about SMEs,** sharing of best practices in finding financing for SMEs and scale-ups, including public-private capital partnerships, and support for associations and networking groups specific to marginalized voices in the ICT sector. By doing so, the OECD finds that marginalised groups, especially women-owned businesses, are more likely to succeed.
- The Government of Canada must work with provincial, territorial, and municipal partners to create a **‘one-stop shop’** that allows businesses to access all government services and regulations at once, including the development of a single digital ID that is used across platforms; and
- **The Government of Canada must include tax and financial regulation in its ‘one-for-one’ regulatory reduction rule.** This should include a comprehensive review of the tax system in Canada to simplify and streamline government regulations.
- **The Government of Canada must review** its definitions of small, medium, and large enterprises in order to better support the specific needs of ICT sector start- and scale-ups.

### 3. Responsible Technology

In everything the Government of Canada does, the safety and security of Canadians is of paramount concern. In the digital age, investments in the ICT sector must take into account cyber security and privacy so as to maintain trust in the system in place and to continue to improve services for citizens.

Simultaneously, the Government must manage these concerns with the growth of the digital economy. We can point to lessons learned through experiences like the Canadian Anti-Spam Legislation in balancing these concerns.

As such, TECHNATION believes the Government must undertake the following steps in Budget 2020 to ensure the safe and secure use of technology in Canada.

#### A. Cyber Security

Cyber threats pose an increasing risk for our economy and society. Too much focus regarding data breaches are focused on the impact on privacy, rather than on a core issue, cybersecurity. Canada must accelerate its adoption of new cyber technologies to improve the security posture of the digital economy.

##### Budget 2020 Recommendation:

- Have the *Canadian Centre for Cyber Security* establish a **Government-Industry Executive Advisory Table**, with senior cyber executives from industry and government advising on increasing cyber preparedness and innovation across the economy;
- Invest in the **development of cyber talent** and encourage students to pursue cyber careers and/or to reskill into the cyber field;
- **Fund research, development and commercialization of new cyber security technologies**, and develop programming to support the growth of Canada's cyber industry to take advantage of a of a \$100B global cyber economy;
- Introduce a **tax credit for cyber security technologies** aimed primarily at SMEs that collect consumer data; conduct R&D – especially funded by taxpayers; and provide goods or services that are important for the physical and economic security of Canadians;
- Create a **15 percent non-refundable tax credit** for small business to purchase cyber security insurance;
  - The policy would be available for small businesses up to 99 employees and self-employed individuals;
  - Only firms which have successfully undertaken ISED's Cyber Assessment and Certification program would be eligible; and
  - The credit would be reviewed after five years;
- Engage with industry to create and maintain **professional standards** for the use and development of contemporary technologies in all sectors.



## B. Marketplace Frameworks, including Privacy

Data is the engine of economic growth and prosperity. Countries that promote data's availability and use for societal good and economic development.

Trust in the digital economy will require sound data governance, cyber security, intellectual property protection, and privacy protection. There need not be a trade-off between privacy and business innovation. New technologies, especially cyber solutions, can better protect Canadians privacy.

Government needs to partner with industry in order to keep up with the rapidly shifting and growing technologies of today and tomorrow. Adoption of new technologies will fall behind if the regulatory environment limits Canadians' capacity to innovate in practical applications of technologies, reducing competitiveness and diminishing Canada's relevance as a global player.

Fundamentally, in a globalised era of free trade and the internet, the Government cannot regulate and legislate unilaterally. By working with governments around the world and with industry, including both multinational corporations and SMEs, the Government can ensure that its marketplace frameworks are positioned for the digital age.

### **Budget 2020 Recommendation:**

As part of the Digital Charter, the Government should **review the effectiveness of marketplace laws and regulations** to ensure:

- PIPEDA, CASL, IP and Copywrite policies support, not impede innovation.
- Appropriate levels of funding to provide businesses, especially SMEs, with simple compliance guidance and tools.
- Private initiatives, voluntary codes and standards are leveraged, and regulatory tools are only used where needed.
- Privacy and security concerns by federal departments regarding technology adoption need to be honestly stated with facts.
- Government focuses on obvious gaps: the reform of the *Privacy Act*, as well as the inclusion of political parties as entities subject to privacy law.

---

For further information contact Andre Leduc, Senior VP at [aleduc@itac.ca](mailto:aleduc@itac.ca); or Nevin French, VP Policy, at [nfrench@itac.ca](mailto:nfrench@itac.ca).