

Sovereign by Design:

Strategic Options for Canadian AI Sovereignty

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Introductions & Acknowledgements



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Full report available at: www.aicompetitiveness.ca

Rise of “AI Sovereignty”

AI sovereignty has emerged as a key issue globally

- **World is grappling with the immense potential of this technology, which could upset the balance of power and significantly accelerate economic growth**
- **AI tech stack is incredibly complex: no one country controls all aspects of it**
- **World is becoming more unstable; sovereignty threats to countries like Canada are increasing**
- **Countries – and citizens – are looking to reassert sovereignty in the face of technological and geopolitical pressures**



Canada's Dilemma

Adoption or Sovereignty?

- **Canada is a small, open economy and a middle power; not possible to build a completely domestic AI tech stack**
- **But failing to adopt and commercialize AI is also a risk to sovereignty**
- **OECD study: “High” AI adoption for Canada could result in \$250-300 billion in higher economic output by 2035 – or \$5,000-\$7,000 increase in GDP per capita**
- **Any solution needs to balance adoption against sovereignty**



What We Mean by AI Sovereignty

Freedom from coercion — not isolation from the world

- **Sovereignty means the freedom to make and enforce your own rules without subordination to external authority**
- **In the AI context: who controls the infrastructure, who holds the keys, which laws apply?**
- **Our report provides the first comprehensive, layer-by-layer assessment of Canada's entire AI stack through the lens of sovereignty**

“The goal is not digital isolationism, but rather strategic autonomy: ensuring Canadian data and infrastructure are governed by Canadian laws and values, secure from foreign threats, and resilient to geopolitical pressure.”

— **Sovereign by Design**, p. 8



Why This Matters, Why Now

“On AI, we are cooperating with like-minded democracies to ensure we will not ultimately be forced to choose between hegemons and hyperscalers.” — PM Carney, Davos, January 2026

- **Geopolitical:** Fracturing international order; AI as a key area of great power rivalry
- **Economic:** US AI investment expected to top \$600B in 2026; comparable to railroads, electricity, and internet buildouts
- **Technical:** AI capabilities advancing at extraordinary pace; advantages compound rapidly for early movers
- **The lock-in problem:** Decisions on data centres, platforms, and standards being made NOW will shape the landscape for a generation — for every country, deferring action is itself a choice to accept dependence



The AI Technology Stack

Layer	Description
1. Data and Data Governance	Training datasets, operational data, and governance frameworks
2. Physical Infrastructure and Networks	Data centres, telecommunications, and energy systems
3. Compute Hardware	Processors, memory, and networking equipment enabling AI workloads
4. Cloud Infrastructure Services	Virtualized compute, storage, and managed services (IaaS/PaaS)
5. Foundation Models (Inference)	Access to and deployment of large-scale AI models
6. Model Operations and Orchestration	Tools for deploying, serving, and monitoring AI in production
7. Applications	End-user AI products and AI-enabled software (SaaS)

- **A 7-layer framework mapping the full AI deployment stack. Vulnerabilities at one layer can cascade through the rest.**
- **Our analysis focuses on inference, not training — where 75% of AI compute demand will concentrate by 2030 and where most new investment will flow.**

Five Dimensions of Digital Sovereignty

Dimension	Core Question	Primary Threat
Jurisdictional	Can you enforce your rules?	Extraterritorial legal reach
Operational	Can you keep functioning under attack?	Cyber threats (attacks, espionage, exfiltration)
Technological	Can you migrate if needed? Can you substitute?	Vendor lock-in
Societal	Can you form and express preferences freely?	Democratic distortion, misinformation
Economic	Do you retain freedom to operate?	Economic coercion



Canada's Strengths

We have more to work with than most middle powers:

Research legacy:

- Birthplace of modern AI: Hinton (Nobel Prize), Bengio, Sutton
- Canadian institutions trained a generation of leading researchers

Strategic assets:

- Abundant energy attracting data centre investment
- Valuable government datasets (CanLII, Translation Bureau, CIHI, StatCan)
- Vibrant domestic tech industry

Industry capacity:

- Cohere: one of very few foundation model companies outside the US and China
- Strong Canadian AI application-layer companies at global scale
- Growing sovereign infrastructure ecosystem



Canada's Vulnerability Heatmap

Canadian AI Sovereignty Risk Heat Map

	Jurisdictional	Operational	Technological	Societal	Economic
1. Data & Data Governance	low	low	low	moderate	low
2. Physical Infrastructure	moderate	low	low	low	low
3. Computer Hardware	low	low	critical	low	critical
4. Cloud Infrastructure	critical	high	high	low	high
5. Foundation Models	low	low	low	moderate	moderate
6. Model Operations	low	low	moderate	low	low
7. Applications	moderate	low	low	moderate	moderate

LOW
 MODERATE
 HIGH
 CRITICAL



Vulnerability Analysis: Summary

What the heatmap tells us — layer by layer

Layer	Vulnerability	Key Finding
1. Data & Data Governance	Low–Moderate	Canadian content underrepresented in training data; no coordination mechanisms to leverage strategic datasets
2. Physical Infrastructure	Low–Moderate	25%+ of domestic traffic routes through US jurisdiction; significant foreign ownership of data centre capacity
3. Compute Hardware	Critical	Extreme supply chain concentration; vulnerable to export controls; no viable domestic alternatives
4. Cloud Infrastructure	Critical	Extraterritorial legal reach; ~63% hyperscaler concentration
5. Foundation Models	Moderate	US dominance; Cohere is Canada's sole domestic option
6. Model Operations	Low–Moderate	Hyperscaler MLOps platforms deepen cloud lock-in at Layer 4; open source options exist
7. Applications	Moderate	"Shadow AI" – uncontrolled foreign tool use; Canadian companies strong

Two layers require urgent attention. Cloud infrastructure is Canada's most acute *controllable* vulnerability. Compute hardware is equally critical but *cannot be addressed domestically*. Together, these middle layers concentrate the threats that flow through the entire stack.



Sovereign Cloud: Strategic Priority

The most acute vulnerability, with realistic solutions

- The right question is not “sovereign or not?” but “how much sovereignty for which workloads?”
- Three credible models on a spectrum:
 1. Self-Hosted
 2. Juridical Sovereignty (French/German Bleu and Delos models)
 3. Contractual Sovereignty (Australian model, encryption keys held in Canada)
- **Match the model to the data:** classified → self-hosted or juridical; sensitive → juridical or contractual; routine → market
- Pool federal and provincial demand through arm’s-length sovereign providers to narrow the 15–20% sovereignty premium through scale



Beyond Cloud: The Rest of the Stack

Different layers, different playbooks

- **Compute Hardware (Layer 3) — managed interdependence:** diversify suppliers across allies, link Canadian energy and critical minerals to access, engage multilateral semiconductor initiatives, contingency stockpile for sensitive systems
- **Foundation Models (Layer 5) — preserve optionality:** support Cohere as a national champion subject to Canadian law; co-build a multinational frontier AI partnership with like-minded democracies (Bengio/Mila Blueprint); deploy open-weight models on sovereign infrastructure as a hedge
- **Applications (Layer 7) — confront Shadow AI:** 79% of Canadian office workers use AI, but only 25% on enterprise-grade tools; mandate approved tools with governance controls
- **Data (Layer 1) — unlock strategic assets:** modernize governance laws; make Canadian health, financial, legal, and administrative datasets usable for AI development



Enablers, Institutions, and CUSMA

The machinery to make sovereignty real

- **Procurement reform:** add explicit sovereignty tiers to the Government Cloud Framework; translate the Buy Canadian Policy into ICT-specific guidance; aggregate demand across federal, provincial, and municipal governments
- **State capacity:** Canada's UN E-Government ranking has fallen from 3rd (2010) to 47th (2024); potential options include a Ministry of Digital and AI (UK/Australia model) or a dedicated Sovereign AI Unit with investment capital and delivery mandate
- **Workforce:** address the 30% federal IT vacancy rate; modernize security clearances for sovereign operations
- **CUSMA 2026 review:** defend national security and procurement carve-outs; don't trade digital sovereignty for concessions in other sectors; build coalitions with Australia, the UK, EU, and Mexico



Sovereign AI as a Market Opportunity?

THE GLOBE AND MAIL





Canadian AI firm Cohere, Germany's Aleph Alpha announce merger


Combined entity will have global headquarters in Toronto, European headquarters in Berlin

JOE CASTALDO

4 min read



 Cohere 
 @cohere  ...

 Sovereign AI for the world.

Cohere & Aleph Alpha form transatlantic AI powerhouse anchored in Canada & Germany! Combining our global scale with European R&D excellence to build sovereign, enterprise-grade AI. Security, privacy & trust for businesses & governments worldwide. [#SovereignAI](#) [#AIPartnership](#)

Learn more: businesswire.com/news/home/2026...



The Path Forward:

Sovereign by Design

- Sovereignty means freedom from coercion, not isolation or autarky
- AI sovereignty is a spectrum, not a binary: each step reduces Canada's exposure but may involve tradeoffs and costs
- Meaningful progress is achievable by 2030 with deliberate action

"The window to act is open but closing as investment decisions harden into long-term commitments."

— Sovereign by Design, p. 9

Thank You

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Full report available at: www.aicompetitiveness.ca



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Sovereignty

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