Executive Summary

Canada faces a unique paradox in AI competitiveness. Despite leadership in foundational research, commercial scale, talent depth, and infrastructure lag behind global peers. The Maple Protocol proposed herein seeks to leverage research excellence to accelerate economic impact, strengthen Canada's AI position globally, establish frameworks for responsible adoption, and improve competitiveness metrics.

Performance Snapshot (vs Top-Tier AI Nations)
Canada faces substantial capability gaps relative to leading AI nations. The largest deficits appear in the commercial AI ecosystem (–2.1 SD), AI talent availability (–1.8 SD), and development environment (–1.6 SD), reflecting limited private investment, brain drain, and weak industry–academia collaboration. Research output per capita is moderately below peers (–1.1 SD), indicating strong academic foundations but weak translation into products. Compute infrastructure shows the smallest gap (–0.3 SD) but still falls short of global benchmarks.

Strategic Pillars & 2030 Targets
The strategy is organized around five pillars with concrete 2030 goals. Governance and policy require a central authority with clear KPIs and cross-government coordination. Compute infrastructure aims to double national AI-ready capacity, including roughly 20,000 H100 GPUs. Commercialization and innovation targets include 150 notable ML models, doubling AI startups, and reaching $9B in private AI investment. Talent and workforce goals focus on expansion, retention, and immigration alignment. Responsible AI and public trust initiatives aim for a 15-point increase in national trust indicators and a modernized regulatory framework.

Projected Impact by 2030
By 2030, the plan is expected to significantly elevate national AI performance. The AI competitiveness score is projected to rise from 26.4 to 41.4 (out of 100), while private AI investment grows from $2.9B to $9B. Compute capacity reaches full AI-ready scale. Talent pipelines expand and retain more skilled workers. Startup activity doubles, producing over 150 notable ML models. Public trust strengthens through evidence-based deployment and more transparent engagement.

Recommended Next Steps
Near-term actions include finalizing national governance and funding structures, initiating compute procurement and public-private partnerships, and launching programs for investment acceleration, foundation models, and startups. Additional steps involve advancing AI literacy and trust-building initiatives to support responsible public-sector adoption**.**

Outcome
A coherent, mission-driven federal AI strategy enabling Canada to **translate research leadership into economic growth, global competitiveness, and trusted AI adoption**.

1. AI Innovation Measurement Methodology

1.1. Methodology of Work

This project first uses a comparative policy analysis to evaluate and compare AI strategies from the world's top ten leading AI nations against Canada's current AI strategy to assess gaps. These top ten AI nations include the USA, the UK, Singapore, South Korea, Japan, France, China and Australia. Following this, a 2-step feature importance analysis is performed to identify actionable policy items with the greatest impact on a country's AI Innovation in order to propose potential solutions.

For the comparative analysis, each country's official AI strategy, regulatory framework, and government-issued policy documents were collected from publicly available government portals, international organizations, and reputable research institutions such as Stanford via its HAI AI Index (Stanford Institute for Human-Centered AI, 2025). These documents included governance models, risk-based regulatory structures, national compute initiatives, public-sector adoption frameworks, and industry incentives, which were then analyzed and compared against Canada's AI policy for any notable trends. A structured benchmarking matrix was created to compare countries by these metrics and identify patterns, strengths, and unique approaches. Canada's current and proposed AI policies were assessed using the same framework to ensure consistency.

The first step of feature importance analysis involved a preliminary correlation analysis, which was performed to determine which overall factor of AI Innovation has the greatest impact on a country's AI competitiveness, and thus should be prioritized. The factors of AI Innovation considered for this report include Infrastructure, Research Investment & Innovation, Human Capital & Talent, Adoption & Economy, and Governance & Trust, and data for these factors was taken from Tortoise Media's global AI Index (Tortoise Media, n.d.) and Our World in Data's AI topic page for all 193 UN countries (Giattino et al., 2023). Oxford AI's Global AI Readiness Index (Oxford Insights, 2023) as used as the overall AI Competitiveness metric.

Next, a more precise feature importance analysis was conducted on specific metrics relevant to the identified key factors with the greatest impact on AI Innovation, and thus should be invested into most. For example, Infrastructure was identified as a key factor of AI Innovation, so the metrics relevant to AI Infrastructure such as number of data centers or energy availability would be investigated to determine what aspect of infrastructure has the most impact on AI Innovation. Data for this was taken from the relevant metrics used for the comparative analysis, and was also limited to the top-10 AI nations to place further emphasis on metrics that drive a country's AI Innovation to globally competitive levels.

Findings from both benchmarking and feature analysis were synthesized to highlight gaps, opportunities, and actionable recommendations for the Government of Canada, which would constitute the proposed AI strategy. This methodological approach ensures a transparent, repeatable, and evidence-based assessment grounded in internationally recognized best practices.

1.2. Key AI Indexes and Data Foundations

As reputable and centralized sources of information on many different countries, established AI indices were key sources of data for both the top-10 benchmarking analysis and AI feature analysis performed in Section 3. Notable AI indices used include Tortoise Media's 2024 global AI index, Stanford's 2025 HAI AI index, and Oxford's 2023 AI Readiness Index. This section aims to briefly describe what these indexes are, what information was used from them for top-10 benchmarking and feature analysis, and summarize key takeaways from the data presented. A more detailed summary of the data sources used can be found in Tables 7 and 8 in the Appendix.

1.2.1 Tortoise Media Global AI Index

Tortoise Media's global AI index was used to provide a quick preliminary understanding of the current global AI ecosystem. It benchmarks nations by their level of investment, innovation, and implementation of AI by measuring 122 different metrics, aggregating them into different subscores for each country, and then combining those into a final AI index score for each country, denoted as "Scale" in Figure 1 (White and Cesareo, 2024). These subscores are Talent, Infrastructure, Operating Environment, Research, Development, Government Strategy, and Commercial, and are all used for the 1st-stage feature importance analysis.

Figure 1 below plots all 193 UN countries based on their final AI index score, as assessed by Tortoise Media. The y-axis labeled "Intensity" represents a country's AI index score relative to its population, while the x-axis labeled "Scale" represents a country's absolute AI index score with no scaling. At a glance, Tortoise Media's data shows Canada as part of an upper-middle cluster of countries, alongside South Korea, France, The UK, and Germany.

Tortoise Media's article on this index also makes special note of the fact Canada's ranking has dropped from 4th place to 8th which can be seen in Figure 2 below (Tortoise Media, n.d.). Analysis of the full set of subscores shown in Figure 3 suggests that Canada's low Infrastructure and Operating Environment scores are likely to blame.

As can be seen, Canada ranked 18th in Infrastructure, which measures a country's reliability and scale of AI-related infrastructure (including digital connectivity, GPU use, semiconductor manufacturing, and supercomputing capabilities), and 16th in Operating Environment, which measures a country's AI regulation and public opinion on AI (Tortoise Media, n.d.).[1]

1.2.2 Stanford HAI AI Index

Stanford's HAI AI Index is a rigorous compilation of many different AI metrics of different countries around the world collected through validated globally sourced data, rather than a singular AI index metric. It is recognized globally as one of the most authoritative resources on AI, being designed to guide any AI stakeholders, notably including government agencies and policymakers, by providing detailed data tables and highlighting key trends which shape the modern AI ecosystem, so that stakeholders can make well-informed decisions (Stanford Institute for Human-Centered AI, 2025). In the context of this project, the HAI AI Index was used as a key source of data for the top-10 benchmarking analysis, and by extension, the precise feature-importance analysis with 75% of the dataset used consisting of metrics from this index. Notably, these analyses use data taken from Chapters 1, 4, 6, 7, and 8 of this index.

1.2.3 Oxford AI Readiness Index

Oxford's AI Readiness index aims to measure how prepared governments around the world are for the deployment of AI in public services for citizens, with the 2023 edition expanding scope to a significantly larger data set of all 193 UN countries (Oxford Insights, 2023). Oxford models AI Readiness as a metric that encompasses 39 indicator metrics of AI readiness, which are reported as three aggregate scores which the report refers to as the "three AI pillars". These pillars are Government, Technology, and Data & Infrastructure. Notably, this index only reports these aggregate pillars and the overall score, without breaking down specific metric values for each country.

This report uses the AI Readiness index itself as an overall AI competitiveness metric to rank countries, but will not use the pillar scores for analyses, as the aggregate scores can create misleading interpretations. For example, this index presents Canada with a very competitive data & infrastructure pillar score of 81.17 out of a max of 100 (Oxford Insights, 2023), which contrasts from all other findings in different sources, such as the Tortoise Media index report. This discrepancy is due to Oxford's data & infrastructure pillar score bundling infrastructure indicators with data availability and data representativeness indicators into a single reported value, meaning the actual impact of Canada's poor infrastructure and AI computing capabilities is masked by Canada's increased data availability compared to less technologically advanced UN nations.

2. Canada's AI Paradox.

A brief preliminary analysis of news media coverage on Canada's AI and overall tech industry already paints an interesting picture of a uniquely Canadian problem. As the home of multiple well-established AI labs, such as the Vector Institute and Mila, Canada is no stranger to AI Innovation, and clearly excels at AI Research and Development, with AI Godfather Geoffrey Hinton even developing the widely-used back-propagation algorithm in Canada. Despite this however, numerous sources[] were found reporting that Canada struggles significantly in the global AI Industry, due to researchers and startups leaving

[1] For comparison, Canada is noticeably more competitive in other subscores, such as Research, where Canada is ranked 9th place, and Commercial, where Canada is ranked 6th place.

Canada to pursue commercial and industrial AI projects in other nations. This hotly debated phenomenon, nicknamed the “Brain Drain”, suggests a potentially large gap in Canada’s AI Industry compared to foreign nations, which limits Canada’s global AI competitiveness despite historical and current AI Research excellence.

3. International benchmarks

This section benchmarks five leading AI nations identified through the Tortoise Global AI Index to assess how different policy approaches drive their strengths in research, talent, infrastructure, governance and commercialization. Figure 4 (drawn from policy areas outlined in CIFAR’s *Building an AI World*, 2020) provides a visual summary of each country’s strategic emphasis, enabling a clear interpretation of national priorities and policy orientations.

Within this comparative landscape, the United States stands out, continuing to lead globally across the most critical dimensions of AI competitiveness, particularly in R&D strength, digital and compute infrastructure, and the scale and quality of AI innovation. These performance outcomes are consistent with the policy directions outlined in *Building an AI World (Second Edition)*, which emphasize sustained federal investment in AI research, talent development, and high-quality data and digital infrastructure (CIFAR, 2020). Governance activity has also accelerated sharply: in 2024, U.S. federal agencies issued 59 AI-related regulations, and states enacted over 130 AI laws, illustrating a rapidly adaptive and responsive regulatory environment (Stanford Institute for Human-Centered AI, 2025). This trajectory is further reinforced by the United States’ light-regulation, pro-innovation approach, which fuels commercialization, venture-capital investment, and rapid deployment of AI across high-risk sectors such as healthcare, finance, and defense (CCIA, 2025).

In contrast, China’s AI leadership is driven by centralized planning, large-scale infrastructure investment, and a comprehensive regulatory framework under its *Next Generation Artificial Intelligence Development Plan*, which targets global leadership by 2030 (CCIA, 2025). Supported by rules on recommendation algorithms, deep synthesis, and generative AI that prioritize national security and social stability, China has rapidly expanded its AI patent activity, industrial AI adoption, and intelligent computing clusters. At the same time, it maintains strong state oversight of data and public-facing AI systems (CCIA, 2025).

The United Kingdom adopts a hybrid approach, combining a sector-specific, pro-innovation regulatory model with strong public investment in safety research, through institutions like the UK AI Security Institute (AI Security Institute, n.d.). The UK emphasizes flexible, principles-based oversight rather than hard law, positioning itself as a global leader in AI assurance and technical safety standards (CCIA, 2025).

Singapore, while smaller in scale, distinguishes itself through a highly coordinated, government-led innovation ecosystem, shaped by ethical guidelines such as the *Model AI Governance Framework* (Personal Data Protection Commission, 2020) and supported by regulatory sandboxes and targeted national AI programs across health, education, and financial services. This approach enables Singapore to maintain one of the world’s most operationally advanced and trusted AI governance systems

Finally, France represents the European Union’s high-regulation, rights-based model of AI governance. Operating within the strict requirements of the EU AI Act, France has expanded national research capacity through initiatives such as *France 2030* while emphasizing public-sector adoption, AI ethics, and strategic domains including health, mobility, and defense (CCIA, 2025). This results in a more centralized yet regulation-heavy approach that prioritizes safety, rights protection, and responsible AI deployment.

4. National AI competitiveness

4.1. Analysis: Determinants of national AI competitiveness

To understand what actually drives national AI competitiveness, we model the 2023 Government AI Readiness score for 193 countries as a function of a set of external AI ecosystem indicators. The dependent variable is the overall AI readiness index. Explanatory variables come from the Tortoise AI Index and Our World in Data and cover AI talent, infrastructure, operating environment, research, development, government strategy, commercial ecosystem, AI publications per million people, cumulative AI-related legislation, and whether a country reports any large-scale AI systems. Inputs that are already used inside the readiness index (for example pillar sub-scores) are intentionally excluded to avoid circularity in the analysis. Figure 4 summarizes the pairwise relationships between these indicators and AI readiness. Three messages stand out.

First, compute infrastructure is the dominant driver. A country's AI infrastructure index, which captures high performance computing capacity, is very strongly associated with AI readiness. The correlation is around 0.85 with a 95 percent confidence interval of roughly 0.78 to 0.91. No other factor comes close to this level of explanatory power.

Second, research strength is the next tier of drivers. Measures of research output, such as AI publications per capita and a composite research quality index, have correlations on the order of 0.70 with readiness. These are important levers, but they still fall noticeably short of infrastructure. National AI strategy commitment and talent availability also show strong positive relationships, with correlations in the 0.66 to 0.69 range. Overall, countries that combine substantial compute capacity with a strong research base tend to rank highest on AI readiness.

Third, the primacy of infrastructure is robust. We stress-tested the pattern using a bootstrap analysis that directly compares the top correlation with its nearest competitor. The result confirms that the infrastructure correlation is statistically and economically higher than any other feature. On average it exceeds the next strongest correlation by about 0.14 in absolute terms, with a 95 percent confidence interval of approximately 0.01 to 0.28. Since this interval does not include zero, the gap is unlikely to be due to chance. In practical terms, national compute capacity stands out as the most reliable single predictor of AI preparedness.

By comparison, the remaining factors have more modest links to readiness. For example, the development environment index and the commercial ecosystem index show correlations closer to 0.5 or below. These dimensions matter, but they appear to play supporting roles relative to infrastructure and research. The overall message from Figure 4 is clear: governments that want to raise their AI readiness should treat investments in compute and research capability as foundational, and then build talent, strategy, and commercialization on top of that base.

4.1.1 Limitations of this Analysis

These findings should be treated as directional rather than precise, for three main reasons.

Incomplete coverage. Many countries lack data for advanced AI metrics, which restricts the effective sample to a subset of mostly high income or data rich economies. More than two thirds of countries in the dataset have no reported values for indices such as AI talent or infrastructure (133 out of 193 entries missing). This sparsity reduces statistical power and may bias the results toward conditions in better measured countries.

Narrow definition of “AI infrastructure”. The infrastructure measure follows the Tortoise Global AI Index sub-pillar, which combines indicators on internet connectivity, Top500 non-distributed supercomputers, semiconductor trade, and citation based measures of access to advanced GPUs. It does not directly capture cloud computing resources or private sector compute capacity, which are central in many markets. As a result, the score may underestimate the true computing resources in countries that rely heavily on cloud providers or unreported corporate AI clusters.

Correlation, not causation. Because the model relies on cross-sectional correlations and imperfect proxies, the relationships should not be read as causal effects. The patterns in Figure 2 are best interpreted as broad signals about which ecosystem features tend to co-occur with high AI readiness, rather than as precise estimates of how much a marginal investment in one area would move the index.

4.2 Canada’s Position Relative to Global AI Leaders

The left panel of Figure 5 benchmarks Canada against the three most AI ready countries, using standardized scores for each indicator. The comparison highlights a clear story: Canada has strong policy intent and adequate infrastructure, but is constrained by sizable gaps in talent and commercialization.

Two binding constraints: commercial ecosystem and talent.
Canada’s largest shortfall is in the commercial AI ecosystem. Its score on the commercial index is about 2.1 standard deviations below the top three average. This indicates that Canada’s private sector is materially less advanced in AI adoption, startup formation, and industry investment than that of the leading nations. A similarly large gap exists in AI talent, where Canada trails by roughly 1.8 standard deviations. This points to a smaller or more thinly distributed AI workforce and possible talent leakage to larger tech hubs such as those in the United States. Taken together, these two areas emerge as Canada’s most binding constraints, because they combine large quantitative gaps with direct relevance for scaling AI deployment in the economy.

Secondary gaps: research output and development environment.
Canada also lags in research output and the overall development environment by around 1.1 to 1.6 standard deviations. Relative to the leaders, Canada produces fewer AI research publications per capita and operates within a somewhat less mature environment for AI development and innovation. These are not as acute as the talent and commercialization gaps, but they still matter, because they influence the pipeline of new ideas and the ease with which innovations move from lab to market.

Areas of strength: government strategy and infrastructure.
On the positive side, Canada outperforms the top three benchmark on government strategy, scoring about 0.75 standard deviations higher on the national AI strategy index. This reflects strong federal commitment and a supportive policy framework for AI. Canada is also only modestly behind on compute infrastructure, with a gap of roughly 0.3 standard deviations, which suggests that access to high end computing resources is not a primary bottleneck relative to the world leaders. In other words, the policy and hardware foundations are largely in place.

Implications for Canada’s AI agenda.
Looking ahead, Canada’s challenge is not to design more strategies, but to convert its strong policy commitment and solid infrastructure into deeper talent pools and a more dynamic commercial ecosystem, while at the same time keeping infrastructure on a forward investment path. Infrastructure is the single strongest predictor of AI readiness in this analysis, and every major AI economy is rapidly increasing its compute capacity. If Canada simply maintains today’s level while peers build new national GPU clusters and secure long term access to advanced chips, the current small gap in infrastructure will widen and could put Canada at a lasting disadvantage.

The priority actions implied by Figure 5 therefore span three fronts: expanding and retaining domestic AI talent through education, immigration, and retention policies; accelerating the growth of a vibrant AI commercial sector through targeted incentives for startups, stronger industry academia partnerships, and capital for scaling firms; and continuing to invest in and modernize AI infrastructure so that Canadian researchers and companies have reliable access to frontier compute. Closing the gaps in talent and commercialization, while preventing an infrastructure gap from opening up, would allow Canada to fully leverage its strong government strategy and move much closer to the global leaders in AI readiness.

5. Recommendations and Expected Impact

In a complementary analysis, we constructed a composite dataset for the top 10 AI countries, using the Stanford HAI AI Index as the primary source. Within this dataset, AI infrastructure and private investment emerge as the most powerful predictors of national AI performance. Total AI data centres is the standout feature, with the highest Spearman correlation (+0.913), the largest mean correlation (+0.893), and the tightest 95% bootstrap interval. National AI investment intensity, new AI firm creation, and the number of notable AI models also rank highly. Canada underperforms key peers on each of these metrics, indicating structural weaknesses in infrastructure, capital formation, and commercialization that prevent high AI readiness from translating into durable global competitiveness. In response, we propose a focused, evidence-based policy portfolio:

1. ***National AI Infrastructure Initiative***. Expand from 5 → 10 AI-ready data centres and to ~20,000 H100-equivalent units, closing the largest empirical gap and anchoring the ecosystem.
2. ***AI Investment Acceleration Fund***. Triple private AI investment ($2.9B → $9B by 2028) and improve Canada's investment ranking (7th → 4th), directly targeting top-three financial drivers.
   Canadian Foundation Model Program. Fund 5 nationally backed foundation models, converting research strength into visible, domestic AI assets.
3. ***National AI Literacy & Trust Mission***. Move Canada into the top-10 globally on AI literacy and trust, attacking the main non-technical adoption constraint.
4. ***AI Startup Accelerator Network***. Build five regional accelerators and raise AI firm creation to 100+ new companies per year, strengthening commercialization and scale-up capacity.

This policy, if implemented, is expected to increase the national AI competitiveness score from 26.4 to ~41.4 by 2030, thereby narrowing the gap with the UK, Singapore, and France. No spending deficit is required, as this policy can rely upon a portion of planned federal savings ($2.25B in 2025 rising to $3.6B by 2026–27) plus targeted reallocations from existing innovation programs.

6. Implementation Roadmap

The implementation roadmap for Canada's national AI strategy should prioritize a sequenced set of interventions that address structural deficiencies in computational capacity, talent development, and commercialization pathways. The first phase requires targeted investment in high-capacity AI infrastructure - most notably national GPU clusters, expanded data-centre availability, and shared research compute - to mitigate Canada's current performance gap relative to peer economies. Complementary initiatives should strengthen human-capital pipelines through increased graduate training support, industry-linked fellowships, and streamlined immigration pathways for advanced AI practitioners. A parallel commercialization workstream should focus on scale-up mechanisms for domestic AI enterprises, improved access to growth capital, and sector-specific adoption programs in domains such as health, manufacturing, and natural resources. Governance and safety frameworks, including standardized evaluation protocols and public-sector AI modernization, must be embedded across all phases to ensure that capability expansion is aligned with national economic objectives and responsible innovation principles. A high-level proposal is displayed in the below roadmap.

PHASE 1: National Capacity Stabilization (0–18 months)

• Launch National AI Compute Initiative
• Procure sovereign GPU clusters and expand research compute
• Incentivize data-centre construction
• Deploy AI Investment Acceleration Fund
• Establish KPIs: compute capacity, investment uplift, data-centre expansion

PHASE 2: Innovation & Model Development Expansion (18–36 months)
• Activate Canadian Foundation Model Program

PHASE 3: System-Wide Adoption & Public-Sector Modernization (36–60 months)
• Implement National AI Literacy & Trust Mission
• Launch national training, certification, and sector-specific adoption guides
• Modernize public sector with AI-enabled workflows
• Deploy shared registries, evaluation tools, and responsible AI frameworks

PHASE 4: Ecosystem Scaling & Global Competitiveness (60+ months)
• Scale regional innovation hubs and commercialization supports
• Promote Canadian models internationally
• Establish long-term global research partnerships
• Continuous monitoring of model performance

7. Risks and Mitigations

Implementing an ambitious national strategy involving infrastructure expansion and market intervention carries inherent risks. This section categorizes these risks into Infrastructure & Environmental, Human Capital, Economic & Market, and Societal & Execution domains. A simple risk management framework is applied to assess the probability of occurrence and the severity of impact, alongside specific mitigation strategies anchored in the proposed Implementation Roadmap. Qualitative ratings of probability and impact use a Low/Medium/High scale, with "Critical" denoting risks that could fundamentally undermine the overall strategy if left unaddressed.

7.1 Infrastructure and Environmental Constraints

The National AI Compute Initiative targets an increase from approximately five to ten AI-ready data centers and a scale-up to roughly 20,000 H100-equivalent GPUs by 2030. This expansion faces significant physical and regulatory hurdles.

Grid Capacity and Permitting Delays
Risk Level: High probability, High impact
***Risk*:** High-performance GPUs (e.g., H100s) have massive power-density requirements. Local utility grids may lack the transmission capacity to support five new hyperscale facilities by 2030. Permitting processes in Canada can take 3–5 years, potentially stalling the Phase 1: National Capacity Stabilization timeline.
***Mitigation*:** The federal government should designate AI data centres as critical national infrastructure to fast-track zoning and permitting. The strategy proposes locating new centres in regions with surplus hydroelectric capacity (e.g., Quebec, Manitoba) and engaging utilities during the 0–18 month phase to pre-zone sites and upgrade substations proactively.

Environmental Impact
Risk Level: Medium probability, High impact
Risk**:** Scaling to ~20,000 H100-equivalent GPUs increases Canada's carbon footprint and water consumption for cooling, potentially conflicting with national Net-Zero targets and local environmental constraints.
Mitigation**:** Mandate heat-reuse systems for all new co-funded centres (e.g., feeding waste heat into district heating or agricultural greenhouse systems). Prioritize liquid cooling technologies that can reduce energy consumption by up to 40% compared to air cooling, aligning with the "Energy Efficiency" metrics tracked in Appendix Table 1. Where feasible, tie public funding to commitments for renewable power procurement and transparent reporting on energy and water use.

7.2 Human Capital and Talent Leakage
As noted in Section 4.2, Canada currently sits approximately 1.8 standard deviations behind leading AI nations in AI talent. Expanding infrastructure and investment without addressing talent dynamics risks amplifying the existing brain-drain problem.

"Brain Drain" of Highly Qualified Personnel (HQP)
Risk Level: *High probability, Critical impact*
Risk**:** Canada may successfully train talent through the National AI Literacy & Trust Mission and graduate programs, only to see them migrate to the United States or other hubs for higher salaries and better computer access. If the Canadian Foundation Model Program cannot offer competitive resources and compelling research environments, researchers and entrepreneurs will continue to leave.
Mitigation**:**

- Compute-for-Retention: Tie preferential access to the national GPU cluster (proposed in Table 2) to Canadian residency, Canadian institutional affiliation, and IP retention requirements, while still allowing international collaboration.
- IP-Anchored Fellowships: Offer "Industrial Research Chairs" and fellowships funded by the AI Investment Acceleration Fund that require a 3-year commitment to Canadian institutions or startups, with explicit IP-anchoring clauses that keep core IP in Canada.
- Streamlined Immigration: Create a specific "AI Talent Visa" and accelerate permanent residency pathways for senior technical and product talent, as suggested in the Phase 1 roadmap, to mitigate net talent outflows and attract experienced practitioners into Canadian firms and labs.

7.3 Economic and Market Risks
The strategy relies on "crowding in" private capital to triple annual AI investment to $9B by 2028 and significantly increase the number of newly funded AI firms.

Private Capital Inertia
Risk Level: *Medium probability, High impact*
Risk**:** Canadian pension funds and venture capital investors are historically risk-averse regarding early-stage technology. There is a risk that the AI Investment Acceleration Fund (Table 3) fails to attract the expected 3:1 ratio of private matching dollars, limiting the scale-up of domestic AI firms and infrastructure projects.

Mitigation**:** Structure public funds as first-loss capital or utilize a sidecar model to de-risk investments for pension funds. Implement the proposed SR&ED tax credit updates for compute expenditures (not just labour), immediately improving ROI for private firms deploying AI infrastructure and models.

Market Adoption Lag
Risk Level: *Medium probability, High impact*
Risk**:** Canadian SMEs typically lag in technology adoption (the commercial gap identified in Section 4.2). Creating domestic models (Table 4) and infrastructure is of limited value if Canadian industry does not adopt them at scale.
Mitigation**:** The AI Startup Accelerator Network should include Demonstration Programs in which the federal government acts as an early or "first" customer via public procurement. This validates the technology in real-world settings and reduces perceived risk for private sector buyers. Complementary sector-specific adoption guides and "AI Clinics" (Section 5 and Table 5) can lower adoption barriers for SMEs.

Table 9 in the Appendix summarizes the most material risks, with their assessed probability, impact, and primary mitigation strategies, tied directly to the proposed policy instruments and roadmap phases.These risks do not negate the strategy's feasibility, but they highlight where implementation discipline and targeted governance will be essential. By embedding these mitigation measures within the National AI Compute Initiative, the AI Investment Acceleration Fund, the Canadian Foundation Model Program, and the National AI Literacy & Trust Mission, the Government of Canada can substantially reduce downside risk while preserving the upside of accelerated AI competitiveness.

8. Conclusion

Canada stands at a critical inflection point in the global Artificial Intelligence race. As this analysis has demonstrated, Canada's historical strength in foundational research, long our primary competitive advantage, is no longer sufficient to secure economic sovereignty in an AI-driven future. The benchmarking data reveals a stark reality: despite world-class academic output, Canada trails global leaders by approximately 2 standard deviations in commercial ecosystem maturity and talent retention. Without immediate intervention, the gap between Canada's research potential and its economic reality will continue to widen as peer nations aggressively scale their compute infrastructure and capital markets.

Project Scale Up offers a decisive response to this challenge. By moving beyond a "research-first" mentality to a "scale-first" strategy, Canada can convert its intellectual capital into tangible economic power. The proposed strategy is holistic, addressing the three binding constraints identified in our regression analysis: **Infrastructure, Capital, and Talent.**
By implementing the **National AI Compute Initiative** and the **AI Investment Acceleration Fund**, Canada will not only secure the physical hardware required for innovation (scaling to 20,000 H100-equivalent GPUs) but also de-risk the private capital needed to grow domestic firms. Simultaneously, the **Canadian Foundation Model Program** and **National AI Literacy Mission** ensure that this infrastructure is utilized to solve Canadian problems, fostering a workforce that is not only skilled at building AI but trusted to deploy it responsibly.
If executed with discipline, the impact by 2030 will be transformative. We project a rise in Canada's AI Competitiveness Score from 26.4 to 41.4, a tripling of private sector investment to $9B, and the

establishment of a sovereign, commercially viable AI ecosystem. This strategy moves Canada from being a net exporter of talent and IP to a global hub of AI commercialization and industrial application.

Recommended Immediate Actions

To initiate the **Phase 1: National Capacity Stabilization** roadmap, the Government of Canada should take the following concrete steps immediately:

- **Authorize the Governance Structure:** Formally establish the central authority responsible for the *National AI Compute Initiative* to oversee procurement and public-private partnerships.
- **Secure Infrastructure Sites:** Begin immediate zoning and energy grid assessments in Quebec and Manitoba to support the construction of the proposed AI-ready data centres.
- **Launch the Investment Vehicle:** Operationalize the *AI Investment Acceleration Fund* by allocating the initial tranche of re-profiled federal savings and engaging pension fund partners for matching capital.
- **Signal Talent Retention:** Announce the immediate creation of the "AI Talent Visa" and "Compute-for-Retention" grants to stem the immediate flow of HQP to the US market.

The path forward is ambitious but entirely achievable within existing fiscal constraints. By acting now, Canada can ensure that the AI of the future is not just researched here, but built, owned, and commercialized here.