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Recommendation:

Unlock and deliver on Canada’s existing capacity in data sovereignty, AI, and brain health expertise by scaling OBI’s federated Intelligence Network for Brain Health Data.



The Opportunity: Position Canada as a Global Leader in AI and Brain Health

Canada has a generational opportunity to lead globally at the intersection of **data sovereignty, artificial intelligence (AI), and brain health**.

The country possesses world-class strengths: leading AI research talent, publicly funded healthcare systems rich in longitudinal data, and globally recognized neuroscience expertise. Yet much of this advantage remains unrealized. Health data – including brain health data – is highly distributed across hospitals, research centres, and communities, and is rarely connected or used to its full potential. Globally, more than 70% of health data is never analyzed, representing a significant untapped economic and clinical asset.

At the same time, global competition is intensifying. Jurisdictions that can securely harness data to train AI – while maintaining privacy, trust, and sovereignty – will define the next generation of health innovation and capture associated economic value.

Canada is uniquely positioned to lead, but doing so will require **coordinated federal investment** to enable secure, interoperable, and privacy-preserving data collaboration across jurisdictions that maintains regional data sovereignty. This would transform fragmented data assets into a **national platform for innovation, productivity growth, and economic security**.

Ontario Brain Institute's Role and Readiness to Lead

Who We Are

The [Ontario Brain Institute \(OBI\)](#) is a non-profit organization that brings together researchers, clinicians, industry, patients, and communities to improve brain health while driving innovation and economic growth.

Since 2010, OBI has translated \$244 million in provincial investment into **over \$1 billion in impact**. It has supported more than 110 brain health startups, connected data from over 70 clinical studies and 27,000 patients, and enabled nearly 1,000 researchers to accelerate discovery and improve care.

At the core of this work is [Brain-CODE](#), a globally recognized neuroinformatics platform that securely integrates clinical, imaging, and molecular data. It enables data standardization, linkage, and analysis across institutions while maintaining strong privacy and governance frameworks.

OBI's [Centre for Analytics](#) builds on this foundation by applying advanced AI and machine learning to real-world data, supporting both research and commercialization. Through its federated learning platform, **NeuroFL**, OBI enables AI models to be trained across institutions without sharing sensitive data.

Innovation and Industry Impact

OBI has supported more than 120 startups, generating a 26x return on investment (~\$463M), and advanced multiple AI-driven initiatives in brain health. It has also built national training pipelines in AI and neuroanalytics, contributing to a highly skilled workforce.

Through partnerships with institutions across Canada – including over 40 major universities and research centres in Ontario (e.g., Vector Institute, University of Toronto) and across Canada (e.g., Hotchkiss Brain Institute, McGill, Dalhousie University) – OBI has already laid the groundwork for a national network. Federal investment would allow this proven model to scale, increasing returns on public data investments and positioning Canadian firms to compete globally in health AI.

Privacy by Design

OBI has long championed international privacy standards as a Privacy by Design ambassador and a leading voice in data governance through the Global Alliance for Genomics and Health (GA4GH). OBI's Centre for Analytics and Brain-CODE platform are working closely with other large Canadian platform partners such as the Pan Canadian Genome Library (PCGL) on cornerstone projects with the Canadian Precision Health Initiative who are also adopting GA4GH standards. By combining Genome Canada's genomics contributions with OBI neuroscience phenotypic data, researchers will have access to rich AI-ready multi-modal data that can bolster Canada's health and research ecosystem in precision health, all while prioritizing patient privacy.

The Challenge: Canada's Untapped Data Advantage

Canada's health data is a strategic asset, but it remains fragmented, underused, and disconnected from economic objectives. As data becomes central to productivity and competitiveness, Canada risks falling behind jurisdictions investing in sovereign AI infrastructure¹².

¹ Canadian Medical Association (2024): [Data Matters. What we don't know about health care in Canada](#)

² Pan-Canadian Health Data Strategy (2021): Expert Advisory Group Report 2: [Building Canada's Health Data Foundation](#)



Fragmented systems across provinces and institutions limit interoperability and prevent data from being linked at scale³. As a result, valuable data remains siloed and inaccessible for research, system planning, or innovation.

Underutilization of data constrains productivity and economic growth. Health data is a foundational input for AI and precision medicine, yet much of it is never used due to access barriers and lack of infrastructure.

Regulatory complexity⁴ – including inconsistent privacy and data-sharing frameworks – creates uncertainty and slows collaboration. While Canada’s privacy standards are a strength, fragmentation increases costs and reduces attractiveness for investment.

Centralized data models introduce risks and inefficiencies. They require moving sensitive data into single repositories, increasing cybersecurity exposure, infrastructure costs, and public trust concerns, while failing to address jurisdictional constraints.

Lack of national infrastructure⁵ limits Canada’s AI competitiveness. Without a coordinated platform, innovations remain localized, datasets lack diversity, and AI solutions cannot scale effectively.

These barriers have measurable consequences, including an estimated **\$2 billion annually in inefficiencies**⁶ from disconnected systems, lost productivity from underutilized data, and increased reliance on foreign platforms.

Canada’s challenge is not a lack of data or expertise – but the absence of **coordinated, sovereign infrastructure** to activate these assets at scale.

The Solution: A National Brain Health Federated Intelligence Network

OBI proposes to scale its **Neuroscience Federated Learning (NeuroFL)** platform into a national **Federated Intelligence Network for Brain Health Data** for secure, cross-jurisdictional AI development.

A Federated Learning Model Designed for Canada

Federated learning enables AI models to be trained across multiple institutions **without moving sensitive data**:

³ <https://www.infoway-inforoute.ca/en/component/edocman/6443-quantifying-the-benefits-of-digital-health-interoperability/view-document?Itemid=103>

⁴ Golandouz, H.M., Lix, L.M. Synthetic health data in Canada: A scoping review of methods, applications, and data sources. Can.J.Public.Health (2026). <https://doi.org/10.17269/s41997-026-01153-6>

⁵ Pan-Canadian Health Data Strategy (2021): Expert Advisory Group Report 2: [Building Canada’s Health Data Foundation](#)

⁶ Canada Health Infoway (2023): [Quantifying the Benefits of Digital Health Interoperability](#)



- Data remains within hospitals, research centres, and provincial systems
- Models are trained locally and shared as encrypted updates
- No raw data is transferred or centralized

This approach aligns with Canada’s decentralized health system and supports public expectations for privacy and responsible data use.

By eliminating the need for data pooling, federated learning reduces regulatory complexity and accelerates collaboration. It can shorten deployment timelines significantly by avoiding delays associated with data-sharing agreements and harmonization.

Privacy, Security, and Sovereignty by Design

NeuroFL operationalizes federated learning through a robust governance and security framework:

- Sensitive data never leaves originating institutions
- All communications are encrypted
- Infrastructure is hosted securely within Canada, by a trusted third party
- Strict authentication and access controls are enforced
- Models are reviewed and governed before deployment

This ensures that data remains under Canadian control while enabling national-scale collaboration – directly supporting federal priorities in **data sovereignty and economic security**.

A Scalable, End-to-End Innovation Pipeline

OBI’s approach integrates four core components:

- **Brain-CODE** – secure, standardized data infrastructure connecting over 40 institutions and 1,000 users
- **Centre for Analytics** – advanced AI development, validation, and machine learning operations (MLOps) capabilities
- **Clinical and community research networks** – enabling real-world testing and deployment



- **Commercialization** – pipeline to de-risk made-in-Canada neurotech (supported 120+ companies to date, generating 26x in follow-on funding for the start-ups)

Together, these form a **nationally scalable innovation pipeline**, connecting data, researchers, clinicians, and companies to accelerate AI development and adoption.

This model lowers barriers for Canadian startups and SMEs, enabling access to high-quality data and infrastructure while supporting commercialization and job creation.

Federal investment would scale this proven system into a **persistent national capability**, with applications beyond brain health to other priority areas.

Outcomes and Impact: A Strategic Investment in Canada's Future

A national Brain Health Federated Intelligence Network represents a high-impact investment aligned with federal priorities in **productivity growth, economic security, and data sovereignty**.

- Economic and Innovation Impact
 - Accelerates growth of Canadian AI and neurotechnology companies
 - Creates high-skill jobs in AI, data science, and digital health
 - Attracts private-sector investment through shared infrastructure
 - Improves system productivity through data-driven decision-making
- Global Competitiveness and Sovereignty
 - Positions Canada as a leader in **trusted, privacy-preserving AI**
 - Reduces reliance on foreign data infrastructure and platforms
 - Anchors intellectual property and economic value in Canada
 - Strengthens control over critical national data assets
- Health and System Impact
 - Enables earlier diagnosis and intervention for brain disorders
 - Supports more precise, personalized treatments
 - Accelerates clinical trials and research translation
 - Improves efficiency and sustainability of the health system



- Long-Term National Advantage
 - This initiative establishes a durable national platform that can extend to broader health priorities, supporting Canada’s transition to a **data-driven, innovation-based economy**.

Conclusion

Canada has the talent, data, and expertise to lead globally in AI and brain health. However, without coordinated national infrastructure, these strengths remain underleveraged.

In a data-driven global economy, the ability to securely access and mobilize data is a key driver of **productivity, competitiveness, and economic security**. Countries investing in sovereign AI infrastructure today will define future industries and value chains.

Canada does not need to build a new model – OBI has already developed a **proven, privacy-preserving system** that is ready to scale.

A federal investment will:

- Unlock Canada’s data advantage
- Strengthen AI sovereignty and economic security
- Accelerate health innovation and system performance
- Drive long-term productivity and economic growth

Investing now will position Canada as a global leader in trusted AI and brain health.

ANNEX A: Budget and Implementation

Proposed Investment

The Government of Canada should invest in a national, privacy-preserving federated learning infrastructure for brain health and AI, building on OBI's proven model.

A **targeted investment of \$50 million over 5 years (2026–2031)** will enable rapid national scaling while leveraging existing infrastructure and partnerships.

Funding Allocation

Goal	Cost
National Federated Learning Infrastructure <ul style="list-style-type: none"> Expand the NeuroFL platform across provinces all 10 provinces and 3 territories Deploy a minimum of 20 federated nodes in hospitals, research centres, communities, and industry Secure cloud and compute infrastructure Establish governance, privacy, and cybersecurity frameworks 	\$25M
Data Integration and Platform Expansion <ul style="list-style-type: none"> Scale Brain-CODE nationally Establish data standards, data quality frameworks, and interoperability across jurisdictions Integrate multi-modal datasets (e.g., clinical, imaging, genomics) 	\$10M
AI Commercialization and SME Support <ul style="list-style-type: none"> Support for Canadian startups and SMEs to access infrastructure Validation and deployment of AI tools in real-world settings Industry partnerships and co-development 	\$10M
Talent and Workforce Development <ul style="list-style-type: none"> Training programs in AI, data science, and neuroanalytics Fellowships and placements across academia, healthcare, and industry 	\$5M
TOTAL	\$50M

This investment is expected to:

- Leverage **2–3x in co-investment** from provinces, industry, and global partners
- Support **50+ companies, 60+ research teams**
- Enable **multi-site national AI projects**
- Create and sustain **hundreds of high-skill jobs**



Implementation Timeline

Phase	Timeline
Foundation and Expansion <ul style="list-style-type: none">• Establish national governance framework• Onboard initial provincial (target: 3) and institutional partners (target: 20)• Deploy first wave of federated nodes (target: 5)	Years 1-2
Scale and Impact <ul style="list-style-type: none">• Expand to a pan-Canadian network (10 provinces and 3 territories)• Launch multi-node AI projects at scale• Integrate with clinical trials and care pathways• Deliver measurable health and economic outcomes	Years 3-5