

What Does Responsible AI Infrastructure Actually Look Like?

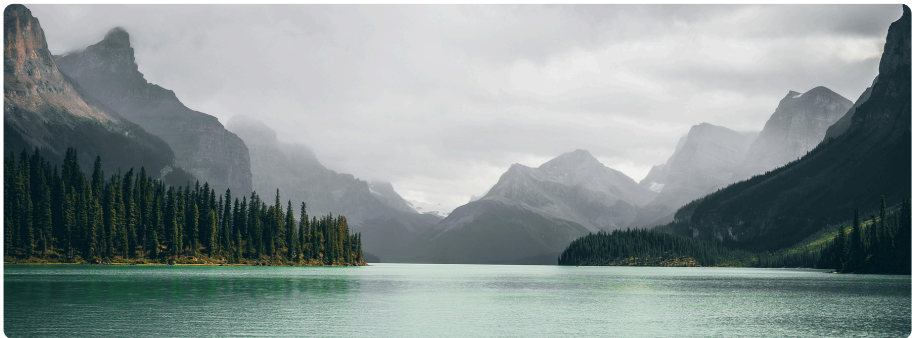
Responsible AI Infrastructure for Indigenous Research Communities

CONTEXT

Indigenous research communities are being asked to use AI tools that don't belong to them, weren't built for them, and often can't be governed by them. This research asks what it would look like if that changed. That question matters to every community trying to find an alternative to extractive AI infrastructure.

WHAT WE STUDIED

40+	5	2
Sources Reviewed 6 categories	Pods Surveyed 6 responses	Methods Literature + survey



INFRASTRUCTURE ALTERNATIVES: MATURITY ASSESSMENT

☒ READY NOW Refurbished servers, small AI models you can run locally, cooperative cloud hosting, and facilities powered by renewable energy.	☐ EMERGING Portable and modular data centers, cooperative cloud networks, and systems that capture and reuse waste heat.	☐ EXPERIMENTAL Off-grid compute powered entirely by renewables, seawater cooling systems, and decentralized networks + community-shared computing power.
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SUSTAINABILITY STRATEGIES: STRUCTURAL VS. SUPERFICIAL

SUPERFICIAL MITIGATION Carbon credits and renewable energy contracts can reduce the harm of existing infrastructure. But the underlying footprint stays the same.	STRUCTURAL REDESIGN Smaller models, refurbished hardware, cooperative ownership, and edge compute reduce the footprint by design. The goal is infrastructure built around the land, not on top of it.
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DECISION TOOLKIT: MATCH PRIORITIES TO PATHWAYS

High Sovereignty + Low Tech Burden	Refurbished local servers with small models. Low-cost, low footprint, community controlled.
High Sovereignty + Higher Capacity	Local data center or cooperative compute (Nubo, platform.coop).
Affordability First	Green cloud with sovereignty protections written into the contract, hosted in a shared data center.
Environmental Integrity	Edge compute with air cooling and small models. Build the infrastructure around the land.
All Priorities - Phased Over Time	Start with small models on existing hardware then build toward cooperative ownership over time.

WHAT THE RESEARCH NETWORK TOLD US

Across 5 Indigenous research groups surveyed, a consistent story emerged. Every group named **data sovereignty** as a top priority, and every group said **cost and technical** complexity were standing in the way. Most are still relying on university systems by default, not by choice. One group stands out. They've already built their own **community-controlled system** using affordable, off-the-shelf hardware on their own land, and are actively developing a standardized package of hardware, software, and governance that other communities can implement locally.

WHAT WE LEARNED

- Most research doesn't need powerful AI.** For language and cultural work, smaller focused tools get the job done.
- Sovereignty is a prerequisite, not a preference.** Where data is stored and who controls the infrastructure are governance decisions, not just technical ones.
- Cost and complexity block everyone.** Most communities default to university AI systems because building their own is too expensive and too hard.
- Running your own system is not the same as owning the AI.** Even Independent setups still start with models the community had no role in building.

Where data lives and who controls it is a decision about power, not just technology. For Indigenous researchers, it cannot be treated as a technical detail.

IMPLICATIONS

There is no one size fits all solution. Every infrastructure choice comes with real tradeoffs around control, cost, complexity, and environmental impact. What matters is that **communities get to decide for themselves**. The bigger challenge ahead is **who builds the AI** and whose needs it's actually designed to serve.

