2026 RKL Compute Budget Concept Paper

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Resonant Knowledge Lab (RKL) | *Secure reasoning. Local control.* | November 2025

Purpose

RKL Compute provides the technical foundation for Resonant Knowledge Lab's *Secure Reasoning* mission — enabling advanced AI reasoning on protected, locally governed data without removing that data from local control. This hybrid infrastructure integrates **cloud AI services**, **centrally managed compute**, and **eventual partner-site deployments** to support RKL research, pilot programs, and governance innovation.

Objectives

1. **Enable Secure Reasoning Pilots** – Safely apply GPT-class models to governed data.
2. **Demonstrate Interoperability** – Connect GPT, Claude, Gemini, and open-source models through the Model Context Protocol (MCP).
3. **Provide a Governance Sandbox** – Test consent, traceability, and accountability frameworks.
4. **Establish a Scalable Foundation** – Build capacity for future institutional collaborations and public-interest applications.

Architecture Overview

1. Cloud & Subscription Layer

Service	Description	Est. Annual Cost (USD)
OpenAI GPT-Pro / Team	Primary reasoning & synthesis	1,000
Anthropic Claude Pro / Code	Agentic reasoning & code execution	900
Google Gemini Advanced	Multimodal research & document analysis	600
Perplexity Pro (optional)	Research verification	400
Total Annual Subscriptions	—	**3,000**

Accounts will be centrally managed under RKL for authorized research, prototyping, and pilot development.

2. Central Compute Layer

A locally governed environment hosting open-source models, retrieval pipelines, and audit systems under the *Secure Reasoning Framework.* The current prototype operates on existing infrastructure and will evolve into a dedicated institutional system as funding permits.

Pilot Demonstrations (2026)

- **Secure Reasoning Demonstrator** – Comparative reasoning across GPT, Claude, Gemini, and local models using Arctic resilience data.
- **CARE Governance Sandbox** – Testing consent and accountability configurations.
- **Open Ocean Research Project** – Hybrid reasoning on marine and satellite data under local governance.

Governance & Security

- No ungoverned data leaves local authority.
- All reasoning events are traceable and verifiable under the **Model Context Protocol (MCP)**.
- Commercial AI use follows explicit consent and audit policies.
- Encrypted local storage and reproducible backup workflows ensure compliance and transparency.

Budget Snapshot (FY 2026)

Category	Description	Est. USD
AI Subscriptions	GPT, Claude, Gemini, Perplexity	3,000
Central Hardware	Compute / storage / networking upgrades	8,000
Pilot Deployments	On-prem partner kits	10,000
Software & Ops	Domains, containers, power & maintenance	2,000
Total Estimated	—	**23,000 − 25,000**

Next Steps

1. Finalize access policies and architecture (Nov–Dec 2025)
2. Secure FY 2026 funding (Dec–Jan)
3. Launch first Secure Reasoning Demonstrator (Spring 2026)

Resonant Knowledge Lab — Secure reasoning. Local control.