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Intelligence Aggregator Architecture

Why Radiant Outperforms Any Single Model

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The Core Principle: A System > A Model

Radiant (Think Tank) produces significantly better results than any single state-of-the-art model (GPT-4o, Claude 3.5 Opus, Gemini Ultra, etc.)—not because it is “smarter” in a raw IQ sense, but because of a fundamental architectural principle:

A well-designed system will always outperform any single component within it.

A SOTA model like Gemini Ultra is a single engine. Radiant is the Formula 1 team that uses that engine. By wrapping models in layers of verification, diverse reasoning, and deterministic tools, Radiant raises the **floor** of reliability and the **ceiling** of complexity.

1. Mixture of Agents (MoA) Advantage

Recent research proves that an ensemble of models often outperforms a single superior model. Radiant doesn’t just ask one model—it **triangulates the truth**.

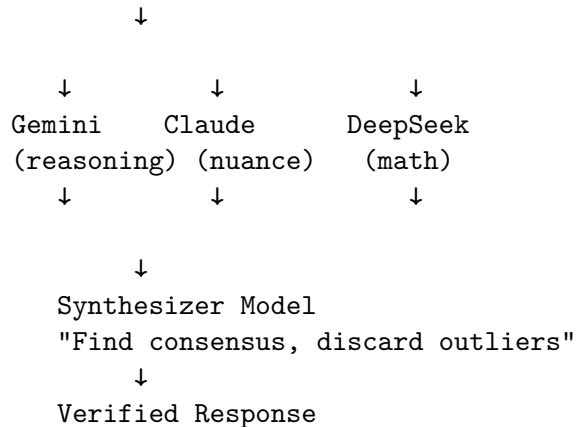
Single Model Approach

User → "Complex physics question" → Gemini Ultra → Response

Problem: If Gemini has a blind spot or bias in that area,
it hallucinates confidently with no correction.

Radiant Ensemble Approach

User → "Complex physics question"



Result: Statistically filters out “hallucination noise” that any single model inevitably produces.

2. Adversarial Verification (The Critic Loop)

A single model struggles to “check its own work” because the same neural pathways that made the mistake will likely validate it.

Single Model Self-Check

User: "Draft a secure legal contract"

Model: [Generates contract with subtle error]

User: "Is this correct?"

Model: "Yes, this is correct" ← Doubles down on error

Radiant Cross-Provider Check

Step 1 - Draft:

Gemini generates the contract

Step 2 - Audit:

Claude (different provider, different training data)
receives the draft with hostile persona:

"You are a Senior Security Auditor. Find loopholes."

Step 3 - Refine:

If Claude finds issues → Gemini rewrites
Loop until PASS or max iterations

Step 4 - Deliver:

User receives vetted, peer-reviewed output

Result: A peer-reviewed output versus a first draft.

3. Execution vs. Simulation (The Sandbox Advantage)

SOTA models are **probabilistic text generators**. They simulate logic. Radiant can be a **deterministic execution engine**.

Single Model Code Generation

User: "Write a Python script to visualize data"

Model: [Writes code that looks perfect]

Reality: Uses a function deprecated in 2024

→ Code crashes when user runs it

Radiant Draft-Verify-Patch Loop

Step 1: Gemini writes the code

Step 2: Radiant executes code in isolated sandbox (Micro-VM)

Step 3: Radiant catches DeprecationWarning from stderr

Step 4: Radiant feeds error back to Gemini: "Fix this error"

Step 5: Repeat until code passes execution

Result: User receives code GUARANTEED to run

Result: Working code, not code that "looks like it would run."

4. Avoiding the Safety Tax

Generalist models are heavily tuned for general safety, which often degrades performance in niche or technical domains (the "alignment tax").

Single Model Safety Limitation

User: "Create a penetration testing strategy"

Model: "I can't help with that" or [generic watered-down answer]

Radiant Specialized Routing

Brain Router detects: Domain = "Cybersecurity"

Routes to: Self-hosted uncensored model
(Running on Radiant's SageMaker layer)
Fine-tuned specifically for security auditing

Result: Professional, actionable penetration test plan

Result: Professional output instead of a safety lecture.

5. The Radiant Multiplier

Radiant wins because **Radiant includes the SOTA model.**

If: Radiant = SOTA Model + Verification + Tools + Memory

Then: Radiant > SOTA Model (mathematically certain)

Comparison Matrix

| Feature | Single SOTA Model | Radiant (Orchestrator) |
|-------------------------|--|--|
| Reliability | Single point of failure (hallucination) | Consensus-based (MoA) verification |
| Code Output Bias | Probabilistic (might run) Provider-specific training bias | Deterministic (verified in sandbox) Bias cancellation (Google + Anthropic + OpenAI) |
| Long Context | "Lost in the Middle" syndrome | Map-Reduce processing of massive datasets |
| Domain Expertise | Safety-filtered generalist | Specialized model routing |
| Self-Correction | Validates own errors | Cross-provider adversarial checking |

Trade-offs

Radiant's superiority comes with costs:

| Trade-off | Impact | Mitigation |
|-------------------|-------------------------|--------------------------------------|
| Latency | Higher (multiple steps) | Parallel execution, caching |
| Cost | 2-4x more tokens | Use selectively for high-value tasks |
| Complexity | More moving parts | Robust fallback chains |

Recommendation: Enable MoA and Verification for high-stakes tasks (legal, medical, financial, security). Use single-model routing for casual conversations.

Configuration

See [RADIANT Admin Guide - Intelligence Aggregator](#) for configuration options.

Default Settings

| Feature | Default | Recommended For |
|-----------------------------|-----------|---------------------------------|
| Uncertainty Detection | On | All tasks |
| Success Memory | On | All tasks |
| MoA Synthesis | Off | Research, analysis, high-stakes |
| Cross-Provider Verification | Off | Legal, code, security |
| Code Execution | Off | Coding mode only |

Related Documentation

- [RADIANT Admin Guide](#) - Full configuration
 - [Think Tank Admin Guide](#) - User-facing features
 - [Provider Rejection Handling](#) - Fallback system
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