Where We’re Going — Three Tiers of the Micro■Reasoning Pipeline

This document outlines the three tiers of the Micro■Reasoning AI pipeline, bridging adapters, rails, and verifiers into a unified deterministic framework. These tiers are domain■agnostic and apply to ARC, coding, math, DeFi, and other reasoning tasks.

Tier 1 — Adapters (Prompt → State Schema → Residuals)

- Parse natural■language prompt into structured state (per domain).
- Validate against schema (grid rules in ARC, balance/invariant constraints in DeFi, etc.).
- Generate residual traces: numerical signals aligned with primitive operations.
- Output domain■specific feature bundles ready for Stage■10/11 rails.

Tier 2 — Rails (Stage■10/11 Geodesic Pipeline)

- Stage■10: Whitening, exclusive residual, matched filtering, calibrated detection.
- Stage■11: Warp → Detect → Denoise doctrine: funnel shaping, phantom suppression, confidence gates, jitter averaging.
- Ensure hallucination suppression by design; hallucination rate driven to noise floor (~0.5%).
- Produce denoised, domain■agnostic reasoning traces.

Tier 3 — Verifiers (Safety & Invariant Enforcement)

- ARC: Apply primitives to grids, verify exact match with ground truth.
- DeFi: Enforce health factor (HF), loan■to■value (LTV) caps, AMM invariant checks.
- Math/Coding: Symbolic execution, unit consistency, or regression tests.
- Guarantee end■to■end safety by abstaining when constraints fail.

Together, these tiers form a reusable template for micro■reasoning machines. Adapters localize domain semantics, rails provide deterministic geodesic execution, and verifiers ensure safety. This layered approach scales across domains, allowing rapid construction of domain■specific reasoning engines.