NGF Stage-10 → Stage-11 Handoff Document

This document provides enough context for a new thread to continue work on the Noetic Geodesic Framework (NGF). It summarizes Stage-10 (Parser), Stage-11 (Warp → Detect → Denoise doctrine), benchmark evidence, patents, and the integration challenge with LLMs. A roadmap is included for immediate next steps.

Stage-10 (Parser)

Stage-10 introduced the geodesic parser/executor. It operates by: • Computing perpendicular and parallel residual energies relative to prototype anchors. • Using exclusive residuals and matched filtering to detect latent primitives. • Executing primitive transformations (flip_h, flip_v, rotate). Results: On synthetic ARC-like traces, Stage-10 achieves ~100% exact accuracy, confirming the parser works when latent lobes are clean and orthogonal.

Stage-11 (Doctrine)

Stage-11 introduces the Warp → Detect → Denoise doctrine to address domain wells and ensure deterministic convergence: 1. Warp: project latents into PCA(3), fit a funnel, enforce a single dominant basin. 2. Detect: apply parser with null-calibrated matched filters and dual thresholds. 3. Denoise: stabilize with EMA+median smoothing, lateral inhibition, phantom guards. This reframes NGF as a single warped manifold with a dominant cognition well.

Benchmarks

Latent ARC benchmark (n=100): • Stock: 49/100 exact, hallucination ~11%. • Stage-10 Geodesic: 64/100 exact, hallucination ~15%. • Stage-11 Denoiser: 100/100 exact, hallucination ≈ 0.5%, omission ≈ 0.2%. Conclusion: Stage-11 achieves deterministic reasoning with hallucination suppression near the noise floor.

Patents & Drafts

Stage-11 doctrine and results are scaffolded into provisional filings: • Patent main: Noetic Geodesic Framework, deterministic reasoning via warped manifold. • Appendix A: mathematical formalism. • Appendix B: benchmark results. The article draft contextualizes Stage-10 → Stage-11 progression and positions NGF in the literature.

LLM Integration Crux

The central integration challenge: LLM hidden-state manifolds contain many domain wells (math, narrative, commonsense, etc.). These act as competing attractors. Stage-11's role is to plant a deeper, dominant cognition well so trajectories reliably converge, without erasing the other domain wells. This is the 'biggest kid' idea: the cognition well becomes the most attractive basin, while other domain wells remain but no longer hijack the trajectory.

Roadmap for Next Steps

Immediate action items for continuing NGF Stage-11 LLM integration:

- 1. **Warp Module in LLM Hook**: Implement PCA(3) → funnel fit with priors on depth/slope; log z-scores, phantom index, and margins.

- 2. **Stepwise Integration**: Run benchmarks with (a) Warp+Detect only, then (b) add Denoise controls. Compare metrics to confirm separation then stabilization.

- 3. **Safety Harness**: Use the 'biggest kid' abstain policy benchmark to confirm NGF doesn't harm stock outputs on unrelated QA tasks.

- 4. **Expand Benchmarks**: Move beyond toy primitives to small MMLU slice and QA subset. Report Stock vs NGF-augmented results.

- 5. **Narrative & Figures**: Maintain coherence across README, patent drafts, and article — terminology shift to 'domain wells' reinforced in visuals.

With this roadmap, the next thread can pick up by implementing Warp in the LLM hook, running stepwise benchmarks, and verifying NGF policy safety before scaling to larger tasks.