



# NeuroForge — Substrate-First Cognitive Engine

Closed-loop validation of reward-consolidation coupling and assembly formation — with a protected core.

## The Problem

- AGI demands grounded cognition: measurable internal dynamics and interpretable progress signals.
- Most systems optimize outputs; few verify substrate-level learning trajectories.
- We prioritize validation of the substrate where learning happens.

## Our Approach

- Substrate-first cognition with a global workspace (Phase C) and role-filler binding.
- Closed-loop validation pipeline linking reward signals to internal substrate changes.
- Protected-core publishing: share outcomes and principles; keep implementation private.

## Key Signals (Non-Sensitive)

- Throughput (neurons/s): scalable capacity and coordination envelopes.
- ▲ • Consolidation spikes: phase-coherent events suitable for safe telemetry.
- • Reward-learning coupling: measured strength and lag structure across runs.
- • Assembly richness: growth curves and consolidation plateaus.

## Validation Loop (Conceptual)

Reward probe → Substrate dynamics → Safe telemetry → Analysis → Dashboard → Hypothesis → Next run.

Designed to validate internal learning while preserving confidentiality.

### Winner Timelines

- Stable coordination trends over time.

### Richness Curves

- Coherent growth phases and plateaus.

### Lag Coupling

- Non-random coupling consistent with phase-aligned learning.

## Strategic Vision

- Embodied agents for interactive environments.
- Simulation platforms for multimodal cognitive testing.
- Cognitive services for learning, consolidation, and memory.
- Research tooling to compare learning trajectories across conditions.

Protected Core Notice: This overview intentionally avoids code, full architecture, and data paths. Detailed schematics are available only under NDA and approved collaboration.

Open to strategic partnerships in research and product development. Seeking early collaborators, advisors, and aligned investors. Contact us to schedule an NDA discussion and curated demo.

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