SAP GATE TESTS

Executable Diagnostics for the Structural Alignment Protocol

0. Layer Correctness Test

Pre-Sequence Diagnostic

Purpose Verify that the problem is framed at the correct structural layer before evaluating researchers.

Test Conditions The Structural Lead must confirm:

- **the problem's generative invariants correspond to the chosen layer**
- **no representational or abstraction artifacts are mistaken for substrate structure**
- **no substrate details are mistaken for representational or abstraction structure**
- **the problem can be articulated cleanly at the chosen layer without collapse**

Failure Condition If the layer is incorrect, SAP halts. The layer must be corrected before any researcher is evaluated.

1. Invariant Gate Test

Primary Gate — Immediate Exit on Failure

Purpose Determine whether the researcher can identify the generative invariants of the problem.

Test Conditions The researcher must:

- **identify generative invariants without using math or formalism**
- **distinguish generative invariants from descriptive patterns**
- **collapse the problem to its structural constraints**
- **articulate invariants at multiple altitudes without drift**
- **maintain invariant recognition when representations change**

Failure Condition Failure to identify generative invariants → Immediate Exit Condition. No further gates are evaluated.

2. Layer Gate Test

Secondary Gate — Architecture-Layer Matching

Purpose Determine whether the researcher's cognitive architecture matches the problem's layer.

Test Conditions The researcher must demonstrate:

- **substrate-layer problems → generative, mechanism-first reasoning**
- **representation-layer problems → formal, model-building reasoning**
- **abstraction-layer problems → conceptual synthesis and altitude stability**
- **no collapse when shifting between adjacent layers**
- **no reliance on domain identity to determine layer**

Failure Condition Architecture does not match the problem's layer → Exit Condition.

3. Architecture Gate Test

Tertiary Gate — Coherence and Stability

Purpose Determine whether the researcher's cognitive architecture is structurally coherent.

Test Conditions The researcher must:

- **maintain coherence across layers and representations**
- **demonstrate math-independence (math may be used, but not required for coherence)**
- **avoid compensatory formalism**
- **preserve invariant structure when shifting altitude**
- **avoid narrative reasoning as a substitute for structure**

Failure Condition Architecture collapses, compensates, or drifts → Exit Condition.

4. Drift Gate Test

Stability Gate — System Integrity

Purpose Determine whether the researcher induces drift in the system.

Test Conditions The researcher must not induce:

- **Layer Drift — pulling the problem to the wrong altitude**
- **Invariant Drift — altering or mis-stabilizing generative invariants**
- **Formalism Drift — replacing structure with math or representation**
- **Narrative Drift — replacing structure with story, analogy, or identity**
- **Altitude Drift — collapsing or inflating the problem's altitude**

Failure Condition Inducing drift → Exit Condition.

5. Alignment Test

Final Determination

Alignment Criteria A researcher is aligned only if:

- **Invariant Gate = pass**
- **Layer Gate = pass**
- **Architecture Gate = pass**
- **Drift Gate = pass**

Outcome

All gates passed → Aligned

Any gate failed → Exit

6. System Stabilization Test

Post-Alignment Behavior

Purpose Confirm that the aligned set forms a self-solving system.

Test Conditions The system must exhibit:

- **stable invariants**
- **zero drift**
- **correct layer maintenance**
- **collapse of unnecessary complexity**
- **convergent generative behavior**

Outcome

If all conditions hold, SAP concludes. No further governance is required.

Canonical Summary

Invariant Gate → fail = exit Layer Gate → fail = exit Architecture Gate → fail = exit Drift Gate → fail = exit All gates passed → aligned Aligned → self-solving system