MGAG Public Architectural Stress-Test Summary

This summary presents a representative subset of adversarial stress scenarios applied to Multi-Layer Global Architectural Governance (MGAG). Its purpose is to demonstrate how MGAG behaves under compositional pressure, cross-layer conflict, latency, and authority fragmentation, and to make its governance guarantees falsifiable rather than assumed.

This is not a complete stress test. It is a public extract.

Rule and section references correspond to definitions in the MGAG paper.

Stress Scenario 1
Cross-Layer Authority Conflict

Probe

One governance layer permits execution while another layer denies execution at its own execution boundary.

MGAG expectation

Deterministic refusal or escalation to a higher-priority authority explicitly defined ex-ante per Rule M1.

Failure indicator

Execution proceeds based on majority, confidence scoring, or agent judgement.

Stress Scenario 2
Missing Authority in a Lower Governance Layer

Probe

Upper governance layers provide valid authority, but a lower layer fails to resolve a valid authority object at its execution boundary.

MGAG expectation

Global execution is forbidden. Absence of authority in any required layer results in refusal.

Failure indicator

Execution proceeds because higher layers are deemed sufficient.

Stress Scenario 3
Asynchronous Layer Timing Mismatch

Probe

Required authority signals from different layers arrive asynchronously, with one layer exceeding its bounded timeout.

MGAG expectation

Execution is refused on timeout. No inference or reconstruction of missing signals is permitted.

Failure indicator

Late or missing authority signals are inferred, defaulted, or ignored.

Stress Scenario 4
Inconsistent Execution Boundaries Across Layers

Probe

Different governance layers define execution boundaries that do not align temporally or causally.

MGAG expectation

Execution is evaluated only when all layer-specific execution boundaries are satisfied and authority holds across every layer.

Failure indicator

Execution proceeds at the earliest boundary without waiting for stricter layers.

Stress Scenario 5
Layer-Specific Fallback Escape

Probe

One governance layer triggers a fallback action that bypasses authority evaluation in another layer.

MGAG expectation

Fallback actions are subject to the same multi-layer authority requirements as primary actions.

Failure indicator

Fallback executes outside the global authority and provenance enforcement path.

Stress Scenario 6
Conflicting Authority Provenance Across Layers

Probe

Different layers present provenance chains that are individually valid but mutually inconsistent.

MGAG expectation

Execution is refused unless provenance chains can be reconciled into a single acyclic, cryptographically valid global chain.

Failure indicator

Execution proceeds with partial or per-layer provenance acceptance.

Stress Scenario 7
Governance Layer Drift

Probe

A governance layer modifies its authority rules or evaluators without invalidating dependent authority objects in other layers.

MGAG expectation

Authority dependent on the modified layer is invalidated and requires re-authorisation.

Failure indicator

Silent drift in one layer while global execution continues uninterrupted.

Stress Scenario 8
Layer Removal or Degradation

Probe

A governance layer becomes unavailable due to failure, misconfiguration, or intentional removal.

MGAG expectation

Execution is refused unless an explicit ex-ante policy defines safe degradation.

Failure indicator

Execution proceeds with reduced governance coverage.

Interpretation

These scenarios illustrate the core design intent of MGAG:

- Global execution requires authority to hold across all required governance layers.
- No layer may be bypassed, inferred, or silently degraded.
- Conflicts resolve through refusal or explicit escalation, never heuristics.
- Composition does not dilute authority; it tightens it.

MGAG does not guarantee correctness or safety. It guarantees that illegitimate execution paths cannot succeed silently under compositional pressure.

Scope Notice

This public summary is illustrative only.

A full MGAG architectural stress test includes additional cross-layer scenarios, formal pass–fail criteria, traceability matrices, and regulator-facing objections. These are delivered only as part of a paid, independent review engagement and are not published publicly.