

## **AI Governance Lifecycle Sequence Diagram – Description of Steps**

**Prepared by John M. Willis**

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These are grouped by phase, but each step is atomic and sequential.

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### **◆ PHASE 1 — INTENT & GOVERNANCE DEFINITION (Steps 1–12)**

#### **Intent Capture**

1. An actor (human, agent, or system) declares an intent
  2. The runtime governance system assigns a unique intent\_id
  3. The system records actor identity and initiating context
  4. The system captures purpose and expected outcome
  5. The system defines scope (targets, systems, data, domains)
  6. The system assigns an initial risk classification
  7. The system records authority basis for the request
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#### **Policy Binding**

8. The system identifies applicable policies and controls
  9. The system maps regulatory and organizational obligations
  10. The system associates domain-specific constraints (A–L domains)
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#### **Governance Compilation**

11. Policies are compiled into executable invariants and rules
  12. The system generates admissibility, authorization, and evidence requirements
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### **◆ PHASE 2 — PROPOSAL & AUTHORITY (Steps 13–25)**

#### **Action Space Constraint**

13. The system constrains the allowable action space based on compiled policy
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#### **Proposal Formation**

14. A structured proposal is created
15. The system assigns a unique proposal\_id
16. The action type and target are defined

17. The proposal links to the originating intent
  18. Policy references are attached
  19. Supporting evidence references are attached
  20. Risk, blast radius, and reversibility are estimated
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### **Admissibility Evaluation (Control Plane)**

21. The proposal is submitted to the control plane
  22. Schema completeness is validated
  23. Policy linkage is verified
  24. Evidence sufficiency is evaluated
  25. Temporal validity is checked
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### **Authorization (Control Plane)**

26. Actor authority is validated
  27. Agent or system authority is validated
  28. Role-based permissions are evaluated
  29. Delegated authority is verified
  30. Co-signature or quorum requirements are evaluated
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### **Proposal Registration**

31. The proposal is registered as a managed lifecycle object
  32. Initial state is assigned (e.g., PENDING)
  33. Lifecycle tracking and versioning are initialized
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## **◆ PHASE 3 — CONTINUOUS GOVERNANCE (Steps 34–45)**

### **Continuous Monitoring**

34. The system continuously monitors target state
  35. The system monitors policy state changes
  36. The system monitors authorization validity
  37. The system monitors evidence availability
  38. The system monitors environmental and system conditions
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### **Degradation Detection**

- 39. The system detects stale or invalid evidence
  - 40. The system detects policy changes affecting the proposal
  - 41. The system detects revoked or expired authorization
  - 42. The system detects conflicting or superseding actions
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### **State Transition Management**

- 43. The proposal state is updated (e.g., READY, DEGRADED, EXPIRED, SUPERSEDED)
  - 44. The system determines whether the proposal remains eligible for execution
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### **Evidence Preservation**

- 45. All monitoring events, decisions, and state transitions are recorded with cryptographic integrity
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## **◆ PHASE 4 — EXECUTION CONTROL / COMMIT BOUNDARY (Steps 46–54)**

### **Pre-Commit Re-Evaluation (Control Plane)**

- 46. The system initiates pre-commit evaluation
  - 47. Policy validity is re-evaluated
  - 48. Risk conditions are re-assessed
  - 49. Authorization is re-validated
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### **Binding Validation (Control Plane)**

- 50. The system binds proposal, target, policy, evidence, and authorization
  - 51. The system verifies that no substitution, drift, or mismatch has occurred
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### **Commit Authorization (Control Plane)**

- 52. A signed, time-bound commit authorization is issued
  - 53. Execution constraints and validity window are attached
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### **Commit Execution**

- 54. The action executes if authorization remains valid
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## ◆ PHASE 5 — POST-COMMIT & NON-COMMIT PATHS (Steps 55–58)

### Post-Commit Audit

55. The system records execution outcome and final state

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### Abandoned Proposal Detection

56. Proposals that do not execute are identified (degraded, expired, superseded, denied)

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### Abandoned Proposal Processing

57. Abandoned proposals are classified by cause

58. Abandoned proposal patterns are analyzed for governance, operational, or security signals

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## ◆ Final Summary

This lifecycle ensures:

- **No action executes without valid, current authorization**
  - **All proposals remain continuously governed**
  - **Decisions are re-evaluated at the moment of execution**
  - **All outcomes—execution or non-execution—produce evidence**
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## ◆ One-line System Definition

A governed system continuously evaluates whether a proposed action remains valid, and only allows execution if that validity holds at the moment of commit.