

HCS-004

Runtime Evaluation Lifecycle

Constitutional Lifecycle Specification

Version: 1.0 (Federation Draft)

Status: Draft Constitutional Specification

Status of This Specification

This document defines the constitutional lifecycle through which continuation proposals are evaluated during runtime.

Unlike **HCS-001**, which defines constitutional jurisdiction, **HCS-002**, which defines constitutional evaluation, and **HCS-003**, which defines constitutional composition, this specification defines constitutional evaluation over time.

It specifies:

- constitutional lifecycle stages;
- constitutional state transitions;
- reevaluation principles;
- constitutional suspension;
- escalation conditions;
- lifecycle invariants; and
- constitutional non-claims.

This specification intentionally does **not** prescribe:

- scheduling algorithms;
- execution engines;
- polling intervals;
- event architectures;
- orchestration strategies;
- runtime platforms;
- implementation technologies; or
- software architectures.

Multiple independent implementations MAY satisfy this specification.

Relationship to Previous Specifications

This specification builds upon:

HCS-000

Defines the constitutional architecture of the specification series.

HCS-001

Defines Harmonic's constitutional jurisdiction.

HCS-002

Defines the Continuation Admissibility Model.

HCS-003

Defines constitutional composition through constitutional interfaces.

HCS-004 defines how constitutional evaluation evolves throughout runtime.

Preamble

Governance is not a single event.

Continuation exists within continuously changing operational conditions.

Authority changes.

Evidence changes.

Operational context changes.

Dependencies change.

Consequence evolves.

Governed continuation therefore cannot rely solely upon prior constitutional determinations.

Instead, constitutional admissibility must remain continuously reevaluable throughout runtime.

This specification defines that constitutional lifecycle.

1. Purpose

The purpose of HCS-004 is to define the constitutional lifecycle governing runtime evaluation of continuation proposals.

The lifecycle preserves constitutional supportability over time.

It does not perform execution.

2. Scope

This specification governs runtime constitutional evaluation only.

It applies independently of:

- programming language;
- runtime platform;
- orchestration framework;
- deployment model;
- industry;
- organization;
- regulatory jurisdiction; and
- implementation technology.

Implementation remains independent.

3. Constitutional Principle

Continuation SHALL remain constitutionally reevaluable until execution responsibility has transferred beyond Harmonic's constitutional jurisdiction.

Historical constitutional determinations SHALL NOT permanently authorize future continuation.

4. Constitutional Lifecycle Model

Every continuation proposal progresses through a constitutional lifecycle.

The lifecycle governs constitutional evaluation.

It does not govern execution.

The lifecycle consists of eight constitutional stages.

Stage 1 — Continuation Proposed

A continuation proposal is introduced.

No constitutional determination has yet been made.

The proposal becomes eligible for constitutional evaluation.

Stage 2 — Constitutional State Acquisition

Governed constitutional state is obtained through constitutional interfaces.

Examples include:

- authority;
- evidence;
- operational context;
- dependency integrity;
- governing constraints; and
- previous constitutional determinations.

Incomplete constitutional state SHALL remain observable.

It SHALL NOT be inferred.

Stage 3 — Constitutional Evaluation

The Continuation Admissibility Model (HCS-002) evaluates current constitutional state.

Evaluation surfaces include:

- Authority
- Evidence
- Operational Context
- Dependency Integrity
- Consequence
- Continuity

Supportability emerges through constitutional synthesis.

Stage 4 — Constitutional Determination

Following constitutional synthesis, one governed constitutional outcome is produced.

Permitted outcomes are:

- Continue
- Pause
- Escalate
- Redirect
- Require Review
- Halt

These remain governance determinations only.

Stage 5 — Constitutional Monitoring

Until execution responsibility transfers beyond Harmonic's constitutional jurisdiction, constitutional state remains subject to reevaluation.

Monitoring MAY occur:

- continuously;
- periodically;

- event-driven; or
- through any implementation-independent mechanism.

This specification does not prescribe monitoring strategy.

Stage 6 — Constitutional Suspension

A continuation proposal MAY enter constitutional suspension when progression depends upon constitutional state that is not presently available.

Examples include:

- awaiting additional evidence;
- awaiting constitutional authority;
- awaiting dependency resolution;
- awaiting external constitutional determinations;
- awaiting governed review; or
- awaiting neighboring sovereign constitutional architectures.

Constitutional suspension does not terminate the constitutional lifecycle.

Constitutional responsibility remains active.

Continuation SHALL remain eligible for constitutional reevaluation immediately upon resolution of the suspended constitutional condition.

Stage 7 — Constitutional Reevaluation

Whenever constitutional state materially changes, continuation SHALL become eligible for reevaluation.

Examples include:

- authority changes;
- new evidence;
- contradictory evidence;
- dependency failure;
- operational context changes;
- policy changes;
- consequence changes; or

- escalation requests.

Previous constitutional determinations SHALL NOT override current constitutional state.

Stage 8 — Constitutional Completion

The constitutional lifecycle concludes when:

- execution responsibility transfers beyond Harmonic's constitutional jurisdiction;
- continuation is halted;
- constitutional responsibility is escalated;
- constitutional responsibility is redirected; or
- the continuation proposal expires.

Completion ends constitutional evaluation.

It does not imply successful execution.

5. Constitutional Reevaluation

Constitutional reevaluation is fundamental to runtime governance.

Reevaluation SHALL occur whenever constitutional supportability may have materially changed.

Reevaluation SHALL evaluate current constitutional state.

It SHALL NOT rely solely upon previous constitutional outcomes.

6. Constitutional State Transitions

Constitutional lifecycle stages SHALL remain observable.

Transitions SHALL preserve:

- reconstructability;
- constitutional lineage;

- explicit authority;
- governed outcomes; and
- constitutional ownership.

Skipped lifecycle stages SHALL remain reconstructable.

The constitutional basis for every lifecycle transition SHOULD remain reviewable.

7. Constitutional Escalation

Escalation MAY occur at any constitutional lifecycle stage.

Escalation transfers constitutional responsibility.

It does not constitute constitutional failure.

Escalation SHALL remain explicitly observable.

8. Constitutional Expiration

A continuation proposal MAY expire without execution.

Expiration SHALL terminate constitutional evaluation for that proposal.

Expired constitutional determinations SHALL NOT authorize future continuation without reevaluation.

9. Constitutional Restart

A previously evaluated continuation proposal MAY re-enter constitutional evaluation.

Restart SHALL begin with current constitutional state.

Historical constitutional outcomes MAY inform evaluation.

They SHALL NOT replace reevaluation.

10. Constitutional Invariants

The following invariants SHALL remain true independent of implementation.

1. Governance SHALL precede consequence.
2. Continuation SHALL remain constitutionally reevaluable.
3. Historical constitutional determinations SHALL NOT permanently authorize continuation.
4. Current constitutional state SHALL govern admissibility.
5. Constitutional ownership SHALL remain explicit.
6. Constitutional lineage SHALL remain reconstructable.
7. Constitutional state transitions SHALL remain observable.
8. Reevaluation SHALL preserve sovereign jurisdiction.
9. Constitutional monitoring SHALL remain implementation-independent.
10. Constitutional suspension SHALL preserve constitutional responsibility.
11. Constitutional completion SHALL terminate constitutional evaluation.
12. Escalation SHALL remain available throughout runtime.
13. Execution SHALL remain outside constitutional jurisdiction.

These invariants define the constitutional runtime lifecycle.

Implementations MAY differ.

The constitutional invariants SHALL NOT.

11. Constitutional Non-Claims

HCS-004 makes no constitutional claim regarding:

- execution scheduling;
- orchestration frameworks;
- distributed runtime management;
- event systems;
- workflow engines;
- state machines;
- software architecture;
- execution timing;
- implementation technologies; or
- monitoring mechanisms.

These remain implementation responsibilities.

12. Federation Compatibility

Runtime constitutional evaluation MAY depend upon governed constitutional state supplied by neighboring sovereign constitutional architectures.

Constitutional reevaluation SHALL preserve:

- sovereign ownership;
- constitutional jurisdiction;
- explicit authority;
- constitutional interfaces; and
- implementation independence.

Runtime federation SHALL NOT require centralized governance.

13. Security and Failure Considerations

When constitutional state becomes unavailable, continuation SHALL become eligible for reevaluation.

When authority becomes ambiguous, escalation SHOULD be preferred.

When evidence materially changes, previous constitutional determinations SHALL be reconsidered.

When constitutional dependencies fail, continuation SHALL NOT presume continued admissibility.

When constitutional uncertainty exists, governed review SHOULD be preferred over unsupported continuation.

Failure SHALL increase constitutional governance rather than reduce it.

Appendix A — Architectural Rationale (Informative)

Runtime governance differs fundamentally from deployment governance.

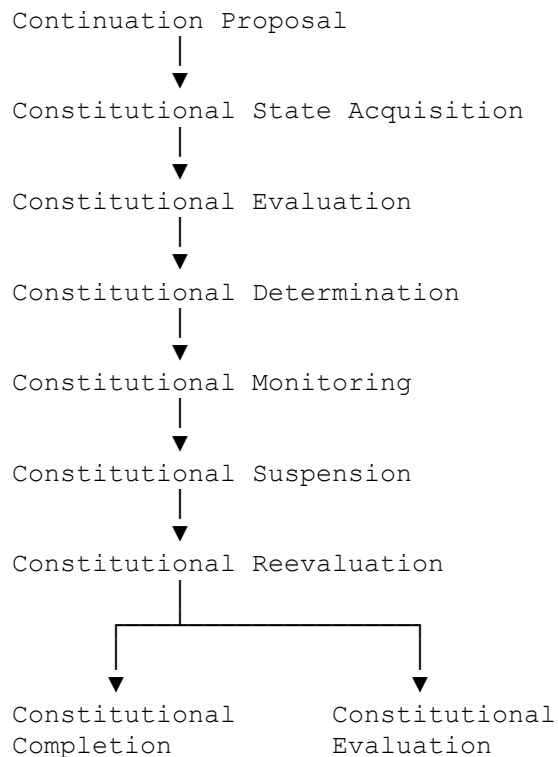
Deployment governance determines whether a system may begin operation.

Runtime governance determines whether continuation remains constitutionally supportable as operational conditions evolve.

Accordingly, constitutional admissibility cannot be treated as a permanent property established at deployment.

It must remain subject to governed reevaluation throughout the constitutional lifecycle.

Appendix B — Conceptual Lifecycle Model (Informative)



The lifecycle preserves constitutional governance while allowing reevaluation whenever constitutional conditions materially change.

Suspension preserves constitutional responsibility without authorizing unsupported continuation.

Closing Principle

The Runtime Evaluation Lifecycle claims one constitutional responsibility—and only one:

To ensure that continuation remains constitutionally reevaluable throughout runtime until constitutional responsibility concludes.

Constitutional governance is not a single decision.

It is a governed lifecycle.

Constitutional admissibility is not permanently established by historical approval.

It is continuously determined under current constitutional state.

By preserving continuous reevaluation, explicit lifecycle transitions, constitutional suspension, and sovereign constitutional boundaries, the Runtime Evaluation Lifecycle enables continuation to remain supportable as operational reality evolves while remaining implementation-independent and constitutionally bounded.