

MO-006c — Current Lifecycle State Determination

[Go to MO-006 — Infrastructure Lifecycle Management](#)

Statement

Crucible SHALL determine the current **Operational Lifecycle** state of each **Infrastructure Environment**.

Derived From

This requirement derives from:

- [MO-006 — Infrastructure Lifecycle Management](#)

The Original Requirement states:

The system SHALL support infrastructure lifecycle management from initial deployment through retirement.[\[C1\]](#)

MO-006c preserves the lifecycle-management intent of the Original Requirement by requiring Crucible to determine the current Operational Lifecycle state of each Infrastructure Environment.

The separate requirements derived from MO-006 address:

- [MO-006a — Operational Lifecycle Assignment](#)
- [MO-006b — Operational Lifecycle Initiation](#)
- [MO-006d — Lifecycle Transition Execution](#)
- [MO-006e — Infrastructure Environment Retirement](#)

Assessment

The Original Requirement refers to infrastructure lifecycle management but does not require Crucible to determine the current lifecycle state of an Infrastructure Environment.

Without current lifecycle-state determination, an evaluator cannot reliably determine:

- The current position of the Infrastructure Environment within its assigned Operational Lifecycle
- Whether the Infrastructure Environment completed its preceding transition
- Which lifecycle transitions are available
- Which transition conditions apply
- Whether the Infrastructure Environment remains in an intermediate or failed state
- Whether the Infrastructure Environment has entered Retirement

- Whether the reported state agrees with observable environment conditions

The phrase **lifecycle management** does not identify:

- The lifecycle state being determined
- The Infrastructure Environment associated with the state
- The assigned Operational Lifecycle governing the state
- The criteria used to determine the state
- The time at which the determination applies
- The treatment of indeterminate or conflicting state information
- The Evidence required to support the determination

MO-006c:

- Identifies [Crucible](#) as the responsible actor
- Identifies each Infrastructure Environment as the subject of the determination
- Identifies the current Operational Lifecycle state as the required result
- Separates state determination from lifecycle assignment, lifecycle initiation, transition execution, and Retirement

Rationale

The current Operational Lifecycle state identifies the position of an [Infrastructure Environment](#) within its assigned [Operational Lifecycle](#).

Lifecycle states can include:

- Initial Deployment
- Validation
- Activation
- Operational
- Maintenance
- Upgrade
- Recovery
- Restoration
- Rollback
- Compliance Reassessment
- Retirement Pending
- Retirement

The assigned Operational Lifecycle defines the applicable states. An Infrastructure Environment does not necessarily use every state listed above.

Current lifecycle-state determination supports:

- Selection of permitted lifecycle transitions
- Evaluation of transition conditions
- Prevention of invalid lifecycle transitions
- Identification of incomplete or failed transitions
- Coordination of lifecycle activities

- Operational status reporting
- Recovery and rollback decisions
- Compliance and security evaluation
- Preservation of [Provenance](#)
- Maintenance of [Traceability](#)
- Generation of auditable [Evidence](#)

The state determination can use:

- The assigned Operational Lifecycle
- The preceding lifecycle state
- The most recent completed transition
- Transition completion results
- Infrastructure Environment observations
- Deployment and configuration records
- Validation results
- Compliance and security results
- Failure and exception records

A failed or incomplete transition does not imply successful entry into its intended target state. The applicable Operational Lifecycle defines the state associated with transition failure or incomplete execution.

This requirement determines the current state. It does not require Crucible to execute a lifecycle transition. MO-006d establishes lifecycle transition execution.

This requirement does not assign or initiate the Operational Lifecycle. MO-006a and MO-006b establish those requirements.

This requirement does not transition the Infrastructure Environment to Retirement. MO-006e establishes Infrastructure Environment Retirement.

Applies To

This requirement applies to:

- [Crucible](#)
- [Infrastructure Environments](#)
- [Operational Lifecycles](#)
- Operational Lifecycle states
- Lifecycle-state criteria
- Lifecycle-state determinations
- Lifecycle assignments
- Lifecycle-initiation records
- Lifecycle transitions
- Transition conditions
- Transition results
- Infrastructure Deployment records
- Configuration records
- Validation results

- Compliance results
- Security results
- Failure records
- Exception records
- Evidence
- Provenance
- Traceability

Verification

Verification confirms that:

1. The Infrastructure Environment is identified
2. The assigned Operational Lifecycle is identified
3. The states defined by the assigned Operational Lifecycle are identified
4. The criteria applicable to each candidate state are identified
5. Crucible determines one current lifecycle state for the Infrastructure Environment
6. The determined state belongs to the assigned Operational Lifecycle
7. The determined state agrees with the applicable lifecycle records and observable environment conditions
8. A failed or incomplete transition does not produce an unsupported target-state determination
9. Conflicting or insufficient state information produces an identified determination result
10. The state determination preserves the required Evidence, Provenance, and Traceability

Verification includes:

- Infrastructure Environment inspection
- Operational Lifecycle assignment inspection
- Operational Lifecycle state inspection
- Lifecycle-state criteria inspection
- Lifecycle-initiation record inspection
- Lifecycle-transition record inspection
- Transition-result inspection
- Infrastructure Deployment record inspection
- Configuration-state inspection
- Validation-result inspection
- Compliance-result inspection
- Security-result inspection
- Failed-transition testing
- Incomplete-transition testing
- Conflicting-state-information testing
- Lifecycle-state determination testing
- Evidence inspection
- Provenance inspection
- Traceability inspection

The verification record identifies:

1. The Infrastructure Environment

2. The assigned Operational Lifecycle
3. The Operational Lifecycle identifier
4. The Operational Lifecycle revision
5. The candidate lifecycle states
6. The criteria applicable to each candidate state
7. The preceding lifecycle state
8. The most recent lifecycle transition
9. The transition result
10. The observable environment conditions
11. The determined current lifecycle state
12. The determination date and time
13. Each conflicting or insufficient source of state information
14. Each identified failure or exception
15. The observed result
16. The generated [Evidence](#)

Requirements Realized By

This requirement is realized by:

- [OR-001 — Operational Roles](#)
- [OR-002 — Deployment Environments](#)
- [OR-004 — Concurrent Environment Management](#)
- [OR-005 — Distributed Environment Management](#)
- [FR-CFG-001 through FR-CFG-005](#)
- [FR-DEP-001 through FR-DEP-007](#)
- [FR-MC-001 through FR-MC-005](#)
- [FR-COMP-001 through FR-COMP-010](#)

Related Architecture Sections

- [5. Descriptions, Composition, and Baselines](#)
- [7. Infrastructure and Deployment](#)
- [9. Compliance and Security](#)
- [10. Reproducibility, Provenance, and Traceability](#)

Referenced By

The following pages reference this requirement:

- [MO-006a — Operational Lifecycle Association](#)
- [MO-006b — Infrastructure Lifecycle Initiation](#)
- [MO-006d — Infrastructure Lifecycle Transition Execution](#)
- [MO-006e — Infrastructure Environment Retirement](#)
- [Annex D: Requirements Traceability](#)

Delivery Phase

Phase 1 and subsequent phases

Implementation Status

Not Assessed

Implementation status requires verification that the current [Crucible](#) implementation determines the current Operational Lifecycle state of each Infrastructure Environment.

Requirement Status

Draft

This requirement derives from MO-006 in the Crucible System Requirements Specification, Version 1.1 Draft.

Notes for Editors

This requirement page should retain the stable requirement identifier MO-006c.

This page is a leaf requirement page and omits a trailing :start from its namespace.

Changes to the Statement should preserve determination of the current Operational Lifecycle state for each Infrastructure Environment.

The lifecycle-state determination record should identify:

- The Infrastructure Environment identifier
- The Operational Lifecycle identifier
- The Operational Lifecycle revision
- The preceding lifecycle state
- The most recent lifecycle transition
- The transition result
- The candidate lifecycle states
- The applicable state criteria
- The observable environment conditions
- The determined current lifecycle state
- The determination date and time
- The actor or process responsible for the determination
- The associated Provenance
- The associated Traceability

- The supporting Evidence

Material changes should receive review and should update the related verification criteria, requirements realization, related architecture sections, and source records.

To reference this requirement Statement from another wiki page, insert:

```
{{section>dido:02-crusible:99-annexes:annex-c-requirements:01-mission-objectives:mo-006:mo-006c#Statement&noheader&nofooter&noeditbtn}}
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