

Sustainable Catalyst Knowledge and Research Model

How sources become knowledge, investigation, analysis, decisions, and reassessment

DOCUMENT ID SC-FND-003	VERSION 1.0.0
STATUS Under Review	AUTHORITY Methodology
LAST REVIEWED 2026-07-16	OWNER Sustainable Catalyst, stewarded by Content Catalyst LLC
REVIEW CYCLE Annual	CANONICAL RECORD Living HTML record

Under Review. This first-edition record is complete for institutional review but does not become current authority until approved and published.

Contents

1. Purpose

2. The research-to-decision continuum

3. Record classes

4. Knowledge Library as the preservation layer

5. Research Librarian as the routing layer

6. Lab, Site Intelligence, and Workbench

7. Decision Studio and accountable synthesis
8. Provenance and transformation

9. Knowledge relationships

10. Reuse without context loss

11. Publication and frozen editions

12. Human review and boundaries

13. Evaluation

1. Purpose

This model defines how Sustainable Catalyst organizes research work across discovery, evidence capture, investigation, computation, synthesis, decision support, publication, monitoring, and preservation.

2. The research-to-decision continuum

1. Source: identify a publication, dataset, observation, record, testimony, standard, repository, or other evidence object.
 2. Record: preserve identity, origin, date, rights, location, version, and relevant context.
 3. Interpret: extract claims, definitions, quotations, relationships, contradictions, and unanswered questions.
 4. Investigate: design notebooks, experiments, observations, comparisons, and research paths.
 5. Analyze: calculate, model, code, visualize, validate, and examine sensitivity.
 6. Synthesize: connect evidence, uncertainty, alternatives, tradeoffs, and stakeholder implications.
 7. Decide: create a reviewable decision artifact without transferring authority to the tool.
 8. Monitor: compare expected and observed outcomes, preserve changes, and trigger reassessment.
-

3. Record classes

- Publications: explanatory or analytical works written for public understanding.
 - Source records: structured descriptions of external or internal evidence.
 - Foundation Documents: governed institutional standards, policies, and system records.
 - Research records: notebooks, protocols, datasets, observations, experiments, and validation results.
 - Analytical artifacts: calculations, code, models, graphs, parameter studies, and reports.
 - Intelligence records: indicators, geospatial layers, country dossiers, event records, and monitored sources.
 - Decision artifacts: framed problems, options, evidence matrices, scenarios, reviews, approvals, and reassessment records.
 - Historical records: superseded, withdrawn, frozen, or earlier editions preserved for context.
-

4. Knowledge Library as the preservation layer

The Knowledge Library provides stable identity, metadata, collections, citations, relationships, pathways, original-file preservation, version history, and discovery. It should preserve both the readable record and the evidence needed to understand where that record came from.

5. Research Librarian as the routing layer

Research Librarian helps people choose among publications, article maps, Foundation Documents, sources, Lab workspaces, Site Intelligence views, Workbench tools, repositories, and Decision Studio workflows. Routing should distinguish known material, inferred relevance, unavailable material, and questions requiring authoritative external sources.

6. Lab, Site Intelligence, and Workbench

Lab manages the conditions and records of scientific or engineering investigation. Site Intelligence supplies public context, monitored evidence, geographic and temporal comparisons, and source health. Workbench performs explicit computational and technical work. These environments should exchange typed artifacts rather than flattening results into untraceable prose.

7. Decision Studio and accountable synthesis

Decision Studio organizes evidence and analysis into a reviewable record. It should show alternatives, assumptions, uncertainties, conflicts, readiness, ownership, and required review. A decision packet is evidence infrastructure; it is not the decision-maker.

8. Provenance and transformation

Every important artifact should retain its source product, artifact identifier, schema or format version, creation time, source links, transformation history, confidence or validation state, and integrity information where available. When a transformation materially changes meaning, the new artifact should not overwrite the source.

9. Knowledge relationships

- Cites: one record formally references another.
 - Supports or challenges: evidence strengthens or contradicts a claim.
 - Derived from: an output results from a documented transformation.
 - Implements: a product or method operationalizes a governing record.
 - Supersedes: a newer record replaces an earlier authority.
 - Requires review: a record depends on unresolved validation or professional judgment.
 - Monitors: a later observation evaluates an earlier expectation or decision.
-

10. Reuse without context loss

Reusable records should carry enough context to prevent false portability. A number without a definition, unit, period, geography, method, and source is not a complete measurement. A quotation without speaker, date, source, and surrounding meaning is not a complete evidence record.

11. Publication and frozen editions

Living records may evolve through governed revision. Fixed editions should preserve the content, metadata, citations, and attachments that existed at approval or publication time. The system should make the relationship between current and frozen records visible.

12. Human review and boundaries

Automation may help classify, summarize, translate, extract, compare, or route records. Human review remains necessary for source interpretation, contested claims, methodological adequacy, ethical implications, and consequential decisions.

13. Evaluation

The model should be evaluated by whether people can discover the right record, inspect its provenance, reproduce or challenge its method, understand its status, reuse it without losing context, and identify what changed over time.

Related Foundation Documents

- SC-FND-004
- SC-FND-005
- SC-FND-007
- SC-FND-010
- SC-FND-011

Revision History

Version	Date	Status	Summary
1.0.0	2026-07-16	Under Review	Institutional Foundations First Edition draft prepared for review and publication.

Authority statement. This living HTML document is the proposed first-edition record within its defined scope. Fixed PDF editions preserve review snapshots. Earlier records remain available for historical reference.