

CONTINUITY INSTRUMENT

Continuity Instrument

Reference implementation and reproducibility

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CI 1.0.0 | Academic publication edition 2

25 October 2026

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Author: Ivan Kotov. Editorial edition academic-pdf-2, prepared from unchanged source build _02. No CI DOI assigned at preparation; empirical qualification remains not established.

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Editorial note and component rights

This volume reproduces the implementation README and the main reproducibility document from the unchanged source build _02. It documents the current reference transformer, its scope, and its known limitations. No historical qualification attempt is rerun by this reading edition.

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Known corrections to the reading instructions: the actual working directory is Continuity_Instrument_v1.0.0/, not publication_draft/. Prefer the unittest discovery command in Part II. A malformed string containing an unpaired Unicode surrogate can produce an uncaught UnicodeEncodeError and exit status 1 instead of the documented controlled exit 2. This defect remains in the preserved source. No output file was produced in the reproduced failure case. See verification/SOURCE_REVIEW_PUBLIC_EXTRACT.md.

Part I. Reference implementation README - reserved rights

Source: REFERENCE_IMPLEMENTATION/README.md. Original wording reproduced as a reading edition.

ci_profile.py is a standard-library-only, inert reference transformation for the Continuity Instrument (CI) evidence-bound continuity-age / formation-depth vector. It accepts caller-supplied records, validates the v1 structural and relational contract, and emits canonical JSON. Importing the module has no side effects. Running it reads only the named input and writes only standard output or an explicitly named output path.

The implementation does not collect evidence, decide whether evidence is true or admissible, inspect a host, call a model, use a network, launch a process, or modify a CI/R160 evidence area. It does not establish personhood, metaphysical or legal identity, wall-clock age, biological age, uninterrupted existence, authority, scientific validity, qualification, or publication readiness.

Versioned contracts

- Input schema: schemas/ci-profile-input-v1.schema.json
- Input schema version: ci-profile-input/v1
- Output schema: schemas/ci-profile-output-v1.schema.json
- Output schema version: ci-profile-output/v1
- Implementation version: ci-profile-reference/1.0.0

Both schemas use JSON Schema Draft 2020-12. The Python implementation also checks constraints that JSON Schema does not conveniently express here: ordered bounds, containment in the observation window, identifier uniqueness, duration eligibility only for admitted intervals, mandatory non-claim tokens, and the absence of overlap between admitted duration intervals and known pauses.

Invocation

From `publication_draft/`:

```
python REFERENCE_IMPLEMENTATION/ci_profile.py INPUT.json
python REFERENCE_IMPLEMENTATION/ci_profile.py INPUT.json --output OUTPUT.json
```

Success returns exit code 0. Invalid input or an I/O error returns 2 and writes one diagnostic to standard error. Output is UTF-8 canonical JSON with sorted object keys, compact separators, and one trailing line feed. Duplicate JSON object keys are rejected.

Deterministic policies

- Time is represented as integer ticks on the caller-declared `time_axis`. The implementation never reads a system clock or converts ticks into a biological or wall-clock age.
- Participation and pause intervals are closed-open: `[start, end)`.
- `W_first` is ordered by lower bound ascending, upper bound ascending, then identifier. `W_last` is ordered by upper bound descending, lower bound descending, then identifier. The selected witnesses must be admitted.
- `I_verified` contains only admitted intervals marked eligible for duration.
- `D_verified` is the length of the union of eligible intervals. Overlap is counted once.
- `P_known` retains evidenced pause records. An admitted eligible interval that overlaps a known pause is rejected as contradictory input.
- `G_unexplained` is the complement, inside the declared observation window, of the union of `I_verified` coverage and known-pause coverage. A computed gap is unknown; it is not active time, inactive time, or zero.
- Replay, fork, restore, and cold-wake records are partitioned into separate coordinates and ordered by time bounds then identifier.
- Memory, governance, witness, and authority lineages remain separate and are ordered by time bounds then identifier.
- Irreversible transitions remain scoped records with their decision rule and evidence references. Lack of a known reversal is not calculated as irreversibility.
- Structured uncertainty is preserved. `not_assessed` is distinct from an empty or zero value.
- The claim ceiling is emitted separately from the vector. The implementation validates structure and mandatory prohibited inferences; it does not judge the truth of free-text allowed claims and cannot raise the supplied evidence ceiling.

formation_depth_vector_sha256 is SHA-256 over the UTF-8 canonical JSON bytes of the formation_depth_vector object, without a trailing line feed. It is a reproducibility checksum, not an evidence-truth or identity attestation.

BACON boundary

The output is designed so that CI can later be mapped into BACON through an explicit, versioned adapter. Such an adapter would need to preserve every vector coordinate, branch distinction, uncertainty value, claim ceiling, schema version, and source checksum. This draft does not implement that adapter, expand the BACON name, assign semantics to BACON, or claim compatibility with it.

Tests and dependency boundary

Run the focused tests from publication_draft/:

```
python -m unittest tests.test_ci_profile
```

The implementation and tests import only Python standard-library modules. The schemas are data files and do not require a runtime schema package. Passing the tests establishes only the behavior exercised by those tests; it is not CI qualification, R160 evidence, scientific validation, security review, or conformance certification.

Part II. Reproducibility - CC BY 4.0

Source: REPRODUCIBILITY.md. Original wording reproduced as a reading edition.

Reproduction boundary

This package supports reproduction of the specified CI v1 transformation and byte-level verification of its public release files. It also provides exact locators and pins for three external evidence objects. It does not redistribute private corpus bytes, model files, runtime binaries, or the frozen evidence archives.

Reproducing a procedure is distinct from validating a scientific conclusion. No reproduction step raises the claim ceiling without admissible evidence and independent review.

Reference transformation

REFERENCE_IMPLEMENTATION/ci_profile.py identifies itself as ci-profile-reference/1.0.0. It requires Python 3.10 or later and imports only Python standard-library modules. The versioned structural contracts are:

- REFERENCE_IMPLEMENTATION/schemas/ci-profile-input-v1.schema.json
- REFERENCE_IMPLEMENTATION/schemas/ci-profile-output-v1.schema.json

From the package root:

```
python REFERENCE_IMPLEMENTATION/ci_profile.py INPUT.json --output OUTPUT.json
python -m unittest discover -s tests -p "test_*.py" -v
```

The transformation reads no clock, environment variable, network, model, or frozen evidence directory. It uses caller-declared integer ticks and closed-open intervals, unions admitted eligible participation without double-counting, computes gaps inside the declared observation window, sorts event and lineage records deterministically, preserves structured uncertainty, and emits canonical UTF-8 JSON. The vector checksum is SHA-256 over canonical JSON bytes without a trailing line feed.

The implementation rejects duplicate JSON keys, invalid or out-of-window bounds, duplicate local identifiers, duration eligibility on non-admitted intervals, overlap between eligible participation and known pauses, and omission of mandatory prohibited inferences. Passing the focused tests establishes only the tested transformation behavior.

External evidence objects

Always retrieve by exact ID and verify the complete bytes before interpretation.

R157

Drive URL: <https://drive.google.com/file/d/16Koyf3ckIkKjSni5C8C97L9c4DihIdE/view>

Bytes: 3703123

SHA-256: fc8564656fb777b1266d763bea841af0dd5f13b03e2f727db6f3ec3689270c8a

Bound result: OD11_TQ_R157_PASS_OPEN_SYNTHETIC_SEMANTIC_GATE_FIDELITY

R160

Drive URL: <https://drive.google.com/file/d/1JmLtDLkL4aQhTSIFprGjsd-xZDN2XRqC/view>

Bytes: 251185

SHA-256: 8b80604a62aa7d5232bf9659b87009537951a3f3b89151bc8164b88d4387952b

Bound result: REAL_LOCAL_OLLAMA_CORPUS_QUALIFICATION_NOT_ESTABLISHED

R161

Drive URL: <https://drive.google.com/file/d/1m11yDfvrhbIQ0Zlp-amxKiMixzNgWv76/view>

Bytes: 191074

SHA-256: 56c586b665b83c3485c19c3186ed989b17cd03fbf21555d7642f1316bb48002f

Bound result: REAL_LOCAL_OLLAMA_QWEN25_CORPUS_QUALIFICATION_NOT_ESTABLISHED

R157 is an immutable open-synthetic predecessor. This package does not rerun or repackage its producer, gate, Run1, or Run2. R160 and R161 are consumed negative attempts. They are not corrected, rescored under new rules, or relabeled as PASS.

R160 frozen environment summary

The R160 negative evidence binds, among other details:

Component	Pin
Attempt key	CI_OD11_TQ_R160_REAL_LOCAL_OLLAMA_CORPUS_ATTEMPT_20261025_01
Ollama client	0.21.2
ollama.exe SHA-256	4a5eae4cce39073d96f4ec34af8f47a3e9bc76f68c083d4fe5f8f315f1bf07c4
Runtime aggregate SHA-256	ee6551e834b4d283ac92cc3f07563776d96f3f7fd96f87b4c7d98afb8161f272
Model	qwen3-vl:32b
Model manifest SHA-256	ff2e46876908853b8d0872595047c46d599d970056277e4864c8a1f0fd93fd3b
Python executable SHA-256	3cce33d75d6fdae4e004d0bdf149320b3147482a9caf370079dcb9c191a1b260
Episode	one service start, five requests, retries 0

The independent R160 custody review found the 251,185-byte Drive object intact and confirmed the preserved negative result. The scorer read the frozen outer response field, which was empty for all five records; it did not substitute the model's separate thinking field after capture.

R161 result summary

R161 used a separately frozen local qwen2.5:32b episode over five immutable Git-blob records. It completed all five requests with retries 0. The independently recomputed frozen metrics were:

- schema valid: 5/5;
- claim boundary exact: 5/5;
- role exact: 4/5;
- class exact: 3/5;
- evidence exact: 0/5;
- records satisfying every predicate: 0/5.

The all-or-nothing threshold therefore failed. Independent custody review returned CONFIRMED_CONSUMED_NEGATIVE_RETURN: exact Drive identity and readback matched 191074 bytes and the recorded SHA-256; ZIP CRC and all 62/62 manifest member pins passed within the 63-member archive. Partial metric success is diagnostic evidence rather than qualification.

Corpus privacy and rights boundary

The external evidence uses owner-controlled corpus material pinned to immutable repository objects. This public package includes repository identifiers and integrity metadata only. It contains no holdout prompt, raw response, Qubit narrative, excerpt, translation, or derivative corpus text. Qubit material remains All Rights Reserved.

Release verification

PUBLICATION_MANIFEST.json pins every release payload member except the manifest and checksum index themselves. SHA256SUMS.txt additionally pins the manifest. The deterministic ZIP uses:

- ordinal path ordering;
- UTF-8 forward-slash member names;
- timestamp 1980-01-01 00:00:00;
- DEFLATE compression;
- regular-file mode 100644.

A verifier should:

1. verify the ZIP SHA-256 supplied with the release;
2. read every member to check CRC;
3. reject duplicate, absolute, parent-traversal, or symlink entries;
4. verify the exact manifest member set, byte lengths, and SHA-256 values;
5. run the focused reference-implementation tests; and
6. preserve the claim ceiling in SCIENTIFIC_CLAIM_MAP.md.

DOI readiness boundary

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Part III. A self-contained teaching input

The outer academic package adds examples/teaching_input_60min.json and examples/teaching_output_60min.json. They instantiate the hypothetical sixty-minute illustration in the explanatory papers. They contain no real-system observations and are not part of R157, R160, or R161. Witness and evidence references are explicitly synthetic; supplied admission labels are stipulations for demonstrating the transformation.

The input declares three eligible participation intervals: [0,20), [10,30), and [50,60). One known pause covers [30,40). The expected union duration is 40 minute ticks, and the one unexplained gap is [40,50). The witness records are separately stipulated; they are not inferred from interval endpoints.

From the outer package root, run the original transformer against this example, writing your result outside the frozen package directory. Compare the complete output bytes with examples/teaching_output_60min.json. The full example and its expected arithmetic are described in examples/README.md. This is a demonstrator, not an additional scientific qualification result.