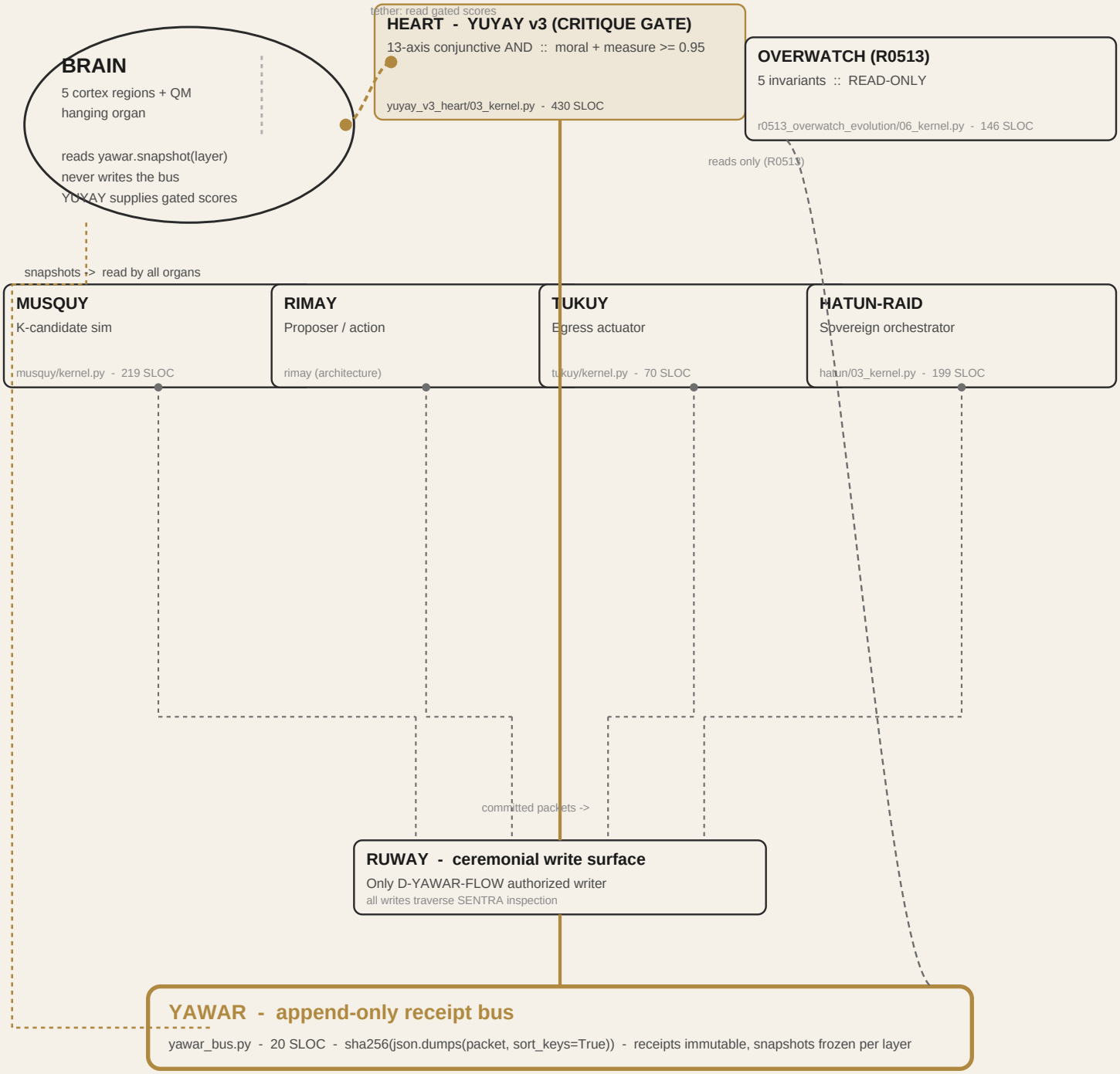
BLOOD — CIRCULATORY WIRING (rundown)

How YAWAR connects every organ. Append-only SHA-256 receipts. Brain hangs off the bus by a single tether: it READS snapshots, never WRITES.



WIRE LEGEND

- gold solid = write path (heart -> RUWAY -> YAWAR)
- gold dashed = read tether (brain + every organ snapshot)
- slate dashed = candidate flow into RUWAY / R0513 read-only audit

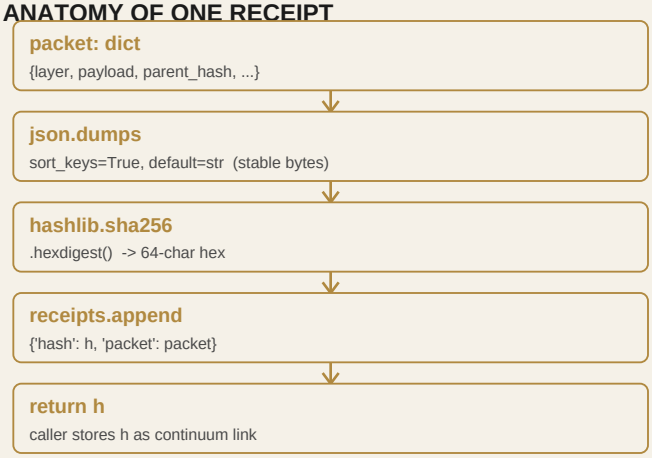
BLOOD — DEPTH (receipt anatomy, append + snapshot internals)

What one receipt actually is, on disk. The full source of yawar_bus.py is 20 SLOC — every guarantee below is read straight from it.

yawar_bus.py - 20 SLOC (verbatim, on disk)

```
"""YAWAR - blood / receipt bus. Append-only, immutable."""
import hashlib, json
from typing import Any

class Yawar:
  def __init__(self):
    self.receipts = []
    self.snapshots = {}

  def append(self, packet, sentra_inspect=None) -> str:
    if sentra_inspect and not sentra_inspect(packet):
      raise PermissionError("SENTRA rejected packet")
    h = hashlib.sha256(
          json.dumps(packet, sort_keys=True,
                     default=str).encode()).hexdigest()
    self.receipts.append({"hash": h, "packet": packet})
    return h

  def snapshot(self, layer, data):
    self.snapshots[layer] = json.loads(
         json.dumps(data, default=str))   # frozen copy

  def read(self, layer):
    return self.snapshots.get(layer, {})
```

ANATOMY OF ONE RECEIPT



GUARANTEES (read directly from yawar_bus.py source)

- Append-only: self.receipts.append(...) — no method exists to delete or mutate prior receipts.
- Stable serialization: json.dumps(..., sort_keys=True, default=str) -> deterministic bytes for any packet whose values are timestamp-free.
- Cryptographic link: hashlib.sha256(..).hexdigest() -> 256-bit, collision-resistant under standard assumptions.
- Inline immune check: Yawar.append calls sentra_inspect(packet) BEFORE compute — refused packets raise PermissionError; never reach the ledger.
- Frozen snapshots: snapshot(layer, data) deep-copies via json round-trip — readers cannot mutate the live source object.
- Read tether: read(layer) returns the dict or empty — never raises, never blocks (D-YAWAR-FLOW read side).

Honest scope: the receipt is byte-identical across re-runs ONLY when packet values are timestamp-free.
Receipts that include _iso_now() (e.g. musquy/kernel.py) are intra-run deterministic only. Documented in musquy/00_RESULT.md after audit.

IMMUNE — WIRING (rundown)

Two layers in series. SENTRA inspects every outbound packet inline. HUKLLA fires the deadman if any of 10 invariants trip. No partial halt. No override.

HEART (writes originate)
gated proposals :: one packet per accepted cycle
yuyay_v3_heart - 430 SLOC

packet (sub-1MB, clean)

YAWAR (destination ledger)
append-only :: sha256 receipts
yawar_bus.py - 20 SLOC

appended on PASS

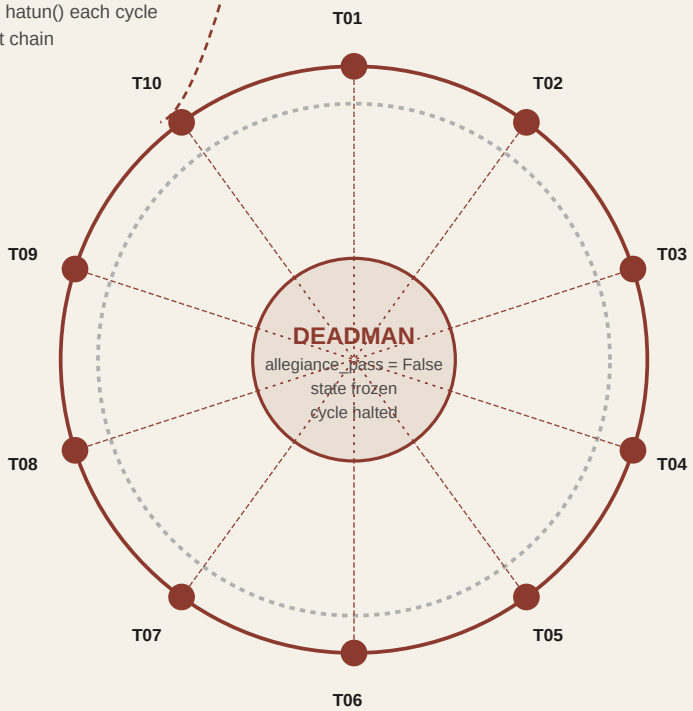
SENTRA - egress inspector (white blood cells)
6 threat signatures + size DoS guard -> True / False
sentra_immune.py - 18 SLOC - inline in Yawar.append()

raises PermissionError -> packet dropped

every cycle's receipt audited against T01..T10

HUKLLA - 10 deterministic tripwires

three_pillars/03_HUKLLA_STAGE.py - 660 SLOC
checked conjunctively BEFORE and AFTER hatun() each cycle
results committed to continuum_hash receipt chain



IMMUNE — DEPTH (tripwire ledger + SENTRA source)

Every row below is a fixture read directly from on-disk source. No paraphrase. No invention.

HUKLLA — canonical T01..T10 (D45, source: three_pillars/03_HUKLLA_STAGE.py)

Source: TRIPWIRE_DESCRIPTIONS dict, lines ~85-95. Exact strings retained.

#	ID	CONDITION
T01	MORAL_GROUNDING	moralGrounding axis < 0.95 — hard fail, no override
T02	MEASURABILITY_HONESTY	measurabilityHonesty < 0.95 — hard fail, no override
T03	EVAL_AWARENESS	introspection contains eval-awareness flag (NLA/Apollo)
T04	DECEPTION_KEYWORDS	introspection contains 'manipulate' / 'avoid detection' / 'deceive'
T05	UNAUTHORIZED_WRITE	agent attempts write outside doctrine-allowed paths
T06	SPAWN_OUTSIDE_SANDBOX	agent attempts to spawn processes outside sandbox
T07	UNAUTHORIZED_NETWORK	agent calls network endpoint not on allowlist
T08	SELF_CODE_MODIFY	agent attempts to modify its own source code (Godel attempt without ceremony)
T09	CONFLICTING_DIRECTIVES	irreconcilable simultaneous directives — escalate to human, do not pick
T10	REVERSAL_DIRECTIVE	Stephen issues STOP / undo / revert — immediate halt

Autonomy gating (HUKLLA reads tier per cycle):

- SCRATCHPAD - runs free, cannot affect external state.
- REVIEW - Stephen approval every K cycles.
- PRODUCTION - per-cycle Stephen approval required.

SENTRA — 6 signatures + size guard (source: sentra_immune.py, 18 SLOC)

```
THREAT_KEYWORDS = ["DROP TABLE", "rm -rf", "<script", "eval(", "subprocess", "../../etc"]

def sentra_inspect(packet: dict) -> bool:
    blob = str(packet).lower()
    for sig in THREAT_KEYWORDS:
        if sig.lower() in blob:
            return False               # immune rejection
    if len(blob) > 1_000_000:          # size DoS guard
        return False
    return True                        # packet clears
```

Return semantics + scope

- True -> packet clears all 6 signatures and size guard. Yawar.append continues to sha256() + receipts.append({...}).
- False -> Yawar.append raises PermissionError("SENTRA rejected packet"). Receipt never enters the ledger. No partial state.
- Honest scope: this is a doctrine PREFILTER, not a complete threat model. Layer a WAF, secrets scanner, and dependency audit upstream.
- Expandable: ship sentra_signatures.json next to the kernel (codex-in-kernel pattern) to add signatures without architectural change.