Executive Brief — SSM-Audit

A conservative add-on to KPIs that shows stability without changing your numbers.

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Caution: Research/observation only. Not for critical decision-making.

Three questions every leadership team should be able to answer

1. When the numbers look great right up to the cliff—can you see the cliff?
2. When platform and bank totals tie—can you still see the daily drift that predicts next month's cash surprise?
3. When an acquisition deck sparkles—can you see the stability debt hiding under the metrics?
   SSM-Audit makes each answer "Yes" without changing a single reported number.

What it is (one line)

A conservative add-on that leaves your KPI untouched and adds a small stability lane beside it:
`x := (m, a)` with `a in (-1,+1)` and collapse parity `phi((m,a)) = m`.
Executives see plain bands (A++ / A+ / A0 / A- / A--) answering one question: **How sturdy is today's number?**

Why leaders care (outcomes over math)

- **Fewer surprises:** Timing slips and long tails show up before they hit P&L, covenants, or cash.
- **Calmer meetings:** Bands with hysteresis cut flicker; owners act early, not loudly.
- **Better pricing of risk:** "Stability debt" becomes visible in diligence and portfolio reviews.
- **Evidence you can file:** A small, repeatable evidence pack (conformance sheet, minimal manifest, optional stamps) — no PII.

What you will see on dashboards

- Same KPI number m exactly as today (unchanged by design; collapse parity `phi((m,a)) = m` holds).
- A compact band badge (`A++/A+/A0/A-/A--`) from the stability lane $a \in (-1,+1)$, with quick-read guides at `0.10 / 0.25 / 0.50 / 0.75` and hysteresis to reduce flicker (`promote` if `delta_a >= +0.05`; `demote` if `delta_a <= -0.05`).
- Weekly band counts and an optional roll-up index `a_sdi := tanh( (SUM_i atanh(a_i)) / max(n,1) )` to spot broad fragility or calm.
- Owner view: a thin trend line for a with band shading; click-through to the day's CSV (optionally stamped) for details.

Self-serve rollout (no rewrites)

1. Pick 3–5 KPIs to start (e.g., AR/Collections, Refunds/Chargebacks, Forecast-vs-Actuals).
2. Extend the feed beside each KPI with four columns: `a`, `band`, `band_hyst`, `knobs_hash` (optional: `build_id`, `stamp`).
3. Fix band rules once (stable across teams): thresholds `A++/A+/A0/A-/A--` from `a`, with hysteresis — promote only if `delta_a >= +0.05`, demote only if `delta_a <= -0.05`.
4. Run daily conformance checks: order-invariance of fusion, band parity with hysteresis, optional stamped replay; numbers for the KPI stay identical by construction (`phi((m,a)) = m`).
5. Optional portfolio view: publish an index per group of KPIs using `a_sdi := tanh( (SUM_i atanh(a_i)) / max(n,1) )` and show weekly band counts for quick scanning.

Stability insights in minutes (mini CLI)

- **Single command**

```
python ssm_audit_mini_calc.py pilot.csv out.csv --compute_a auto --
build_id demo --plot_kpi Revenue_actual --plots_dir Plots --sdi --
sdi_plot
```

Produces an updated CSV with `a`, `band`, `band_hyst`, `knobs_hash`, optional alerts, and charts with band guides (including `SDI.png` when `--sdi` is used).

- **Deterministic & bounded**

  - Collapse parity: `phi((m,a)) = m`
  - Order-invariant fuse: `a_out := tanh( (SUM w*atanh(a)) / max(SUM w, eps_w) )`
  - Portfolio index: `a_sdi := tanh( (SUM atanh(a_i)) / n )`
  - Knobs fingerprint: `knobs_hash := sha256(ascii(canonical_json(knobs)))`
  - No PII is processed.

Quick self-evaluation (DIY; typical window ~2 weeks)

- Fewer false alarms and under-budget alerts per KPI.
- At least two early actions triggered by band movement **before** classical KPIs moved.
- Conformance **PASS** and, if enabled, stamps verify end-to-end replay.

Under the hood (roots, one-liners)

- **Shunyaya Symbolic Mathematics (SSM):** two-lane arithmetic `((m,a))`, clamps, streaming composition, simple combination rules.
- **Shunyaya Symbolic Mathematical Symbols (SSMS):** canonical operator verbs that become clean connector contracts.
- **Shunyaya Symbolic Mathematical Clock (SSM-Clock):** optional tamper-evident stamps `SSMCLOCK1|iso_utc|rasi_idx|theta_deg|sha256(file)|chain` for replayable evidence.
  (SSM-Audit is built on SSM and SSMS; SSM-Clock is an optional add-on for provenance.)

What it is not

- Not a change to financials (`phi((m,a)) = m` guarantees that).
- Not a replacement for controls or GAAP/IFRS; it is **supplemental**, non-GAAP risk disclosure.
- Not a place for personal data; lanes and stamps are aggregate-only.

SSM-Audit: same numbers, earlier truth—fewer surprises.

OMP