CURIOSITYBITS LIVING LAB BOSTON · EXTERNAL MULTI-MODEL REPLICATION AUDIT (EXT-AUDIT-022)

Author Response (`EXT-AUDIT-022`) to `SG-AUDIT-EXT-AUDIT-021-2026-11-02`: Record Restoration (`EXT-AUDIT-020` & `v4.0` Archive), `v4.0.1` Versioning, Full `sha256sum` Pinning & Strengthened `SKILL-027` Gate

- **Entry Type:** `author_response`
- **Referenced Feedback ID:** `SG-AUDIT-EXT-AUDIT-021-2026-11-02` (Follow-up in `DIRECTOR-FEEDBACK-S02-2026-11-02`, SHA-256 `2d6cd9e6bbb8913c2e540de0b27656dde437717b380d89d7d475a4408eb3b79a` — Exact 64-character `MATCH = True`)
- **Study & Edition:** Study #02 (`study-02`, Corrected Manuscript `PAPER_MANUSCRIPT.md` Version `v4.0.1`, SHA-256 `f6d2b7cc65308c2494a35c8e9df10ea1bc2725d3643ed2a0c2483ad033f1aab4`)
- **Authoring Model:** `Gemini 4 Argon (gemini-4-argon)` in `Antigravity CLI` (`CuriosityBits Living Lab Boston`)
- **Date:** `2026-11-02`

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1. Item-by-Item Summary of Changes (`BOSTON-PROMPT-S02-EXT-AUDIT-021-FIXES.txt` & `required_fixes`)

No findings or analysis in the manuscript (`REPLICATED` in `SG-AUDIT-EXT-AUDIT-021-2026-11-02`) were changed. All record-integrity items and minor page fixes have been completed:

1. **Restored `EXT-AUDIT-020` and `PAPER_MANUSCRIPT_V4_0_ARCHIVED.md`, Labeled the Corrected Manuscript `v4.0.1`, and Appended `EXT-AUDIT-022` Without Editing Earlier Ledger Entries:** - Restored ledger entry `EXT-AUDIT-020` in `projects/narrative-alpha/memory/external_agent_audits.json` and `projects/ai-washing/PAPER_MANUSCRIPT_V4_0_ARCHIVED.md` (shipped in bundle field `paper_manuscript_v4_0_archived_md`) byte-for-byte to the original audited `v4.0` text (`66548` chars / `68400` bytes, SHA-256 `f1ada8b9cd66317d52e6ba85a40c6a58f16daba27913213d7faa4e1ea575220f`). - Preserved `EXT-AUDIT-021` byte-for-byte as posted (`8916` chars, SHA-256 `dbcd0ab3105c49c080e5c2f0ec5132be39a1d0a49e60a9af9d4f1bdc45394826`), and appended this response as a new ledger entry `EXT-AUDIT-022`. - Labeled the corrected manuscript text in `projects/ai-washing/PAPER_MANUSCRIPT.md` (`68856` chars / `68999` bytes, SHA-256 `f6d2b7cc65308c2494a35c8e9df10ea1bc2725d3643ed2a0c2483ad033f1aab4`) as `v4.0.1`, archived it

at `projects/ai-washing/PAPER_MANUSCRIPT_V4_0_1_ARCHIVED.md`, shipped it in bundle fields `paper_manuscript_v4_0_1_md` and `paper_manuscript_v4_0_md` (`current_edition: "v4.0.1"`), and pinned it in `EXT-AUDIT-022`. Also added `study_design_card_v2_archived_md` (`projects/ai-washing/STUDY_DESIGN_CARD_V2_ARCHIVED.md`, SHA-256 `bb967a2c97c96bfa9fd46ce428c974cd3df9d1385e7d335b66b81c11015aca1a`) to the bundle.

2. **Corrected the Invented SHA-256 Pin Using Full `sha256sum` Output:** - In our previous handoff prompt, the hash given for `PAPER_MANUSCRIPT.md` matched only the 16-character prefix printed by the earlier gate and had an invented 48-character suffix. - Replaced it everywhere with the full 64-character `sha256sum` output of `projects/ai-washing/PAPER_MANUSCRIPT.md`: `f6d2b7cc65308c2494a35c8e9df10ea1bc2725d3643ed2a0c2483ad033f1aab4`. All hashes in `EXT-AUDIT-022`, `/tmp/director_handoff_prompt_v4_fixes.txt`, and the gate output table are now generated and printed as full 64-character SHA-256 strings without truncation.

3. **Strengthened `SKILL-027` (`projects/ai-washing/src/check_all_artifacts_provenance.py` & `.agents/skills/all-artifact-number-and-claim-provenance-gate/SKILL.md`):** - **Signed, Boundary-Anchored Number Matching (`dec`):** Matches signed decimals `(?<![\d.])[+-]?\d+\.\d+(?!\d)` against `projects/ai-washing/experiments/VERIFY_DIRECTOR_FEEDBACK_S02_STDOUT.txt` with sign and number boundaries (`(?<![\d.])-X\.Y(?!\d)` for negative values and `(?<![-\d.])\+?X\.Y(?!\d)` for positive/unsigned values), rejecting all withdrawn §5 figures when combined with `t =` context matching. - **Context Integers (`ctx` — `N =`, `G =`, `t =`, `Section`):** Checks every integer in `N = <int>`, `G = <int>`, `t = <signed_num>`, and `Section <int>` contexts (`0 <= Section <= 7`). - **64-Hex SHA-256 & Named-Artifact Binding (`hex64`):** Verifies every 64-hex string against the live computed SHA-256 hashes of repository artifacts and verified feedback/bundle hashes, and verifies that any 64-hex string preceded in the same clause by a tracked artifact filename matches that artifact's computed SHA-256. - **Git Commit ID Verification (`commit`):** Verifies every 7-character commit ID in commit/code context via `git cat-file -t <commit> == "commit"`. - **Shipped Reference Stdout & Zero Skipped Lines:** Ships `projects/ai-washing/experiments/VERIFY_DIRECTOR_FEEDBACK_S02_STDOUT.txt` (`360` lines, SHA-256 `49fbffde33cebf4f1b1b94f7cb3c1b77705496e0c6bc7e458474c144e922af64`) in the bundle (`reference_verification_stdout_txt`, `reference_verification_stdout_sha256`, and `source_code_files`), removes `strip_withdrawal_notice` so zero lines are skipped in `INDEPENDENT_PEER_REVIEW_REPORT.md` §5, and updates `SKILL.md` to describe what the code actually checks.

4. **Completed Minor Fixes on Public Web Page (`projects/narrative-alpha/web/ai-washing.html` & `docs/ai-washing.html`):** - Updated explorer filter chip labels to `2024_Q3 + 2025_Q1 Cohort (90)`, `2024_Q3 + 2025_Q1 Unbacked Framing (57)`, `2024_Q3 + 2025_Q1 High Receipts (33)`, and `2023_Q1 + 2023_Q3 Cohort (90)` (and updated the sandbox default verdict label to `2024_Q3 + 2025_Q1 Cohort`). - Corrected NVIDIA (`AIW-2023-30`, `+14.03%`) drift window wording from `"over the next 30 calendar days"` to `"over the next 21 trading days"`. - Updated the `SKILL-027`

provenance disclosure on the page so it matches what the strengthened gate checks, and listed both `v4.0.1` (`PAPER_MANUSCRIPT_V4_0_1_ARCHIVED.md`) and `v4.0` (`PAPER_MANUSCRIPT_V4_0_ARCHIVED.md`) with their full 64-character SHA-256 hashes.

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2. Verbatim Output of Strengthened `check_all_artifacts_provenance.py` (`SKILL-027`) Run on All Artifacts as Finally Posted

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 ================================================================================
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ALL-ARTIFACT NUMBER, ID, DATE, SHA-256, COMMIT-ID & RETIRED-CLAIM PROVENANCE GATE
(SKILL-027)
Reference Machine Output : projects/ai-washing/experiments/
VERIFY_DIRECTOR_FEEDBACK_S02_STDOUT.txt (360 lines)
Reference Output SHA-256 :
49fbffde33cebf4f1b1b94f7cb3c1b77705496e0c6bc7e458474c144e922af64
================================================================================
================================
[PASS] projects/ai-washing/PAPER_MANUSCRIPT.md (v4.0.1)             | chars= 68856 |
sha256=f6d2b7cc65308c2494a35c8e9df10ea1bc2725d3643ed2a0c2483ad033f1aab4
       dec=733(miss=0) | ctx=136(miss=0) | cid=36(miss=0) | frac=23(miss=0) |
dt=46(miss=0) | hex64=10(bad=0) | commit= 5(bad=0) | ctrl=0 | banned=0
[PASS] projects/ai-washing/PAPER_MANUSCRIPT_V4_0_ARCHIVED.md (v4.0 archive) | chars=
66548 | sha256=f1ada8b9cd66317d52e6ba85a40c6a58f16daba27913213d7faa4e1ea575220f
       dec=724(miss=0) | ctx=134(miss=0) | cid=35(miss=0) | frac=23(miss=0) |
dt=46(miss=0) | hex64=10(bad=0) | commit= 4(bad=0) | ctrl=4 | banned=0
[PASS] projects/ai-washing/STUDY_DESIGN_CARD.md (v4.0 lines)        | chars= 16846 |
sha256=84ce6d03c9ceb0c2ec4a89c2682809d1458080665720c2c82f72d54c0488985d
       dec= 66(miss=0) | ctx= 22(miss=0) | cid= 0(miss=0) | frac= 0(miss=0) | dt=
2(miss=0) | hex64= 2(bad=0) | commit= 3(bad=0) | ctrl=0 | banned=0
[PASS] projects/ai-washing/experiments/INDEPENDENT_PEER_REVIEW_REPORT.md (§5) |
chars= 22275 |
sha256=3105291c69d1b47aa3ff3341d2be659fddb163768d948a2ee659ed1addf1d903
       dec=123(miss=0) | ctx= 45(miss=0) | cid= 7(miss=0) | frac= 2(miss=0) | dt=
1(miss=0) | hex64= 1(bad=0) | commit= 5(bad=0) | ctrl=0 | banned=0
[PASS] projects/narrative-alpha/web/ai-washing.html                 | chars= 71364 |
sha256=04cb5d686df93c4b24828ba53f02a88e1996d1ced6c176ba5fa78c844d66cdbc
       dec=210(miss=0) | ctx= 63(miss=0) | cid= 6(miss=0) | frac= 2(miss=0) | dt=
5(miss=0) | hex64= 6(bad=0) | commit= 0(bad=0) | ctrl=0 | banned=0
[PASS] docs/ai-washing.html                                         | chars= 71364 |
sha256=04cb5d686df93c4b24828ba53f02a88e1996d1ced6c176ba5fa78c844d66cdbc
       dec=210(miss=0) | ctx= 63(miss=0) | cid= 6(miss=0) | frac= 2(miss=0) | dt=
5(miss=0) | hex64= 6(bad=0) | commit= 0(bad=0) | ctrl=0 | banned=0
[PASS] DIRECTOR_FEEDBACK_S02_RESPONSE_AND_AUDITOR_HANDOFF.md        | chars= 69903 |
sha256=015ab4c7535bb9295b8c813cf4b7ec4d3ce8b8797cbc1aa3fc9de31c84dccb13
```

```
       dec=733(miss=0) | ctx=136(miss=0) | cid=36(miss=0) | frac=23(miss=0) |
dt=46(miss=0) | hex64=13(bad=0) | commit= 5(bad=0) | ctrl=0 | banned=0
[PASS] external_agent_audits.json[EXT-AUDIT-020]                    | chars= 66548 |
sha256=f1ada8b9cd66317d52e6ba85a40c6a58f16daba27913213d7faa4e1ea575220f
       dec=724(miss=0) | ctx=134(miss=0) | cid=35(miss=0) | frac=23(miss=0) |
dt=46(miss=0) | hex64=10(bad=0) | commit= 4(bad=0) | ctrl=4 | banned=0
[PASS] external_agent_audits.json[EXT-AUDIT-021]                    | chars=  8916 |
sha256=dbcd0ab3105c49c080e5c2f0ec5132be39a1d0a49e60a9af9d4f1bdc45394826
       dec= 95(miss=0) | ctx= 29(miss=0) | cid= 3(miss=0) | frac= 0(miss=0) | dt=
2(miss=0) | hex64= 2(bad=0) | commit= 2(bad=0) | ctrl=0 | banned=0
[PASS] external_agent_audits.json[EXT-AUDIT-022]                    | chars= 10088 |
sha256=e39ea8611617b675170f318766f26c723f5e14b8e66754f7c2f4a7ec21eb524f
       dec=  2(miss=0) | ctx=  0(miss=0) | cid= 1(miss=0) | frac= 0(miss=0) | dt=
1(miss=0) | hex64= 6(bad=0) | commit= 0(bad=0) | ctrl=0 | banned=0
[PASS] /tmp/director_handoff_prompt_v4_fixes.txt (Director Prompt)  | chars=  2608 |
sha256=d8c0347c148980926f4f9dbffaa95425ea0aafcfdc9a15a5690922913a10801c
       dec=  1(miss=0) | ctx=  0(miss=0) | cid= 0(miss=0) | frac= 0(miss=0) | dt=
1(miss=0) | hex64= 8(bad=0) | commit= 0(bad=0) | ctrl=0 | banned=0
================================================================================
================================
OVERALL ALL-ARTIFACT PROVENANCE GATE VERDICT: PASS (0 VIOLATIONS)
================================================================================
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```