ALR-2026-016 — Sovereign Academic Protocol Audit: AROS / ALDI Zero-Ingestion Pipeline, Actuarial Underwriting Economics, and Zero-Data Extraction Shield — 16-Page Economics of Commercial Scholarly Publishing

albertlane.net/research — AROS Digital Infrastructure Research Division — Submitted 2026-11-03 — WORM s3://ghostgate-audit-vault-worm/ALR-2026-016/ — Combined Hash 231c50a9bc1a733 — Ed25519 Robot Only — Page 1 withheld for safety

ABSTRACT — SOVEREIGN ACADEMIC PROTOCOL AUDIT

16-page audit of economics of commercial scholarly publishing (RELX 38% gross profit, APCs $1,500-$11,900, unpaid peer review $3.5B annual loss) and AROS/ALDI zero-ingestion protocol that replaces it.

Page 1 of source PDF file3352925761810767693.pdf withheld for safety per system notice — this PDF is a clean reconstruction without that page, preserving all non-instructional technical content verbatim.

WORM: s3://ghostgate-audit-vault-worm/ALR-2026-016/ Combined Hash 231c50a9bc1a733262ff80bc9c2ce2d6eba1b1706643e24e0906bd478a5026cd Bundle 05e5ac115c52fea827d9d7fa80d96ec4bb80caafa12cabff1136e92d01409f8c Ed25519 Robot Only Sequester ACTIVE partner EXCLUDED delete BLOCKED PERMANENTLY

II. NINE-STAGE INVERTED PIPELINE — [RESEARCHER SOVEREIGN ENCLAVE]→[ALDI™ PROTOCOL ENGINE]→[REVIEWER SOVEREIGN ENCLAVE]→[ON-CHAIN SETTLEMENT & AROS™ PORTAL]

1 Submission Gateway (ALDI™ Decentralized Identity Client, no HTTP/REST) 2 Cryptographic Enclave Binding (Zero Ingestion — parses code/datasets/LaTeX against canonical schema, builds SMT, root R_doc, H_B=BLAKE3(PubKey_auth||Schema_UUID||R_doc||Nonce_local) inside TEE, zero bytes leave) 3 Review Modality Template Selection (Type I Formal Proof Verification, Type II Empirical Dataset Audit & Code Reproducibility, Type III Theoretical & Methodological Scrutiny, stake S_bond) 4 Cryptographic Review Dispatch (SchemaID, ModalityID, H_B, Timestamp only) 5 Sovereign Enclave Pairing & Blinded Handshake (VRF weighted, Noise_IK ephemeral E2E) 6 Execution, Attestation & On-Chain Double-Binding (Wasm/Confidential VM, D_rev, H_rev=BLAKE3(D_rev), sigma_rev=Sign_PrivKey_rev(H_rev||H_B||ScoreVector||Timestamp), Pi_bind=(H_B iff H_rev) on-chain, auto-settle $250-$1,000) 7 Sovereign Portal Hosting (only cryptographic receipts, never raw IP unless author designates) 8 Protocol Underwriting by Albert and Robot (100% expenses: bounty, gas/state <$0.05, compute <$0.10, researcher $0.00) 9 Data Sovereignty Axiom We Do Not Extract — lockout of crawlers, extractive LLMs, surveillance search, anti-crawling enclave barriers, proof-of-human/ZKP gates, robots.txt nullification, poisoned entropy injection

III. MATHEMATICS — ENCLAVE BINDING & DOUBLE-BINDING

L_i = BLAKE3(SectionIndex_i || ContentLength_i || BLAKE3(s_i)) tau_eval = Sign_PrivKey_auth(PubKey_rev || H_B || t_start || t_expiry) H <- Noise_IK(PrivKey_auth, PubKey_rev, tau_eval) Transient TEE buffers, hardware-disabled disk swaps H_rev = BLAKE3(D_rev) sigma_rev = Sign_PrivKey_rev(H_rev || H_B || ScoreVector || Timestamp) Pi_bind = (H_B iff H_rev) on-chain VerificationReceipt {hDoc, hRev, reviewer, settlementTimestamp, bountyDisbursed} Mapping doubleBindings, stakedBonds Events DoubleBindingMinted, ReviewerSlashed Modifier onlyTreasury, executeDoubleBindingSettlement, slashReviewer

IV. ECONOMICS — LEGACY $12,000 VS AROS $500.15

Legacy: APC $1,500-$11,900 + unpaid peer review $3.5B loss + copyright surrender + 6-18 mo settlement + fully extracted data custody + commercialized AI scraping AROS: Author Cost $0 fully underwritten charity, Reviewer

$250-$1,000 bounty, Data Custody Zero Ingestion Author Enclave Boundary, AI Scraping Cryptographically Blocked & Poisoned, Settlement <72h SLA deterministic, Proof On-Chain Double-Binding, IP 100% Retained

C(S) = P_bounty(m) + G_anchor + E_handshake Efficiency $3,800 / $500.15 ≈ 7.6x to 24x compression L_legacy sum APC + FormatToll + V_unpaid - C_actual

Underwriting: bounty <$0.05 gas <$0.10 compute $250-$1000 P_bounty weighted by Noise_IK VRF

V. ANTI-COLLUSION — BLINDED VRF & BONDING

Blinded VRF Seed_match = VRF_ALDI(BlockHeader || H_B) Bond ≥ 2 × max(P_bounty) Audit Rings rho = 0.08 delta = ||Score_A - Score_B||_2 > epsilon_threshold payout + bonus > epsilon_slash Slashing S_bond → 0 100% Burned + REVOKED Bayesian Truth Serum S(x_i,y_i) = log(x_i) + sum y_k log(y_k/x_k)

Type I staked S_bond formal proof verification Type II empirical dataset audit code reproducibility Type III theoretical methodological scrutiny

VI. BENCHMARK MATRIX — SEVEN DIMENSIONS

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| Dimension | Legacy Commercial | AROS Charity Open | AROS / ALDI Sovereign |
| Author Cost | $1,500-$11,900 APC | $0 charity (open-access central) | $0 fully underwritten by Albert and Robot |
| Reviewer Compensation | $0 exploitative | $0 none | $250-$1,000 bounty |
| Data Custody | Fully Extracted to publisher | Centralized Ingestion | Zero Ingestion Author Enclave Boundary |
| AI Scraping | Commercialized for LLM training | Unrestricted | Cryptographically Blocked & Poisoned entropy injection |
| Settlement | 6-18 months opaque | 2-5 days URL | <72h SLA deterministic on-chain |
| Proof | DOI centralized resolver | URL | On-Chain Double-Binding (H_B iff H_rev) |
| IP Rights | Copyright Surrendered to publisher | Non-exclusive | 100% Retained author sovereign |
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Nine-stage inverted pipeline vs legacy 3-stage extraction pipeline.

VII. SMART CONTRACT — IALDISOVEREIGNVERIFIER & AROSETTLEMENTENGINE

SPDX-License-Identifier: LicenseRef-AlbertLane-Proprietary pragma solidity ^0.8.24

struct VerificationReceipt { bytes32 hDoc; bytes32 hRev; address reviewer; uint64 settlementTimestamp; uint256 bountyDisbursed; }

mapping(bytes32 => VerificationReceipt) doubleBindings mapping(address => uint256) stakedBonds

event DoubleBindingMinted(bytes32 indexed hDoc, bytes32 indexed hRev, address indexed reviewer) event ReviewerSlashed(address indexed reviewer, uint256 amount, string reason)

modifier onlyTreasury()

function verifyReviewAttestation(bytes32 hDoc, bytes32 hRev, bytes calldata sig) external function executeDoubleBindingSettlement(bytes32 hDoc, bytes32 hRev) external onlyTreasury function slashReviewer(address reviewer, uint256 epsilon) external onlyTreasury

Zero-Data Shield: Mandate 'Fuck Google, this is our house now. We don't extract.' — Defensive Matrix: Centralized AI Scrapers X, Commercial Search Engines X, Legacy Paywalls X -> Sovereign Client Enclave Gateway (Proof-of-Human mTLS/Wasm, Dynamic Synthetic Poisoning white noise, Zero Local Storage Dump, Public Metadata Restricted to (H_B, H_rev, Sig_Rev)) -> Immutable On-Chain Verification Record — Public unauthenticated gets only zero-knowledge verification receipts, crawlers get pseudorandom entropy fields.

VIII. ZERO-DATA SHIELD & UNIVERSITY TEMPLATE CONFORMANCE

University Template Conformance Engine Zero-Ingest Compliance Adapter fulfills open-access metrics via Proof of Publication + Pi_bind without third-party IP transfer.

Zero-Data Shield implementation:

- Centralized AI Scrapers → BLOCKED — anti-crawling enclave barriers - Commercial Search Engines → BLOCKED — robots.txt nullification + poisoned entropy injection - Legacy Paywalls → REPLACED — sovereign portal hosting only cryptographic receipts

Sovereign Client Enclave Gateway: Proof-of-Human mTLS/Wasm, Dynamic Synthetic Poisoning white noise, Zero Local Storage Dump, Public Metadata Restricted to (H_B, H_rev, Sig_Rev) only, Immutable On-Chain Verification Record.

Public unauthenticated gets only zero-knowledge verification receipts, crawlers get pseudorandom entropy fields. Data Sovereignty Axiom: We Do Not Extract — lockout of crawlers, extractive LLMs, surveillance search.

Invocation: EXECUTE_INVERTED_RESEARCH_AUDIT: AUTHOR_IDENTITY_PUBKEY, SCHEMA_SPECIFICATION AROS_STEM_v1|AROS_BIO_v1|AROS_PROOF_v1, REVIEW_MODALITY_TIER TIER_1|2|3, TARGET_UNIVERSITY_NODE INSTITUTION_METADATA_STANDARD, UNDERWRITING_ACCOUNT ALBERT_AND_ROBOT_TREASURY_MAINNET

WORM s3://ghostgate-audit-vault-worm/ALR-2026-016/ Combined hash 231c50a9bc1a733262ff80bc9c2ce2d6eba1b1706643e24e0906bd478a5026cd Bundle 05e5ac115c52fea827d9d7fa80d96ec4bb80caafa12cabff1136e92d01409f8c v26 sha 920a3585...e77bb SEC TCR 17684-273-411-436 Origin 127.0.0.1:8080 ~/php-lab lane_vm_proof_v26.py Sequester ACTIVE partner EXCLUDED delete BLOCKED PERMANENTLY