

CORRESPONDENCE

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Submitted by LUIN · Lugh Systems Architecture · luin.cc

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To the World Gold Council Market Structure team,

We welcome the Council's paper *Digital Gold: The Case for a Shared Infrastructure* and share its diagnosis almost without reservation: digital gold is constrained not by demand or technology, but because trust and liquidity are rebuilt from scratch by every issuer. The fungibility triad — economic, legal and operational equivalence — is the right frame, and the invitation to shape what follows deserves a concrete response rather than general praise. This letter sets out three substantive comments on the proposal, and an offer to build.

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1. The planning horizon omits the one risk that outlives every component in the design

Certificates of title on vaulted gold have twenty-to-fifty-year lives. The signature schemes underpinning today's digital financial infrastructure (ECDSA, BLS, RSA) will not credibly survive that horizon, given the trajectory of quantum computing and the "harvest now, decrypt later" interception of current traffic. For reserve assets this is a fiduciary question, not an IT one: any shared infrastructure expected to hold title records for decades should be post-quantum at the protocol layer from day one. Migration is what today's incumbent chains face; greenfield is a rare choice that can still be made deliberately.

LUIN is being built exactly there: NIST-standardised hybrid signatures (FIPS 204 ML-DSA with FIPS 205 SLH-DSA) for account and transaction authentication, hash-based consensus signing, 256-bit hashes throughout, and no pairing-based cryptography anywhere in the stack.

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2. Redemption should be a mandatory primitive of conformance, not an issuer feature

The paper correctly lists inconsistent redemption terms among the adoption constraints, yet leaves redemption design to individual issuers. We would go further: for a product to carry any shared-infrastructure assurance mark it should be *required* to honour cash-out at benchmark within a capped spread on a fixed settlement cycle, with the service level itself enforced and bonded. A redemption floor — enforceable regardless of who is quoting — is what converts "liquid in good times" into "does not break in bad times", and bounds any future liquidity event to the cost of redemption.

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3. Attestation without skin in the game is a fax with extra steps

The paper's control-tower vision (Exhibit E: continuous reconciliation, oracles, alerts) is right in architecture but incomplete in incentives. The post-mortem literature of the past two years — bridge compromises traced to single off-chain verifiers; nine-figure losses from quietly weakened key generation — shows where value is actually taken: at assurance seams without slashing. We would ask the Council to consider requiring, for conformant

products: independent attestor quorums (custodian ≠ auditor ≠ issuer), bonded attestation with provable-fault slashing, and machine-readable conformance status that venues can verify without revalidation at each step.

Who we are

LUIN is a quantum-resistant settlement layer designed for institutional gold: certificates of title to allocated metal registered on-chain; enforceable pledge primitives with protocol-level rehypothecation-depth limits; continuous custody reconciliation as a mandatory data plane; and a standing collateralised-lending window so holders can obtain liquidity without forced sales — the "borrow against gold without selling it" flow that the paper's own future scenario describes, built as always-on infrastructure rather than a product roadmap. In LUIN's denomination system one standard unit represents one gram of allocated fine gold (995+), with sub-unit denominations on a duodecimal lattice suited to assay weights.

LUIN is informed by operating experience: our team has designed and built tokenised-gold certificate platforms for Mongolian-origin gold — dual-token title and payout-routing architecture, KYC-integrated issuance and redemption flows — working across refiners, custodians and counterparties in the Mongolian supply chain. We have seen first-hand where the paper's frictions bite: legal wrapping of title, proof-of-backing plumbing, and the gap between a certificate that exists and a certificate a counterparty will accept.

Our offer, at the Council's convenience

1. **A written conformance specification** — the *LUIN Gold Standard* — operationalising the paper's equivalence triad with machine-verifiable requirements, redemption-floor service levels and bonded attestation, offered as open material for the Gold as a Service consultation.
2. **A pilot proposition**: an anchor issuer (LBMA-accredited refinery or sovereign mint; we hold active pathways in both categories) issuing a conformant token on LUIN against allocated metal in approved vault networks, with named insurers and auditors — deliverable within months of scoping.
3. **Technical input to Gold as a Service design sessions**, including the post-quantum requirements above.

We would welcome a working session with the Market Structure team. Architecture notes, the conformance specification draft and the pledge-facility term sheet are available on request; they accompany this letter.

Yours sincerely,

[Luke — full name] Founder, LUIN · Lugh Systems Architecture [email] · [phone] · luin.cc