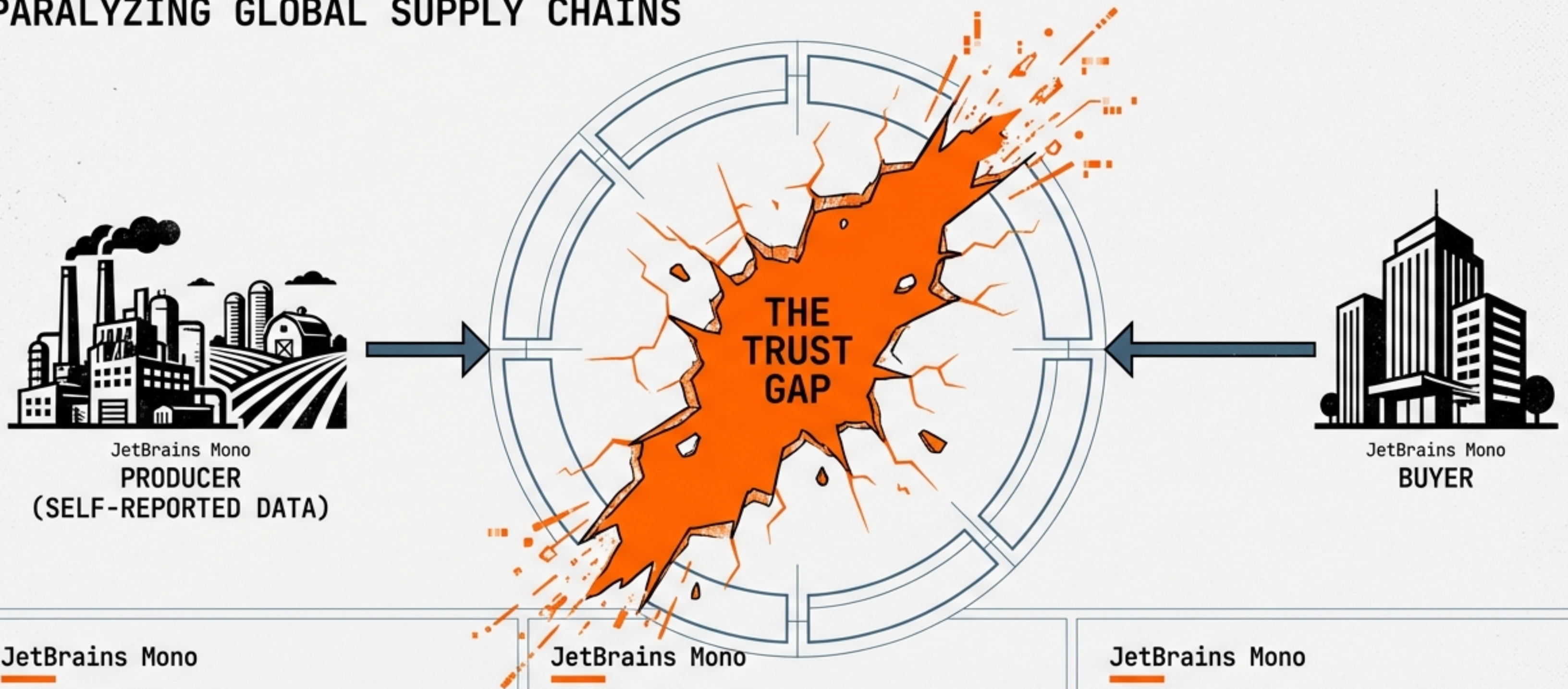


THE CRISIS OF TRUST

PARALYZING GLOBAL SUPPLY CHAINS



JetBrains Mono

THE STALEMATE: Buyers view self-reported data as unreliable and demand verification.

JetBrains Mono

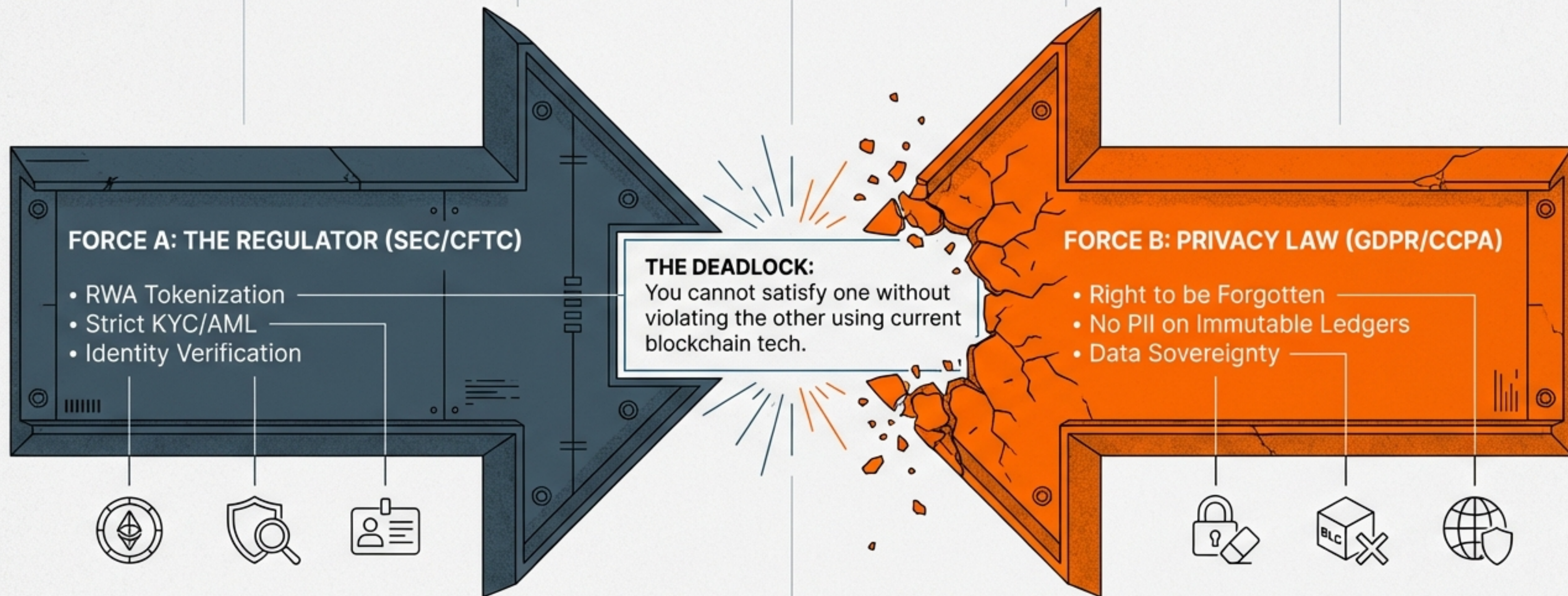
THE COST BARRIER: Centralized auditing is too expensive for small-scale farmers.

JetBrains Mono

THE RESULT: Supply chains exist on a knife's edge, fragile and dependent on opacity.

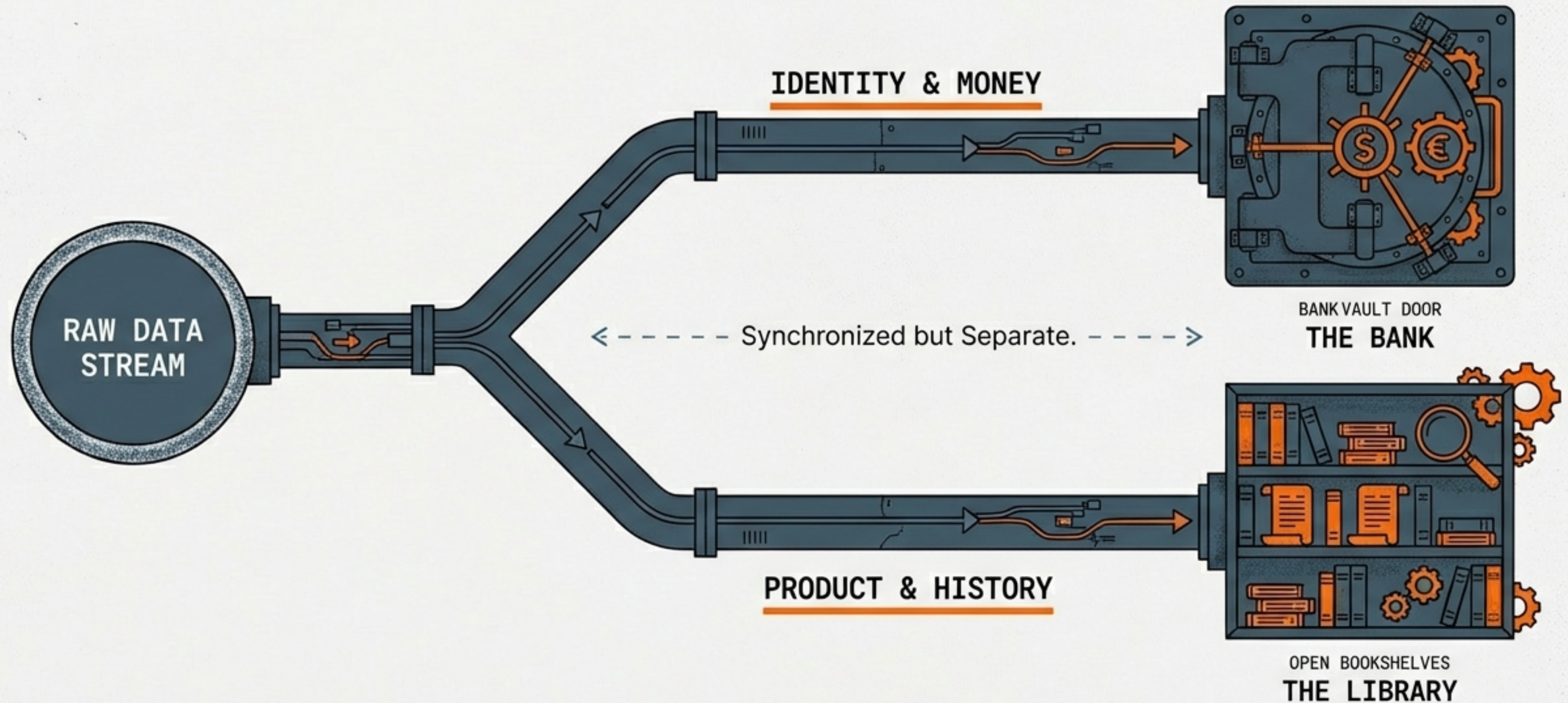
THE REGULATORY PARADOX

RADICAL TRANSPARENCY VS. MANDATORY PRIVACY



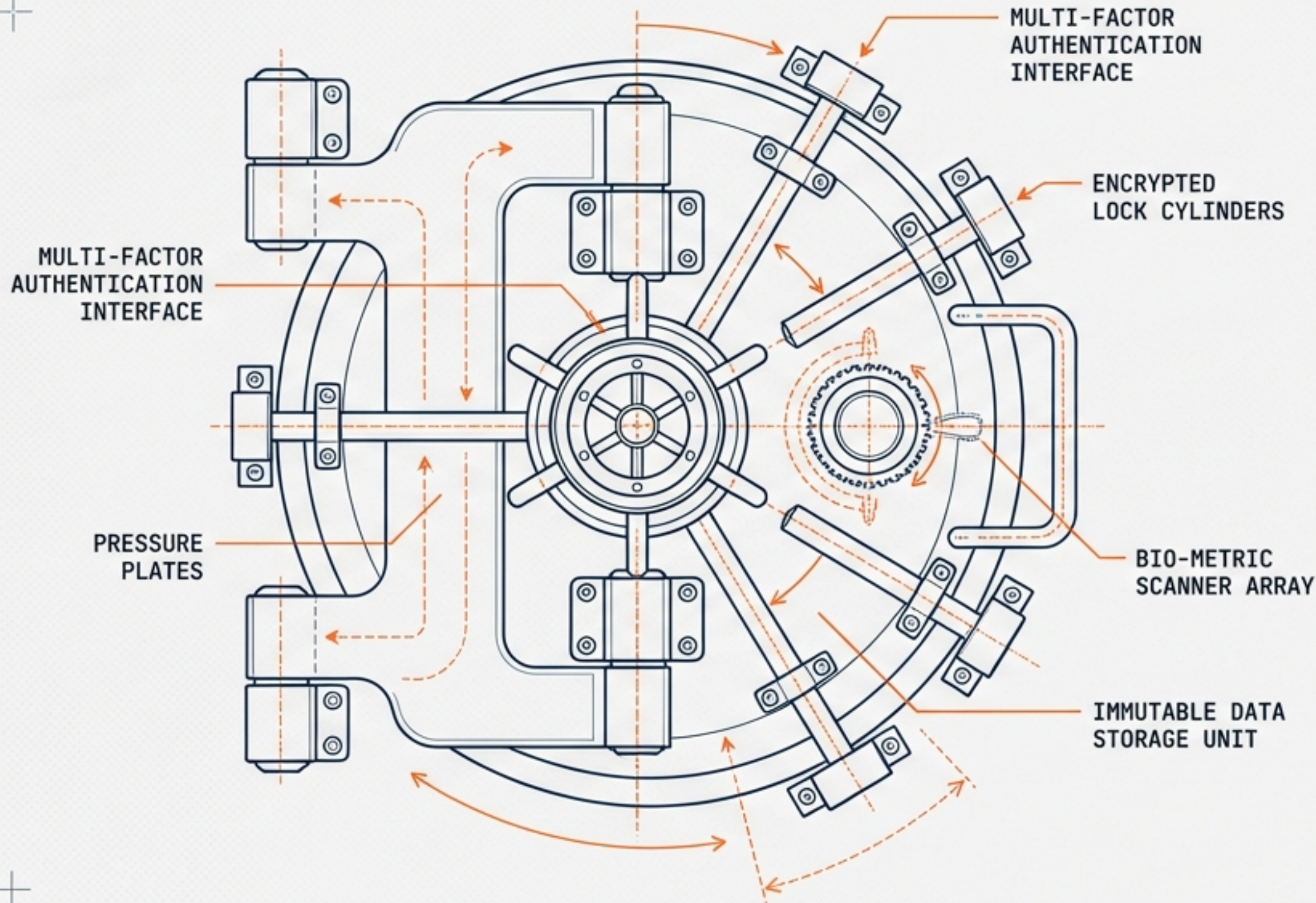
THE SPLIT-LEDGER ARCHITECTURE

DECOUPLING FINANCIAL SETTLEMENT FROM PHYSICAL ATTESTATION



THE BANK: PRIVATE LEDGER

TECH SPEC: POWERED BY HORIZEN



CONTENTS OF THE VAULT

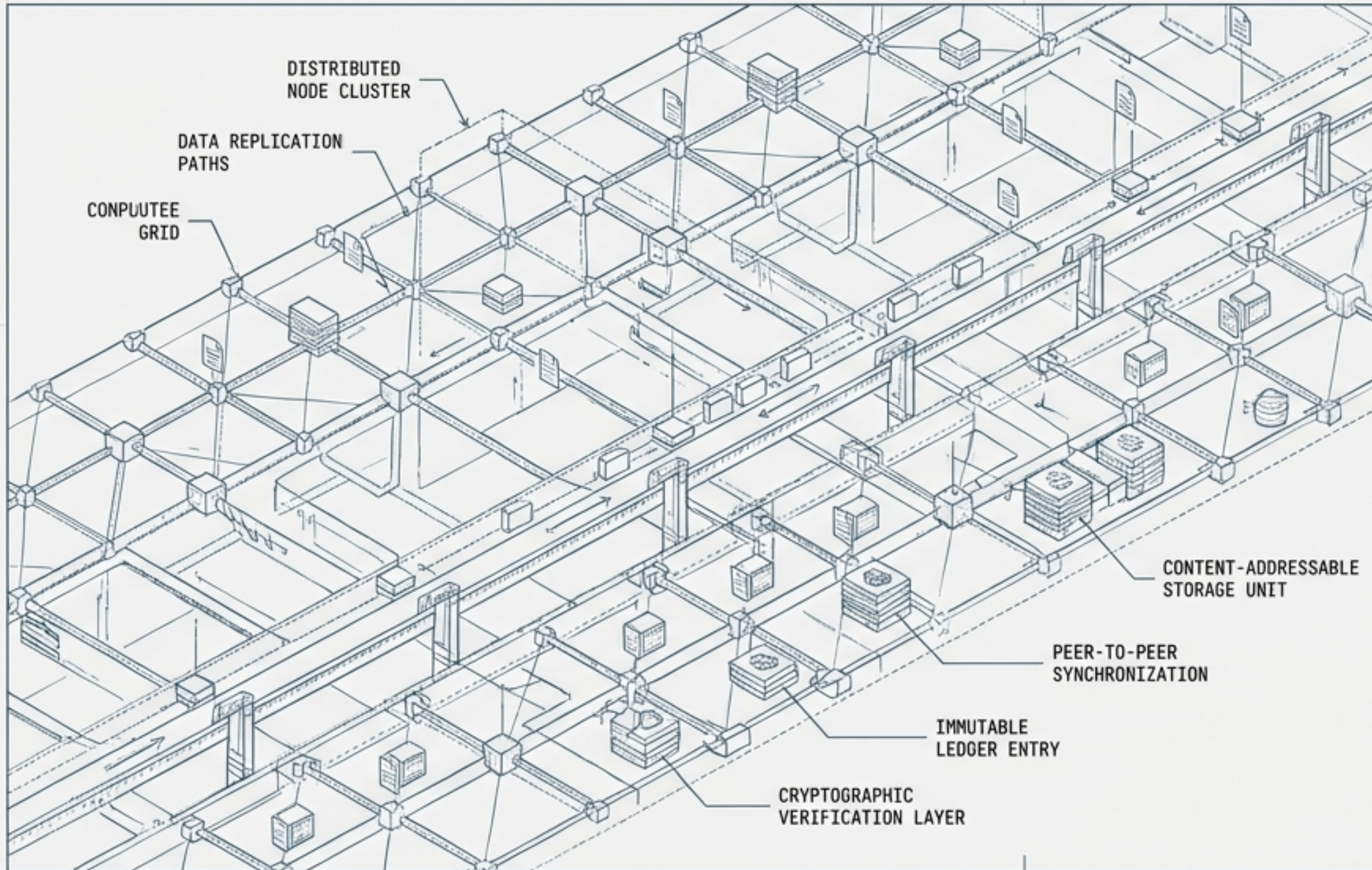
- Farmer Identity (Tax IDs, Biometrics)
- Wallet Addresses
- Transaction History
- Legal Contracts

FUNCTION: SAFE HARBOR

Keeps Personal Identifiable Information (PII) off the public web to satisfy GDPR, while ensuring no one enters the system via KYC/AML compliance.

THE LIBRARY: PUBLIC LEDGER

POWERED BY FREENET (LOCUTUS) + WASM



CONTENTS OF THE SHELF

- Physical Metrics (Moisture, Fiber Quality)
- Evidence (Computer Vision Hashes, Sensor Logs)
- Provenance (Geohash)
- Hardware Identity (Ed25519 Public Key)

FUNCTION: TRUSTLESS TRANSPARENCY.

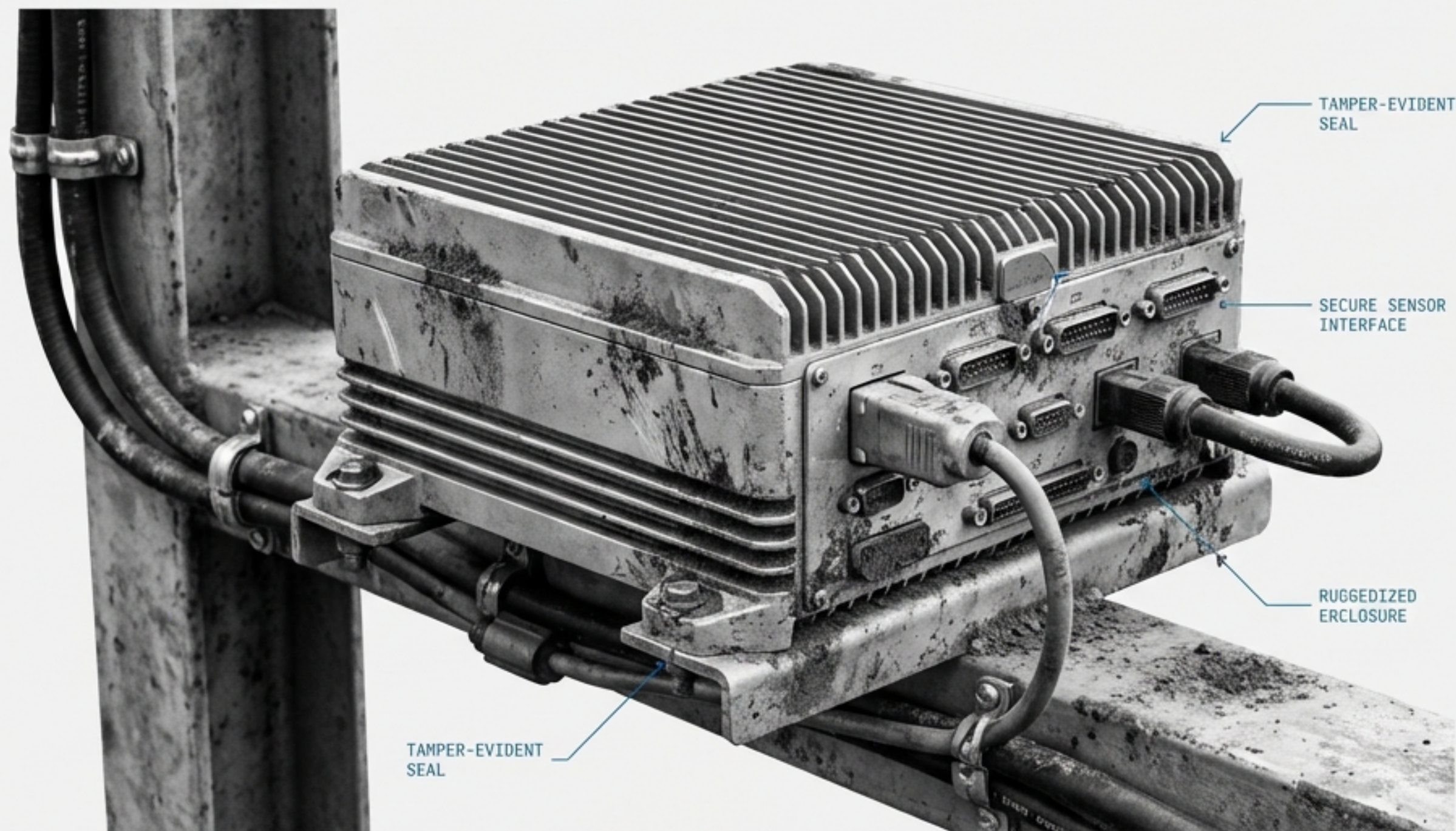
Indifferent to WHO the farmer is, obsessed with WHAT the crop is. Ensures Sovereign Permanence of data even if the company dissolves.

TWO WORLDS, ONE PROTOCOL

FEATURE	THE BANK (PRIVATE)	THE LIBRARY (PUBLIC)
PRIMARY GOAL	Regulatory Compliance (KYC/AML)	Trustless Transparency
TECHNOLOGY	Horizen (The Volume Play)	Freenet (Locutus) / Wasm
VISIBILITY	Private (Permissioned)	Public (Open to All)
ACCESS	Strictly Managed / Identity-Based	Trustless / No Login Required
BENEFIT	Financial Safety	Mathematical Proof of Quality

THE HARDWARE ORACLE

BRIDGING DIRT TO DATA



RIOS Tier 2 Node

PROBLEM:

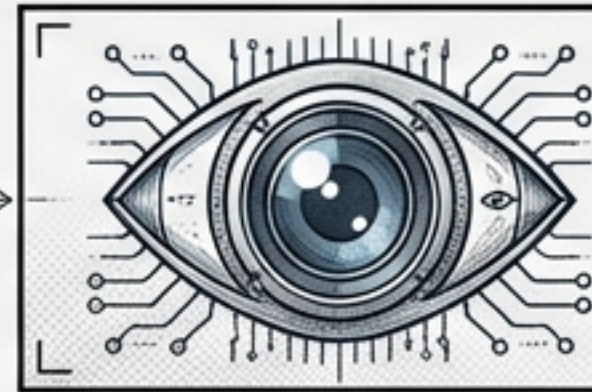
Garbage-in,
garbage-out.
Human entry is
unreliable.

SOLUTION:

A witness that isn't
human. Trust the
physics of silicon,
not the honesty of
an operator.

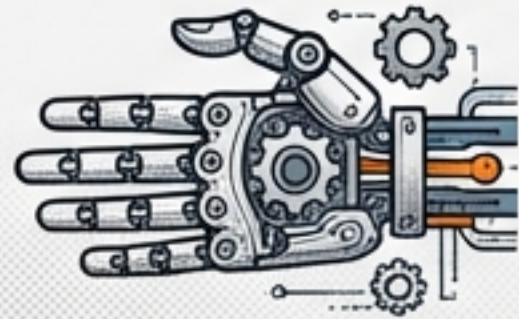
THE TRINITY STACK

EYE, HAND, AND MEMORY



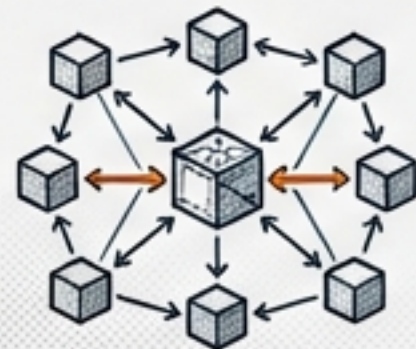
THE EYE (INGESTION)

NVIDIA A2 GPU + YOLOv8.
Sees the product, infers quality.



THE HAND (MIDDLEWARE)

hempgrade-publisher (Rust).
Sanitizes PII, signs data, splits the packet.



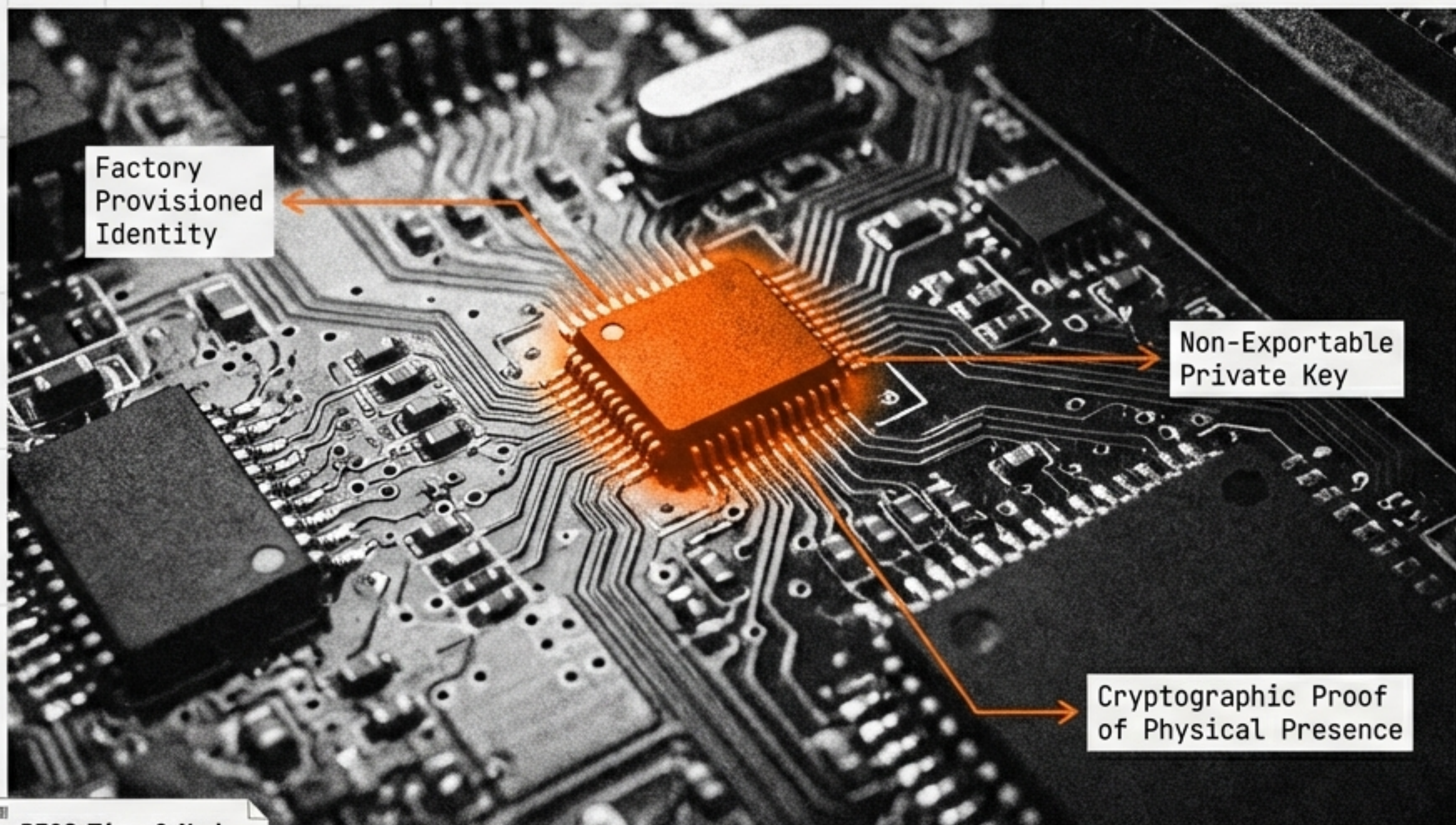
THE MEMORY (REGISTRY)

Freenet + Wasm.
Permanently stores the truth.

Technical Paper White
(Hex #F4F4F4)

THE ROOT OF TRUST: TPM 2.0

TPM 2.0



Factory
Provisioned
Identity

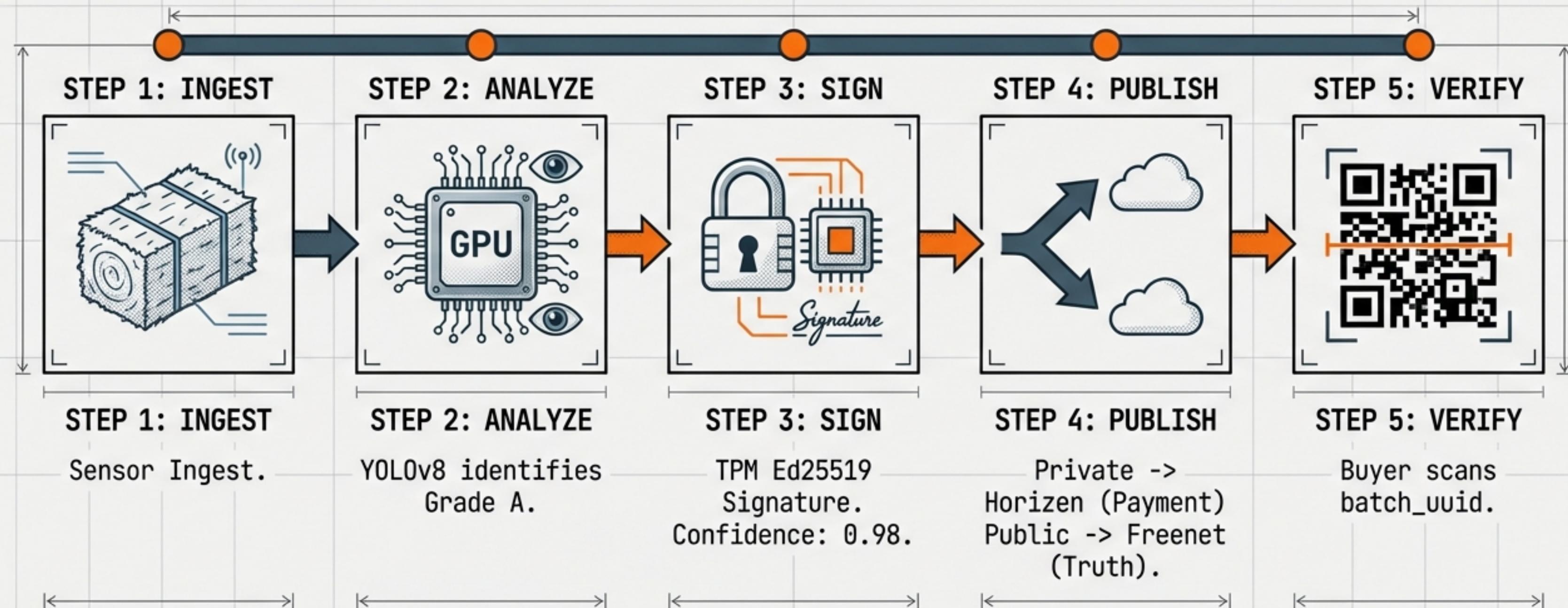
Non-Exportable
Private Key

Cryptographic Proof
of Physical Presence

Why can't this be faked? The key is burned into the silicon at the factory. It never leaves the chip. Any signature produced proves that the specific hardware unit witnessed the harvest.

THE HAPPY PATH: FROM HARVEST TO HISTORY

CASE STUDY: NODE 4 (KAABONG, UGANDA)



THE ECONOMICS OF TRUTH

WHY FREENET?

ETHEREUM

\$50+

Cost to store one high-res image.
Result: Auditing is too expensive.

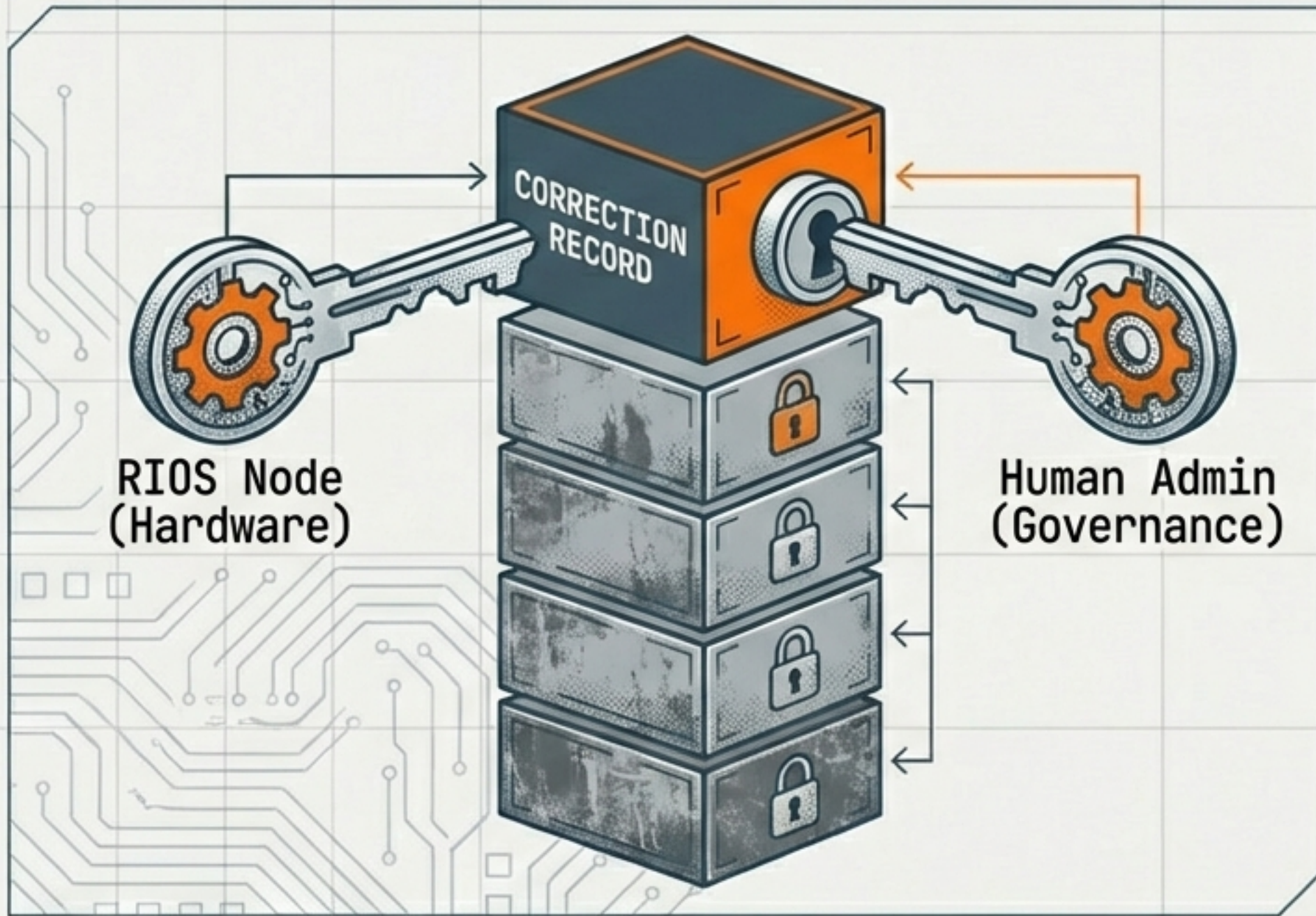
FREENET

\$0

Marginal cost for high-capacity storage.
Result: High-fidelity auditing (photos, logs) is commercially viable.

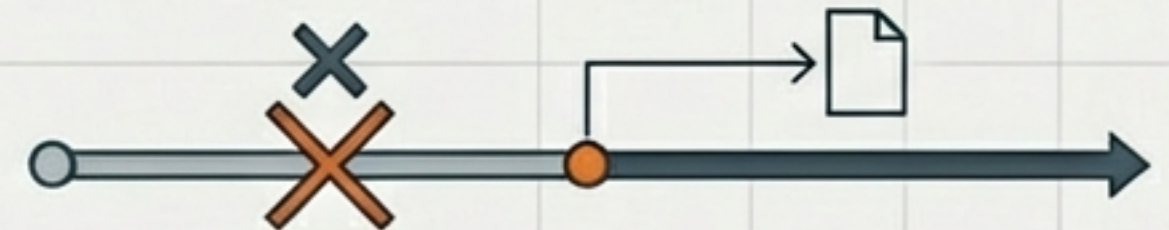
CORRECTION LOGIC

THE IMMUTABLE ERROR



In the Library, you cannot delete history. You can only append to it.

Errors are fixed by adding a Correction Record, ensuring the original mistake remains visible as part of the audit trail.



THE STRATEGIC SHIFT

FROM HARDWARE TO SOVEREIGN CERTIFIER



FOR THE FARMER

Gains Data Sovereignty.
Owns an unalterable history
to secure better loan rates.



FOR THE BUYER

Receives mathematical
proof of quality without
human intervention.



FOR THE REGULATOR

Maintains a clear audit
trail for money without
violating privacy laws.

THE BRIDGE FROM DIESEL TO DATA IS OPEN

JOIN THE SOVEREIGN STACK

1. HACK THE FORGE: Build the Application Layer

2. GO. BUILD. WIN.

WWW.AGRA.ENERGY