

# The Rosetta Stone Protocol (RSP)

*Ending Information Asymmetry Through Privacy-Preserving Cognitive Translation*

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## The Problem: Everyone Is Lost in Translation

Information asymmetry has two failure modes. The first — **access** — is who has the information. Open-source, public ledgers, and free publishing largely solved this. The second — **translation** — is whether the receiver can actually parse it. This one is unsolved and arguably more destructive. A Solidity whitepaper is "public" the same way a medical journal is "public": technically available, practically opaque. The information is free. The comprehension is gated.

This is not an intelligence gap. It is a *language* gap. Every human processes information through a unique cognitive profile: technical depth tolerance, preferred analogy frameworks, humor as a trust signal, domain familiarity, attention architecture, abstraction comfort. When a document is encoded in a language that doesn't match the receiver's profile, information is lost — not because it wasn't sent, but because it wasn't *translated*. Two people can read the same whitepaper and one walks away with the thesis while the other walks away with nothing. The document didn't change. The encoding didn't match.

**Proof of concept:** We took two VibeSwap research papers (parasocial extraction theory, trinomial stability theorem) and translated them for two real people. Subject A ("Bubbles"): technical depth 1/5, humor-driven, no crypto background. Subject B ("DefaibroTM"): technical depth 4/5, execution-focused, deep DeFi native. Same source information. Radically different outputs. Both subjects received the complete thesis — zero information loss — because the *encoding* matched their cognitive profile. The content was lossless. The wrapper was personalized. This is what the protocol automates.

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## Architecture: Cognitive Profile + AI Translation + Zero-Knowledge Privacy

### Layer 1: The Personality Test (Profile Generation)

A structured assessment that maps the user's cognitive profile across dimensions: **technical depth tolerance** (1-5), **preferred analogy domains** (physical, social, financial, mechanical, biological), **humor modality** (dry, absurdist, referential, none), **abstraction comfort** (concrete-first vs. principles-first), **domain familiarity map** (finance, engineering, law, medicine, etc.), **attention architecture** (deep-dive vs. executive summary), and **trust signals** (data, credentials, narrative, social proof). Output: a structured vector — the user's **Cognitive Profile (CP)**.

### Layer 2: The Translation Engine (AI-Native)

An LLM pipeline that accepts: (1) a source document, (2) a Cognitive Profile vector, and (3) a target format (whitepaper, letter, brief, thread, explainer). The engine re-encodes the source document's information into the receiver's cognitive language. This is not summarization — it is **lossless re-encoding**. The technical depth, analogy framework, humor modality, and structure all adapt. The thesis, evidence, and conclusions remain invariant. AI is not optional here — no human system can perform real-time, per-individual document translation at scale. This is an AI-native product category.

### Layer 3: The Privacy Fortress (Non-Negotiable)

**A Cognitive Profile is a fingerprint.** It captures how a person thinks — more identifying than biometrics, more intimate than browsing history. The protocol has **no right to see this data**. It must only prove accuracy and integrity. The privacy architecture:

**Compute-to-Data.** The CP never leaves the user's device. The translation model is delivered to the data, not the data to the model. Local inference (on-device LLM or TEE-hosted) processes the document against the local CP. The plaintext profile never touches a network.

**Homomorphic Encryption (HE).** For cloud-assisted translation where local compute is insufficient: the CP is encrypted client-side using FHE (fully homomorphic encryption). The translation engine operates on the *encrypted* profile. It produces a correctly personalized document without ever decrypting the profile. The server sees ciphertext in, personalized document out, and learns nothing about the cognitive profile that produced it.

**Zero-Knowledge Proofs.** Two critical proof circuits: (1) **Proof of Valid Profile** — the CP was generated from a legitimate test completion, not fabricated or manipulated, without revealing any answers or scores. (2) **Proof of Translation Integrity** — the output document is a faithful re-encoding of the source document against a valid CP, without revealing which CP. This lets third parties verify that the translation is accurate and complete without accessing the profile.

**Differential Privacy + Mixers.** If aggregate profile data is ever needed (research, model improvement): differential privacy noise injection before any aggregation, routed through mixers to break linkability between profiles and identities. No individual profile is ever reconstructable from aggregate data.

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## How It Ends Information Asymmetry

Today, comprehension is gated by encoding. Experts write for experts. Populists oversimplify. Everyone in between gets a version that doesn't quite fit. The result: the same information produces radically different understanding depending on who reads it. That's information asymmetry — not of access, but of *reception*.

RSP collapses this gap. Every document becomes universally comprehensible — not by dumbing it down, but by re-encoding it into each receiver's native cognitive language. A PhD thesis and a two-paragraph explainer can carry identical informational content if the encoding matches the receiver. The lossless part is the breakthrough. Summarization destroys information. Translation preserves it.

The implications compound. **In finance:** a derivatives term sheet becomes parseable by every counterparty, not just the one who hired the lawyers. Retail investors read the same prospectus as institutional ones — and actually understand it. **In governance:** legislation becomes comprehensible to every citizen, not just lobbyists and lawyers. **In medicine:** clinical trial results become readable by patients, not just physicians. **In education:** every textbook adapts to every student. Every domain where experts exploit comprehension gaps as competitive moats — which is every domain — gets leveled.

The moat around expertise was never knowledge. It was *language*. Kill the language barrier, and expertise diffuses instantly. Information asymmetry doesn't get reduced. It becomes structurally impossible.

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## Prototype Scope

**MVP:** Personality test (web form) → CP vector (encrypted, local storage) → document upload → LLM translation (local or FHE-cloud) → personalized PDF output. ZK proof of valid profile generation. No profile data ever leaves user control.

**Stack:** On-device LLM inference (llama.cpp / WebLLM) for local-first. FHE library (TFHE-rs / Concrete) for cloud fallback. Circom or Noir for ZK circuits. All profile storage client-side (IndexedDB encrypted at rest).

**Validation:** Same source document, multiple CPs, blind evaluation by recipients. Metric: comprehension parity across all technical depth levels with zero information loss.

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**This is not a product. This is infrastructure.** The Rosetta Stone didn't translate one document. It made an entire civilization's knowledge accessible. RSP does the same — for every document, for every person, forever. And it does it without ever learning who you are.

*The protocol doesn't need to know how you think. It just needs to prove that it translated correctly.*