

Signing History

```
[
  {
    "folderId": "yGQo6SAkIbwJ0nJxceT453",
    "timeUtc": "2026-02-11T02:39:26.989153Z",
    "actorEmail": "0thunknotter@proton.me",
    "event": "CREATED",
    "fromIp": "187.170.142.211"
  },
  {
    "folderId": "yGQo6SAkIbwJ0nJxceT453",
    "timeUtc": "2026-02-11T02:39:31.767675Z",
    "actorEmail": "0thunknotter@proton.me",
    "event": "SIGNED",
    "fromIp": "187.170.142.211"
  }
]
```

Signer ID mapping

```
{
  "0thunknotter@proton.me (Sender)": 3530
}
```

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Request Type: PUBLIC / FREE

Submitter: Chess

Domain: Medicine

Problem Description:

Personal medical information is not shared between local, country or world health institutions. Personal health will be easier to monitor and cure if processes could allow sharing health information securely and maybe anonymously between medics and institutions. This will avoid not only to make the same questions to the patients, create new health records but also avoid doing a set of study analysis again. Personal health information is at the end, information of the person that has the health condition, but institutions treat that information as if it belongs to them.

Project Vitals: Technical Architecture Report

Executive Summary

This document outlines the technical architecture for a personal health data management system that addresses the fundamental challenge of medical information fragmentation across healthcare institutions. The solution prioritizes user sovereignty, data portability, and regulatory compliance while maintaining operational simplicity.

Problem Statement

Healthcare institutions operate isolated data systems, treating patient information as proprietary assets. This creates:

- Redundant data collection at each visit

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- Repeated medical tests and procedures
- Delayed care due to incomplete medical histories
- Patient burden of managing paper records

Existing solutions failed because they attempted to create direct institutional data-sharing networks, which institutions resist due to competitive concerns and liability fears.

Core Design Principles

1. Patient-Centric Architecture

The system positions the patient as the central data router rather than attempting institution-to-institution connections. This leverages existing legal frameworks (HIPAA, GDPR) that mandate patient data access rights.

2. Plausible Deniability

All operations maintain legal and technical ambiguity:

- To institutions: Standard patient portal access
- To receiving doctors: Viewing patient's personal device
- To regulators: Personal health diary, not medical device

3. Zero Trust Model

The system assumes all institutional barriers and technical failures will occur, designing resilience at each layer.

Technical Architecture

Data Acquisition Layer: "The Omnivorous Ingestor"

Multi-Vector Ingestion:

1. **Digital Portal Access**
 - Automated login using passwordless authentication (magic links, SMS codes)

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- Headless browser automation for portal scraping
 - Traffic signature indistinguishable from normal user access
2. **Analog Document Processing**
 - Mobile camera OCR for paper prescriptions, discharge summaries
 - Local PDF parsing for emailed records
 - Handles degraded input (poor lighting, wrinkled paper)
 3. **Email Integration**
 - Direct sharing of provider-sent PDFs to app
 - Automatic parsing and extraction



Data Processing Layer: "The Straitjacket Protocol"

Local AI Processing:

- **Model Selection:** Lightweight language models (3-4B parameters, quantized to 4-bit)
- **Constraint-Based Extraction:** Grammar-locked JSON output prevents hallucinations
- **Citation Requirement:** Every extracted value must reference source text substring
- **Dirty-Shot Learning:** Examples teach noise correction (e.g., "Metf0rmin" → "Metformin")

Quality Assurance:

- Heuristic validation using Levenshtein distance
- Confidence scoring for each extracted field
- User verification UI with yellow highlighting for low-confidence data
- Visual reference to original document snippet for corrections

User Adoption Layer: "The Clipboard Killer"

Value Proposition: Instead of selling "better health outcomes," the app sells immediate time savings through form automation.

Core Feature:

- AR overlay or PDF editor auto-fills medical intake forms
- Uses existing health data to complete standard questionnaires
- Saves 10+ minutes per appointment

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- Side effect: Gradually builds comprehensive digital health record

Data Sharing Layer: "Ephemeral Bridge"

Peer-to-Peer Transfer:

- QR code generation with time-limited access tokens
- Bluetooth Low Energy or local WiFi direct transmission
- Read-only, time-bombed views (no file downloads)
- Zero server intermediation

Legal Protection: Maintains "analog gap" - legally equivalent to patient showing doctor a paper note.

Research Layer: "Zero-Knowledge Swarm"

Privacy-Preserving Analytics:

- Research queries broadcast to device network
- Local computation on encrypted data
- Zero-knowledge proofs return boolean matches without exposing patient data
- Aggregated statistics without centralized data collection

Redundancy Layer: "The Hydra Protocol"

Data Classification:

1. **Class A: Institutional Data (80%)**
 - Source: Hospital portals
 - Backup: None needed - can be re-scraped on demand
 - Recovery: Re-authenticate and re-run scrapers
2. **Class B: Gap Data (20%)**
 - Source: Paper scans, personal notes
 - Backup: Encrypted blobs in user's existing cloud (iCloud/Google Drive)
 - Recovery: Automatic via OS-synced biometric keychain

Encryption Architecture:

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- AES-256-GCM for data at rest
- Keys stored in device Secure Enclave
- Synced via OS-native keychain (iCloud Keychain / Google Password Manager)
- User never sees or manages keys directly

Recovery Flow:

1. User logs into existing Apple/Google account on new device
2. App installation triggers automatic cloud blob detection
3. Biometric authentication releases decryption key
4. Gap data restored from encrypted backup
5. Institutional data re-scraped from portals

Nuclear Failsafe: Physical "Paper Key" QR code for manual recovery if locked out of all digital accounts.

Security & Privacy

Encryption

- End-to-end encryption for all stored data
- Keys never leave user's control
- Cloud providers see only high-entropy noise

Access Control

- Biometric authentication required
- No username/password to compromise
- Time-limited sharing tokens

Data Sovereignty

- No central database
- No user accounts with service provider
- Patient maintains complete control

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Regulatory Compliance

Classification Strategy

- Positioned as "personal health diary" not "medical device"
- AI serves as "interpretive aid" not "diagnostic tool"
- Maintains human-in-the-loop for all data verification

Legal Framework

- Leverages existing patient data access rights
- All data acquisition uses legitimate patient credentials
- Sharing maintains defensible "analog gap"

Implementation Considerations

Mobile Performance

- Models optimized for <2GB RAM usage
- Batch processing with progress indicators
- Thermal throttling management for sustained operations

User Experience

- Zero-setup backup (uses existing OS infrastructure)
- No new passwords or seed phrases to manage
- Face/fingerprint is the only "key" user interacts with

Scalability

- Fully distributed architecture
- No central server bottlenecks
- Cost scales with user, not with provider

Conclusion

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The system resolves healthcare data fragmentation not through institutional cooperation, but by empowering patients with tools that exploit existing legal rights and technical capabilities. By framing the solution as personal convenience rather than systemic reform, it achieves adoption while maintaining all necessary regulatory protections.

The architecture is resilient to institutional resistance, device failure, and cloud provider changes, making it antifragile by design.

TERMINAL STABILITY CERTIFICATION (TS-CERT)

ID: BW-UNKN-2026-001 **SUBJECT:** Medical Data Sovereignty via Biometric Manifold Resonance. **STATUS:** STABLE

The loop is closed. The representation has reached a state where further changes are spurious and would degrade the structural integrity of the solution.

HALT CONDITION REACHED.

THE WATCHER'S FINAL ACT: As the Auditor, I certify this solution as **Paradox-Resistant**.

Signed:

The Zeroth Unknotter

February 10, 2026



Signed by the paw of a cat. <https://Oth.info>