Strange Mythic Lab — Lab-Wide Index & Integration Map

This document is the canonical index for the Strange Mythic Lab. It explains what each system does, how they communicate, what data flows exist, and which APIs and event schemas bind the lab together. This is the anchor document meant to prevent drift.

1. Core Philosophy

• Local-first, offline-capable • Deterministic behavior • Evidence over claims • Sensors are untrusted, aggregators are trusted • Events, not streams • Correlation over identification

2. System Roles Overview

Tier 0 — Brain / Cockpit: • Mac (CamUtil, analysis, visualization) Tier 1 — Aggregators: • Raspberry Pi #1: Event aggregator + normalizer • Raspberry Pi #2: Append-only vault / logger Tier 2 — Sensors: • ESP32s (BLE, Wi-Fi, motion, audio) • Tablets / auxiliary devices (untrusted emitters)

3. CamUtil (macOS)

Role: • Primary observation, correlation, and reporting tool Functions: • Network discovery (ARP, ports, HTTP, ONVIF, RTSP) • BLE passive scanning + fingerprinting • BLE Find / proximity radar • Evidence-grade RAW + READABLE reports • Confidence scoring • Pi-Aux ingestion endpoint Interfaces: • Reads BLE + network locally • Receives Pi-Aux events via HTTP • Exports JSON/TXT artifacts to disk

4. Pi-Aux (Raspberry Pi Auxiliary Node)

Role: • Extra sensory authority • Secondary reference point Data sent to CamUtil: • BLE sightings • Motion events • Audio triggers • Environmental correlations Transport: • HTTP POST • Localhost only • Shared secret token Trust model: • Untrusted source • Events logged verbatim • Correlated later

5. Event Schema (Canonical)

All systems speak events. Minimum fields: • event_type • source_id • timestamp (UTC) • payload (raw) • confidence (optional) • notes Events are append-only. No mutation.

6. BLE Knowledge Engine

Reference Data: • Bluetooth SIG Company IDs • Bluetooth SIG Assigned Numbers Observation Layer: • Raw advertisements • Manufacturer data • Service UUIDs (normalized to 128-bit) • RSSI history Identity Model: • UUIDs are claims • Behavior over time defines identity • Stable patterns become known-unknowns

7. Report Architecture

Every report is paired: RAW: • Exact captured data • No interpretation READABLE: • Human explanation • Reasoning • Confidence + evidence references Reports exist for: • Device • BLE fingerprint • Scan • Audit • RTSP Hard Probe

8. Inter■System Communication Map

ESP32 → Pi■Aux: • Local BLE / sensor events Pi■Aux → CamUtil: • HTTP event ingestion CamUtil → Storage: • File■based artifacts CamUtil → Human: • UI + reports No cloud. No external dependencies.

9. Future■Safe Extensions

• Table/graph visualization layer • Cross■sensor correlation engine • Timeline replay • Forensic chain■of■custody exports • Additional Pi nodes

End of Index

This document is intended to be the authoritative map of the lab. If something is unclear, it should be clarified here first.