

Architecture Roadmap

Version: 1.4.0 Date: 2025-12-20 Active Release Target: 0.133.0-Beta

1. Executive Summary

Current Status: CRITICAL STABILIZATION REQUIRED. The project is mid-transition in a major "Visualization Standardization" overhaul. Phase 1.5 (Standardization) was partially executed but introduced a regression (`NameError` crash) in the Plotly reporting engine. The immediate priority is applying the **Hotfix** to restore report generation, followed by implementing the **Session Manifest** architecture to decouple the Web Dashboard from filename predictions (fixing 404 errors).

2. Active Development Tracks

Track A: Reporting Engine Modernization (Visualization)

- **Goal:** Eliminate Matplotlib, standardize branding (3-Line Titles), and enforce "Smart Scoping".
- **Status:**
 - ☑ **Phase 1: Presentation Layer** (Branding/Footers) - *Completed.*
 - ☑ **Phase 1.1: Smart Scoping** (Redundancy Logic) - *Completed.*
 - [!] **Phase 1.5: Standardization (Plotly)** - *REGRESSED.*
 - * *Issue:* Refactoring removed `is_single_band` variable needed for filename generation.
 - * *Result:* Reports crash on generation. 404s in Dashboard.
 - ☐ **Phase 2: Stabilization & Manifest** - *IMMEDIATE PRIORITY.*
 - * **Hotfix:** Centralize filename logic in `_report_utils.build_filename`.
 - * **Manifest:** Implement `manifest_manager.py` to index artifacts and prevent 404s.
 - ☐ **Phase 3: Text Report Standardization** - *Pending.*
 - ☐ **Phase 4: Chart Migration** (Butterfly/Propagation) - *Pending.*
 - ☐ **Phase 5: Animation Migration** (WRTC HTML) - *Pending.*

Track B: Web Dashboard (Architecture)

- **Goal:** Robust, stateless file handling.
- **Status:**
 - ☑ **Identity Agnostic Uploads** - *Completed.*
 - ☑ **Public Log Archive Fetcher** - *Completed.*
 - [!] **Artifact Discovery** - *FRAGILE.* Currently relies on `os.walk` and filename prediction. Must move to **Session Manifest** (Track A, Phase 2).

3. Feature Backlog & Technical Debt

ID	Priority	Component	Description
TECH-001	Critical	plot_*.py	Fix NameError Crash. Restore <code>is_single_band</code> logic via utility.
ARCH-002	High	views.py	Session Manifest. Replace <code>os.walk</code> with deterministic JSON man
DEBT-003	Medium	*.py	Matplotlib Removal. Port final static charts to Plotly.
FEAT-004	Low	animations	WRTC HTML Animation. Replace MP4/FFmpeg dependency.