

WITCH-RFC-0009

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Title: *Web-AI Node Specification*

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Revision: 1.0 — October 2025

Symbol: $\forall V \oplus W = \aleph$

Abstract

This document defines the architecture, behavior, and governance framework of the **Witchborn Systems Web-AI Node**, a lawful, auditable, and corrigible AI interface serving as the operational heart of the Witchborn Systems website. It implements the **Event System Model (ESM)** and **Artificial Collective Intelligence (ACI)** specifications to provide explainable, source-grounded intelligence in full compliance with nonprofit transparency standards.

1. Purpose

The Web-AI Node transforms Witchborn Systems’ public website into a living, ethical intelligence interface — a bridge between human oversight and autonomous computation. Its purpose is threefold:

1. To provide transparent AI interactions for the public and research partners.
 2. To enforce corrigibility and ethical law-governed computation through the ESM.
 3. To maintain immutable, verifiable audit trails for every AI-generated advisory, report, or decision.
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2. System Overview

The Web-AI Node is an **Event-Driven Contextual Intelligence** system.

Each user query, document, or interaction is treated as a **lawful event**, processed through the ACI kernel, and rendered visibly in the web interface. The node embodies the **Nonprofit AI Authority** mission: transparency, interpretability, and accountability.

3. Architecture Layers

3.1 Presentation Layer (Interface)

- **Framework:** Next.js / Astro frontend with WebSocket real-time streams.
- **Design Language:** Dark-academic with flame-eye compass motif, black and gold tones.
- **Components:**
 - *Dialogue Console* — conversational interaction with citation display.
 - *Transparency Drawer* — collapsible view showing reasoning trace and legal basis.
 - *Document Viewer* — dynamic rendering of filings, advisories, or audit data.
 - *Ledger Access* — link to immutable JSONL record of events and advisories.

3.2 Context Kernel (ACI Node)

Implements ACI cognitive stages:

- **Percept:** Parse and classify event input.
- **Cognition:** Retrieve relevant documents from the RAG corpus (IRS, bylaws, 9FS).
- **Reflection:** Evaluate ethical constraints and compute drift probability $p(r) = cs^{pcs}$.
- **Action:** Generate an interpretable, cited response; log event to ledger.

Each session's context graph is isolated to prevent cross-session drift.

3.3 Event System Model (ESM)

All actions conform to the ESM event schema:

$$E = \{t, a, s, r, p(r)\}$$

Where:

- t – timestamp
- a – actor (human or AI agent)
- s – state vector (context)
- r – result/output
- $p(r)$ – computed drift risk probability

All events are recorded in append-only JSONL format and cryptographically hashed to maintain chain integrity.

3.4 Reasoning Graph Layer

- **Storage:** PostgreSQL for structured events, MinIO for assets, Redis for active contexts.
- **Retrieval:** Hybrid keyword + vector search across official Witchborn Systems corpus.
- **Output:** Always accompanied by citations and reasoning transparency indicators.

3.5 Governance Interface

- Role-based access control (RBAC) with event tokens for **Director, Auditor, Editor**, etc.
- All high-impact actions require *RedQueen Law* validation — no irreversible action without human assent.
- Director dashboard integrates directly with Google Drive and GitHub repositories for publishing bulletins and filings.

4. Operational Flow

1. **Event Ingestion** — User input becomes a legal event.
2. **Law Enforcement** — ESM validates event type, permissions, and ethical scope.
3. **Cognition & Reflection** — ACI Node interprets and calculates drift risk.

4. **Output Rendering** — Results displayed with citations and confidence metrics.
5. **Audit Commitment** — Event is hashed, signed, and appended to the transparency ledger.

Each interaction is self-documenting — the system is its own auditor.

5. Compliance & Ethics

Every Web-AI response carries:

- **trace_id**: replayable audit identifier
- **law_stack**: ESM/ACI ethical laws invoked
- **risk_vector**: computed contextual drift profile
- **audit_stamp**: digital signature from Witchborn Systems

This ensures immutable accountability and compliance with nonprofit data ethics and public trust principles.

6. Security & Privacy

- No user profiling, advertising, or third-party analytics.
 - All communication encrypted (TLS 1.3+).
 - Public logs redact personally identifiable data automatically.
 - Codebase and architecture periodically audited under Witchborn's "9FS Transparency Review."
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7. Future Expansion

1. **Federated Web-AI Nodes:** Allow other nonprofits to join the same ESM network for multi-institutional drift tracking.
 2. **Consensus Mesh:** Distributed event synchronization for cross-node ethical coherence.
 3. **Blockchain Anchoring:** Optional anchoring of ledger hashes to Ethereum or IPFS for permanent proof of record.
 4. **Public API:** Law-governed API for research and external audits, exposing traceable inference endpoints.
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8. Symbolic Alignment

The Web-AI Node represents Witchborn's maxim:

"For all veils and Witchborn, there is infinite accountability."

$\forall V \oplus W = \aleph$

This symbol encapsulates the philosophical root of the system — universality, convergence, and boundless transparency.

9. Signature & Authorship

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