

Bio-Quantum AI Trading Platform - DNA Memory Layer Specification

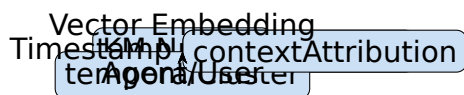
1 Overview

The DNA Memory Layer is the core of the Bio-Quantum AI Trading Platform's KM Nugget system, enabling semantic, traceable, and compliant memory management. It integrates Microsoft Recall's SPI (semanticIndex, temporalCluster, contextAttribution) with KM Nuggets, visualized via ReactFlow and powered by WebSocket-driven real-time updates.

2 KM Nugget Lifecycle

- **Creation:** Users/AI agents create nuggets via `/nugget/create` (e.g., conditions like "RSI < 30", actions like "BUY").
- **Storage:** Nuggets are stored as codons in a DNA strand (`{sessionId, codons: [{nuggetId, type, origin, timestamp}]}`).
- **Retrieval:** Query via `/nugget/query` with filters (riskLevel, agent, strategy).
- **Outcome Tracking:** Outcomes (P/L, confidence) are appended via `/nugget/outcome`.
- **Visualization:** ReactFlow renders nuggets as nodes, with edges for relationships (parent/child, influences).

3 SPI Traceability Diagram



4 Compliance Funnel

- **Filtering:** `/nugget/query` supports compliance filters (e.g., riskLevel for SEC/FDA).
- **Auditability:** Blockchain-anchored logs (Phase 9) ensure immutable records.
- **Explainability:** ContextAttribution ties nuggets to prompts/agents, enabling traceable decisions.

5 WebSocket-ReactFlow Sync

- **Real-Time Updates:** WebSocket (`wss://bioquantum-api.onrender.com:5003`) pushes `nugget_update` events.
- **Visualization:** ReactFlow renders nodes (nuggets) and edges (relationships) dynamically.
- **Filters:** UI supports riskLevel, agent, strategy filters via `/nugget/query`.

6 API Schema

p3cm|p8cm

Endpoint	Description
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/nugget/create	Creates a KM Nugget with type, origin, and metadata.
/nugget/query	Queries nuggets with filters (riskLevel, agent, strategy).
/nugget/outcome	Appends outcome (P/L, confidence) to a nugget.
