Data Forge & Artisan AI– Technical Architecture Overview

1. Platform Overview

Data Forge™ is a secure, high-performance data analysis and visualization platform designed for organizations requiring isolated environments, advanced analytics, and AI-assisted interaction—all without compromising data integrity or compliance.

2. Tenancy & Data Isolation

- **Architecture:** Single-tenant deployments
- **Data Separation:** Isolated Amazon S3 buckets per tenant
- **Encryption:** Data encrypted at rest (AES-256) and in transit (TLS 1.2+)

3. Data Analysis Engine

- **Processing Core:** Proprietary high-performance filtering and analytics engine
- **Integration:** Supports querying via Athena over Parquet-based datasets
- **Offline Rendering:** Enables dashboards and reports generation in disconnected environments

4. AI Engine and HLAD (Human-Language Analysis Driver)

- **LLM Integration:** Configurable AI agent orchestrates natural-language queries via OpenAI and other LLMs
- **Deterministic Analysis:** All data computations are executed by our proprietary procedural math engine– guaranteeing 100% reproducible results and zero risk of LLM hallucination
- **Auditability:** Every computation, data lookup, and transformation is logged, providing a transparent trail users can review to verify accuracy and data provenance
- **Contextual Awareness:** Pulls in tenant-specific auxiliary knowledge to enrich responses with organizational context
- **Secure Querying:** HLAD intermediates between LLM and analysis engine, ensuring raw data never leaves the secure environment

5. Storage & Performance Optimization

- **Primary Storage:** AWS S3 with tenant-specific buckets
- **Caching:** Sharded, intelligently warmed based on usage patterns
- **Data Freshness:** Automated ingestion and update pipelines

6. Security & Access Control

- **Network Security:** Physically separated from the public Internet
- **Access Control:** IP whitelisting, VPN access, and role-based permissions
- **Audit Logs:** Comprehensive access logging for compliance and security reviews

7. Scalability & Extensibility

- **Compute:** Horizontally and vertically scalable architecture
- **Integration:** Pluggable with 3rd-party tools and APIs

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