



# ODGS Protocol: Architecture Specifications

## 1. Integration Pattern

ODGS (v1.2.1) is a deterministic binding layer for high-risk industrial AI, available as a native package for Node.js and Python ecosystems.

- **Package Access:** `npm install odgs` or `pip install odgs`
- **Data Agnostic:** Native support for Parquet, Iceberg, and Delta Lake formats.
- **Runtime Binding:** Injects validation middleware between the Data Registry and Inference Engine.

## 2. Deterministic Semantic Hashing

### Hashing Logic:

Utilizes **SHA-256** hashing of JSON business definitions to ensure absolute data-to-concept integrity.

- Unit dimensions (ISO alignment).
- Temporal and Drift constraints.
- EU AI Act Article 10 Audit Flags.

### The "Hard Stop":

A 1-bit mismatch between the runtime hash and the Governance Registry triggers an **Immediate Execution Freeze**. This prevents "Silent Drift" where AI makes decisions on data no longer matching the compliance definition.

## 3. Governance as Code: Core CLI

Command	Action	Outcome
<code>odgs init</code>	Initialize	Creates standard protocol directory and 7 core JSON schemas.
<code>odgs validate</code>	Verify	Ensures definitions adhere to strict protocol constraints.
<code>odgs build</code>	Compile	Generates artifacts for dbt (MetricFlow), Power BI, and Tableau.

## 4. Interoperability & Compliance

- **TNO Semantic Treehouse:** Engineered for native alignment with Federated Object Libraries (TNO Standards).
- **CIRPASS 2:** Validated against Digital Product Passport (DPP) data requirements.
- **EU AI Act:** Solves Article 10 (Data Quality) & Article 12 (Record Keeping) via cryptographic enforcement.

## System Architecture

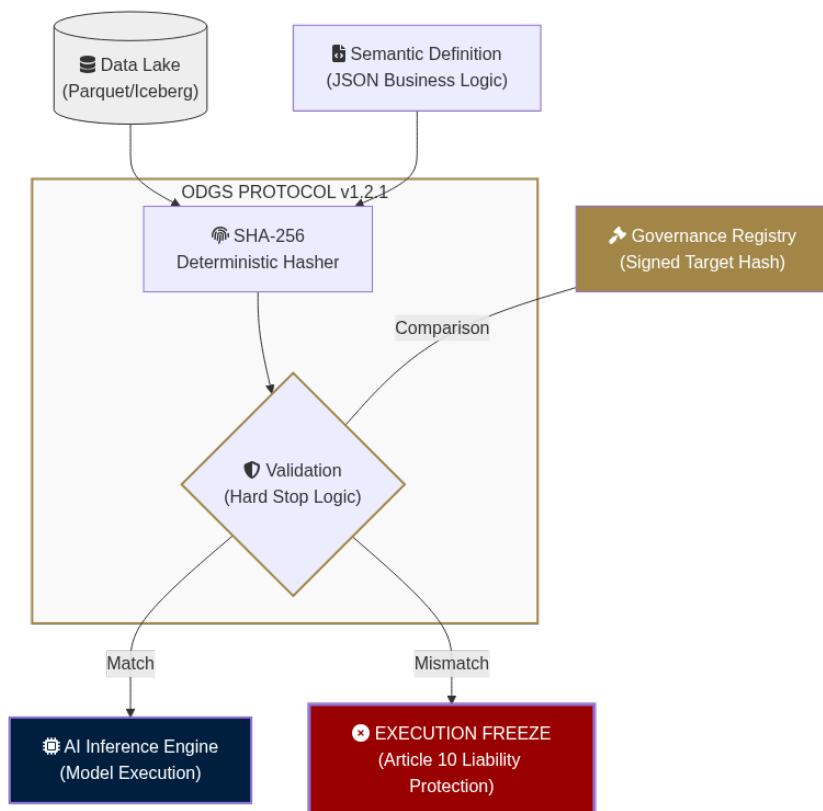


Figure 1: \*  
*Figure 1: ODGS Binding Logic - Enforcing Deterministic Compliance*

### GitHub Repository

[github.com/MetricProvenance/odgs-core](https://github.com/MetricProvenance/odgs-core)

### Reference Implementation

[www.metricprovenance.com](http://www.metricprovenance.com)

Technical Inquiries: [partner@metricprovenance.com](mailto:partner@metricprovenance.com)