ODDC Overview

ODD Conformance Determination Framework

Version 3.0 — February 2026 — Public Document

ODDC (ODD Conformance Determination) provides independent, third-party attestation that autonomous systems operate within defined operational boundaries with three-tier enforcement. Boundaries may be specified by the operator or auto-discovered through the ENVELO Interlock's adaptive learning mode. This document describes the framework components, attestation scope, and conformance process.

1. Introduction

1.1 Purpose

ODD Conformance Determination (ODDC) is Sentinel Authority's voluntary conformance framework for autonomous systems. ODDC provides standardized, verifiable evidence of bounded operation that serves as a first-order risk control input for underwriting review of autonomous infrastructure.

1.2 Framework Components

The ODDC framework consists of three integrated components:

Component	Description
ODD	Operational Design Domain — The operational boundaries within which the system operates. May be formally specified by the operator or auto-discovered through adaptive learning.
ENVELO	Enforced Non-Violable Execution-Limit Override — Three-tier runtime enforcement: self-correction on ODD approach, Minimum Risk Condition on ODD breach, and hard halt at the ENVELO wall.
CAT-72	Convergence Authorization Test — 72+ hour evidentiary procedure demonstrating bounded operation and verification of all three enforcement tiers.

1.3 What ODDC Is Not

ODDC explicitly does not constitute:

- Regulatory approval or certification
- Safety certification (e.g., IEC 61508, ISO 26262)
- Product certification or quality mark
- Guarantee of system performance or reliability

- Insurance or warranty of any kind

2. Attestation Scope

2.1 What ODDC Attests

Upon successful conformance determination, ODDC attests that at the time of determination:

Category	Attestation
ODD Boundaries	System operates within defined operational boundaries — whether specified by the operator or auto-discovered through adaptive learning and approved by the operator.
Operational Evidence	System demonstrated stable operation within its ODD through 72+ hours of continuous CAT-72 testing.
ENVELO Enforcement	Three-tier enforcement architecture is present and functional: Tier 1 self-correction, Tier 2 Minimum Risk Condition, Tier 3 hard halt at the ENVELO wall.
Audit Trail	Tamper-evident audit records generated for all enforcement events and tier transitions with cryptographic integrity.
IP Protection	Operator's source code, model weights, decision logic, and proprietary algorithms are never accessed. The Interlock transmits only operational telemetry.

2.2 What ODDC Does Not Attest

- Functional safety of underlying system design
- Regulatory or legal compliance
- Cybersecurity posture or resilience
- System performance, accuracy, or fitness for purpose
- AI model correctness, training data quality, or algorithmic fairness

3. Conformance Process

The conformance process supports two paths. Adaptive (default): the ENVELO Interlock observes normal operation, auto-discovers operational boundaries, the operator reviews and approves, and enforcement begins. Prescriptive: the operator defines boundaries upfront for regulatory or contractual requirements. Both paths follow five phases:

Phase 1: Application

Submit system identification and ENVELO implementation approach. ODD specification is optional — boundaries can be auto-discovered during Phase 3.

Phase 2: Scope Assessment

Sentinel Authority reviews and determines test requirements (5–10 business days).

Phase 3: CAT-72 Testing

72+ hours of continuous monitored operation. Adaptive path: begins with learning mode to auto-discover boundaries, then transitions to enforcement. Prescriptive path: enforcement from start against specified boundaries. All three enforcement tiers verified.

Phase 4: Determination

Conformance determination issued with certificate hash and registry publication.

Phase 5: Maintenance

Ongoing ENVELO Interlock operation with renewal testing prior to expiration.

4. Related Documents

- **ENVELO Requirements v3.0** — Three-tier runtime enforcement requirements specification
- **CAT-72 Procedure v3.0** — Convergence test requirements and format
- **ODDC Scenarios v3.0** — Industry application examples with tiered enforcement
- **Conformance Agreement** — Terms and conditions for conformance determination

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