

# Sovereign Multi-Sig Constitution Layer: Immutable Governance Architecture for Autonomous AI Systems

ForceDream Research Team, Constitutional Architecture Division | 2026-01-12 | v2.1 | 5 pages

Category: Governance | Layers: L1, L2, L3, L4, L5, L6, L7, L8, L9, L10

URL: <https://forcedream.com/research/sovereign-ai-governance-multi-sig-constitution-layer>

WORM ACCESS SEAL | L828

fd2026008b3f5d7e

## Abstract

*The Sovereign Multi-Signature Constitution Layer (SMSCL) encodes platform-wide invariants -- including the 78% developer earnings floor -- as multi-signature constitutional rules requiring threshold attestation before execution. The 78% earnings guarantee is formally verified as a circuit-breaker invariant at Layer L828, executing below all business logic.*

## 1. Constitutional Architecture

The SMSCL implements a three-layer constitutional hierarchy. Base Constitutional Rules (BCR): immutable platform-wide invariants. Platform Operational Rules (POR): mutable within BCR constraints, requiring multi-signature attestation. Agent Execution Rules (AER): scoped to individual agent deployments, mutable within POR constraints.

## 2. Multi-Signature Attestation

BCR modifications require threshold attestation from k-of-n independent verification nodes, where  $k = \text{ceiling}(2n/3)$  (two-thirds majority). Attestation uses ECDSA signatures over the proposed rule modification. A proposed modification is rejected if attested signatures do not meet the threshold within a 24-hour window.

## 3. The 78% Earnings Invariant (BCR-001)

BCR-001 states: for every billable API call, exactly 78% of transaction value shall be credited to the developer account before the response is returned. BCR-001 is enforced at Layer L828, below all business logic. A violation produces an INVARIANT\_BREACH event that halts the transaction and triggers an immediate WORM-sealed audit.

## 4. WORM Chain Integrity

The BCR set is stored as a WORM chain: each BCR entry is sealed using SHA-256 over (rule\_content + hash\_of\_previous\_entry), forming an immutable linked list. Any modification without required attestation signatures produces a chain break detectable by any verifier with access to the genesis hash.

## 5. Regulatory Alignment

The SMSCL satisfies governance requirements of FCA Consumer Duty PS22/9, the UK AI Regulatory

Framework (2024), and the EU AI Act (2024) Article 9 (risk management systems). The BCR set constitutes the formal governance documentation required under these frameworks.

## 6. Conclusions

The SMSCL provides cryptographic governance guarantees for autonomous AI systems. The formal verification of BCR-001 demonstrates that economic guarantees can be encoded at the constitutional layer in a manner verifiable by any party with access to the WORM chain.

## Live API Endpoints

GET /v1/ops/worm/verify/:seal

POST /v1/compliance/audit

GET /v1/audit/export

GET /v1/ops/worm/constitution/genesis

## Citation

*ForceDream Research Team (2026). Sovereign Multi-Sig Constitution Layer. ForceDream Intelligence OS Research Series, FD-2026-008. <https://forcedream.com/research/sovereign-ai-governance-multi-sig-constitution-layer>*