Loom – Product Requirements Document (v0.1)

Category: AI Runtime Control Plane

Parent Company: Synaptic Weave

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1. Executive Summary

Loom is a provider-agnostic AI runtime control plane that eliminates operational chaos by providing auditability, visibility, and governance over AI systems in production.

2. Problem Statement

- AI usage becomes fragmented across applications
- Model and prompt changes lack traceability
- Costs fluctuate unpredictably
- Incidents cannot be reconstructed
- No centralized audit trail exists

3. Product Vision

Loom becomes the runtime control plane that governs AI systems in production, ensuring every interaction is observable, traceable, and accountable.

4. Phase 1 – Loom Gateway (Auditability Foundation)

- OpenAI-compatible proxy (chat/completions and responses endpoints)
- Full streaming support
- Structured trace recording with immutable history
- Token usage and cost estimation
- Latency tracking
- Multi-tenant architecture
- Minimal observability dashboard

Phase 1 – Out of Scope

- A/B testing
- Policy enforcement
- Memory abstraction
- Agent orchestration
- PII detection
- Budget controls

5. Phase 2 – Loom Control (Governance Layer)

- Model rollout control and A/B testing
- Prompt version tracking
- Regression replay
- Budget governance and quotas
- RBAC and SSO
- Audit exports and retention policies

6. Phase 3 – Loom Runtime (Agent Execution Platform)

- Agent execution graph visualization
- Tool call tracing
- Memory retrieval logging
- Workflow versioning
- Drift detection and quality scoring

7. Architecture Principles

- Provider-agnostic and cloud-neutral
- API-first design
- Stateless gateway layer
- Structured trace schema from day one
- Extensible middleware architecture

8. Success Metrics

- All Goal Glowup traffic routed through Loom
- Stable streaming performance

- Trace capture completeness
- Gateway overhead under 20ms
- At least one external beta deployment

9. Strategic Positioning

Loom is not a logging tool or dashboard. It is the runtime control plane that brings order, auditability, and governance to AI systems in production.