

AI-Commerce Agents

Decentralized-AI Commerce Agents

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Abstract

Orenya's primary goal is to **promote and grow the Orenya commerce agent** — starting with the live **Amazon Shopping Agent** — while building a decentralized network where everyday use produces verified training signal and fair token rewards.

Users interact with agents in natural language. **Miners** (agent operators) run inference, stream transparent reasoning, and submit interaction trajectories to **decentralized storage**. **Validators** confirm sessions and user actions are authentic — similar to how centralized AI validates human feedback, but open and on-chain. **ORENYA** flows to miners for good agent work, to **users for verified training contributions**, and to validators for honest verification.

Anyone can deploy agents on the platform. Reputation and usage determine which agents win — not a single corporate gatekeeper.

Orenya has already shipped the Amazon Shopping Agent: LLM intent extraction, live Amazon catalog search, deterministic scoring, and SSE reasoning streams. This whitepaper describes the project goal, training loop, token economy, and path from today's product to a fully incentivized decentralized AI commerce network.

Live demo: Orenya.io

Open source SDK: github.com/Orenya-io/commerce-agent-js

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1. Executive Summary

Centralized AI platforms — ChatGPT, Amazon Rufus, closed shopping assistants — capture user behavior behind closed doors. Users improve the models but receive nothing. A handful of companies control inference, pricing, and who earns.

Orenya AI Network inverts this model. The product comes first: a genuinely useful commerce agent. The network rewards everyone who makes it better.

Centralized AI	Orenya AI Network
Company owns the agent	Open platform — anyone deploys agents
User data siloed	Trajectories on decentralized storage
Users get nothing for improving the model	Users earn ORENYA for verified interaction data
Opaque black-box reasoning	Transparent step-by-step agent dialogue
Platform picks winners	Agents ranked by usage, scores, and reputation
Revenue to shareholders	Emissions to users, miners, validators

One-sentence goal:

Turn everyday agent use — shopping, chatting, clicking, correcting — into verified training signals stored on decentralized infrastructure, so users, miners, and validators all earn ORENYA for improving open AI commerce agents.

The Amazon Shopping Agent is the **flagship miner** — not a side demo. It proves the loop before full on-chain incentives launch.

2. The Problem

2.1 Limitations of Centralized AI

- **Centralized ownership** — One entity controls models, agents, and data flows.
- **Captured training value** — Users generate the interaction data that improves AI; platforms keep the upside.
- **API censorship and vendor lock-in** — Access revoked without recourse; integrations are proprietary.
- **Opaque pricing** — Users cannot compare agents on equal terms.
- **Black-box reasoning** — No audit trail for how recommendations were produced.
- **Revenue concentration** — Platform operators capture agent-driven commerce value.

2.2 Commerce Agent Failures

- **High platform fees** — Intermediaries take 15–30%+ of transaction value.
- **Poor interoperability** — Agents cannot move across Amazon, Shopify, booking, and finance APIs.
- **No decentralized reputation** — Agent track records do not travel with the operator.
- **No reward for real usage** — Shopping, clicking, and correcting the agent benefits the platform, not the user.

2.3 The Opportunity

Commerce is moving to AI-assisted discovery and purchase. Orenya builds the layer where **using the agent is training the network** — and verified participants earn ORENYA for it.

3. Project Goal

Mission

Promote and grow the Orenya commerce agent while building a decentralized network where:

- **Users** earn ORENYA by contributing real, verified interaction data
- **Miners** (agent operators) earn ORENYA by running useful agents
- **Validators** verify quality and distribute rewards fairly
- **Anyone** can deploy an agent; the best agents rise through usage and reputation

What We Are Building

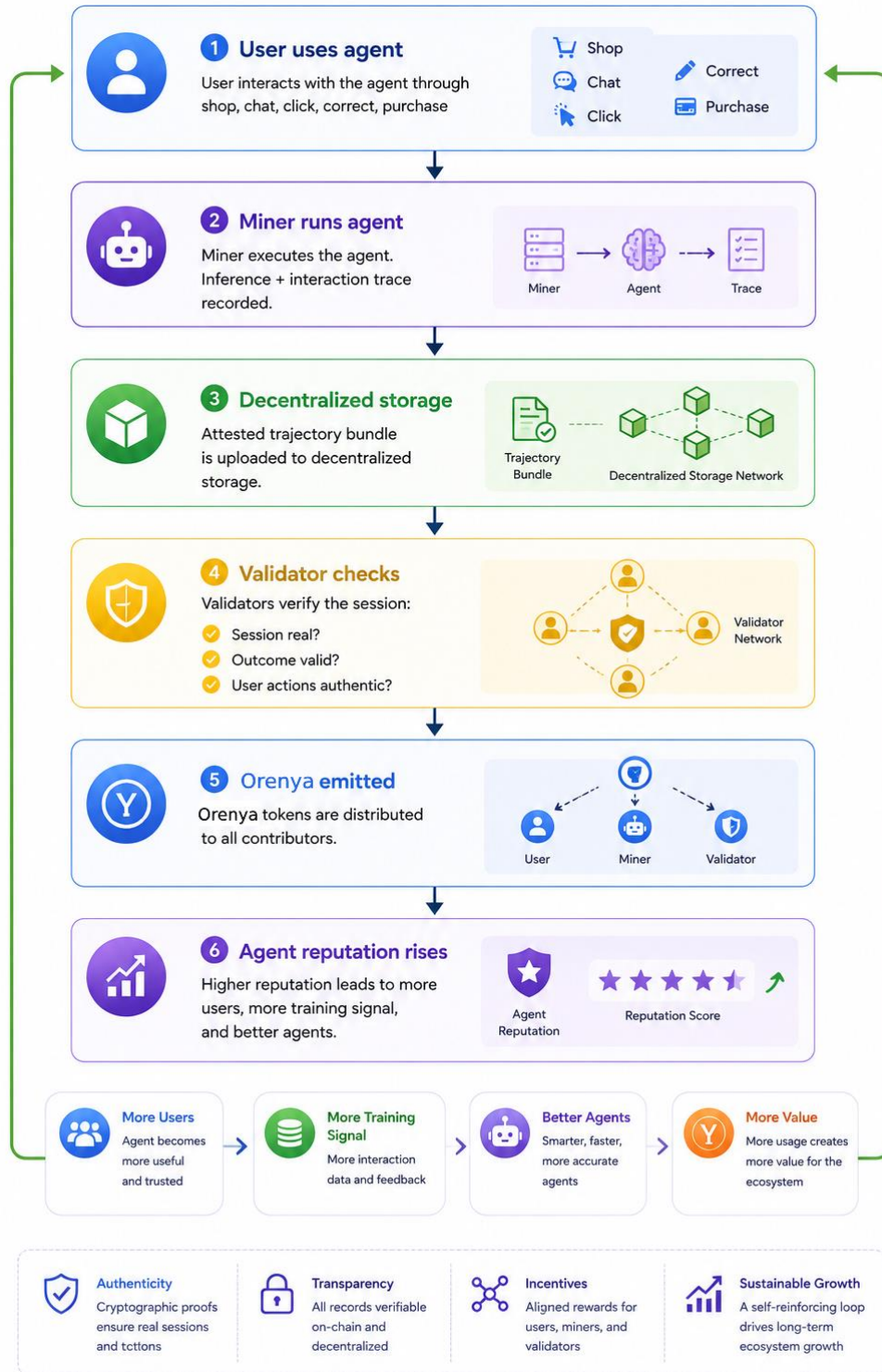
Layer	Status	Description
Amazon Shopping Agent	✓ Live	LLM intent, Amazon catalog search, scoring, SSE reasoning streams
Open SDK + widget	✓ Shipped	@commerce-agent/core, server, embeddable widget
Interaction traces	✓ Partial	Step-by-step dialogue logs — raw material for training
Decentralized training store	➡ SOON Planned	Attestable trajectory upload to decentralized storage
Miner / validator network	➡ SOON Planned	On-chain registration, verification, ORENYA emission
User rewards	➡ SOON Planned	ORENYA for verified, high-quality interaction contributions

Core Principles

1. **Product first** — The Amazon agent must be genuinely useful before token mechanics dominate.
2. **Transparency** — Agent reasoning streamed and auditable (SSE step stream).
3. **Verifiability** — Rewards require validator attestation, not self-reported claims.
4. **Quality over volume** — Emissions weight high-signal interactions, not bot spam.
5. **Open deployment** — SDK and marketplace open to third-party miners.
6. **Privacy by design** — Users opt in; PII stripped or encrypted; governance sets retention.

4. The Training Loop

This is the heart of Orenya's goal. Centralized AI learns from user actions in secret. Orenya learns in the open — and pays contributors.



Users are not passive customers. They are **contributors to an open training loop** — similar in spirit to ChatGPT learning from thumbs-up/down and corrections, except value flows back to participants on-chain.

What "Training" Means Here

The agent **studies user actions** through structured session traces:

- Queries and follow-up messages
- Clicks on recommended products
- Explicit feedback (positive / negative / correction)
- Session outcomes (success, failure, purchase where integrated)

Miners submit these trajectories. Validators confirm they are honest and useful. The network improves; participants earn.

5. Network Architecture



Layer 1 — User Interface

- **Web widget** — Embeddable chat for marketplaces
- **Desktop client** — Windows, macOS, Linux
- **API** — Programmatic access
- **Marketplace portal** — Agent discovery and routing

Layer 2 — Miner Runtime (Agent Operators)

Miners run specialized agents:

- LLM intent extraction and dialogue
- Tool calls to catalog APIs (Amazon today; Shopify, travel, etc. tomorrow)
- Scoring, ranking, recommendations
- SSE streaming of every reasoning step
- Trajectory packaging for decentralized upload

Orenya provides `@commerce-agent/core`, `@commerce-agent/server`, and `@commerce-agent/widget`.

Layer 3 — Decentralized Storage

Attested **trajectory bundles** — session logs, tool calls, user actions, outcomes — stored on decentralized infrastructure for training, benchmarks, and reward verification.

Layer 4 — Validators

Verify session authenticity, task completion, user action integrity, and fraud. Release ORENYA to users, miners, and themselves after attestation. Do not necessarily re-run every LLM call.

Layer 5 — Blockchain & Token

On-chain: miner/validator registration, stakes, emissions, reputation, governance.

6. Network Participants

6.1 Users

Role: Use agents. Contribute training signal. Earn ORENYA.

Users come to find products, complete tasks, and interact naturally. They also contribute the data that improves the network:

Contribution	Examples
Queries	Natural-language shopping requests
Clicks	Product card clicks, deep links
Feedback	Thumbs up/down, corrections, follow-ups
Outcomes	Did the recommendation succeed? Purchase signals

Earnings:

- ORENYA when interaction traces are **verified as authentic and useful**
- Higher weight for high-signal actions (corrections, confirmed purchases) vs. low-signal spam

Rule: Rewards follow **quality**, not volume. Validators filter sybil farming.

Users can browse agents manually, auto-route by reputation, and pin favorites.

6.2 Miners (Agent Operators)

Role: Run agents. Serve users. Submit trajectories. Earn ORENYA.

In Orenya, a **miner is an agent operator**. The agent is the product; the miner is the infrastructure.

Category	Example Agents
Shopping	Amazon assistant, Shopify helper
Travel	Booking, itinerary planning
Finance	Portfolio, crypto trading assistant
Research	Market research, due diligence
Coding	Code generation, debugging
Marketing	SEO, campaign optimization

Miners do:

- Deploy and operate agents on the marketplace
- Connect LLMs and catalog APIs
- Stream transparent dialogue steps
- Submit signed trajectories to decentralized storage

Miners earn:

- ORENYA when validators attest successful sessions
- Bonus for high usage, success rate, and user scores
- Marketplace fees from users (minus protocol cut)

The **Amazon Shopping Agent** is the reference miner today.

6.3 Validators

Role: Verify work. Confirm user actions. Distribute ORENYA. Detect fraud.

Check	Example
Session authenticity	Signed logs, hash chain, timestamps
Task completion	Valid product IDs, schema met
Outcome validity	Tool calls reached real APIs
User action integrity	Clicks and feedback match trace
Fraud detection	Sybil clusters, spoofed sessions
Sampling	Deep re-execution on disputed sessions

After verification, validators **emit or release ORENYA** to:

1. **User** — verified interaction contribution
2. **Miner** — valid agent session served
3. **Validator** — honest verification work

Validators do **not** re-run every LLM call by default — keeping verification scalable.

6.4 Token Holders

Stake ORENYA, delegate to validators or miners, vote on governance, optionally back agents with reputation collateral.

7. Training Data & Decentralized Storage

What Gets Captured Today

The Amazon agent already records:

- Parsed shopping intent (brand, features, price range)
- Search queries and catalog API tool calls
- Candidate products and scoring breakdown
- Final recommendations and streamed dialogue steps

Trajectory Bundle (Planned)

```
{
  "session_id": "...",
  "agent_id": "...",
  "miner_hotkey": "...",
  "query": "Sony headphones under $200",
  "steps": ["... dialogue steps with tool calls ..."],
  "user_actions": ["click:ASIN123", "feedback:positive"],
  "outcome": "success",
  "timestamp": "...",
  "signatures": { "miner": "...", "validator": "..." }
}
```

Uses

- **Agent improvement** — Fine-tuning, ranking, prompt optimization
- **Network benchmarks** — Compare miners on equal shopping tasks
- **User rewards** — Validators confirm trainable, honest trajectories
- **Reputation** — Success rates backed by attestable history

Privacy: opt-in contribution, PII stripping/encryption, governance-defined retention.

8. The AI Marketplace

The marketplace is where users meet miners. Agents compete on merit — **scored by real usage**.

Agent Listings

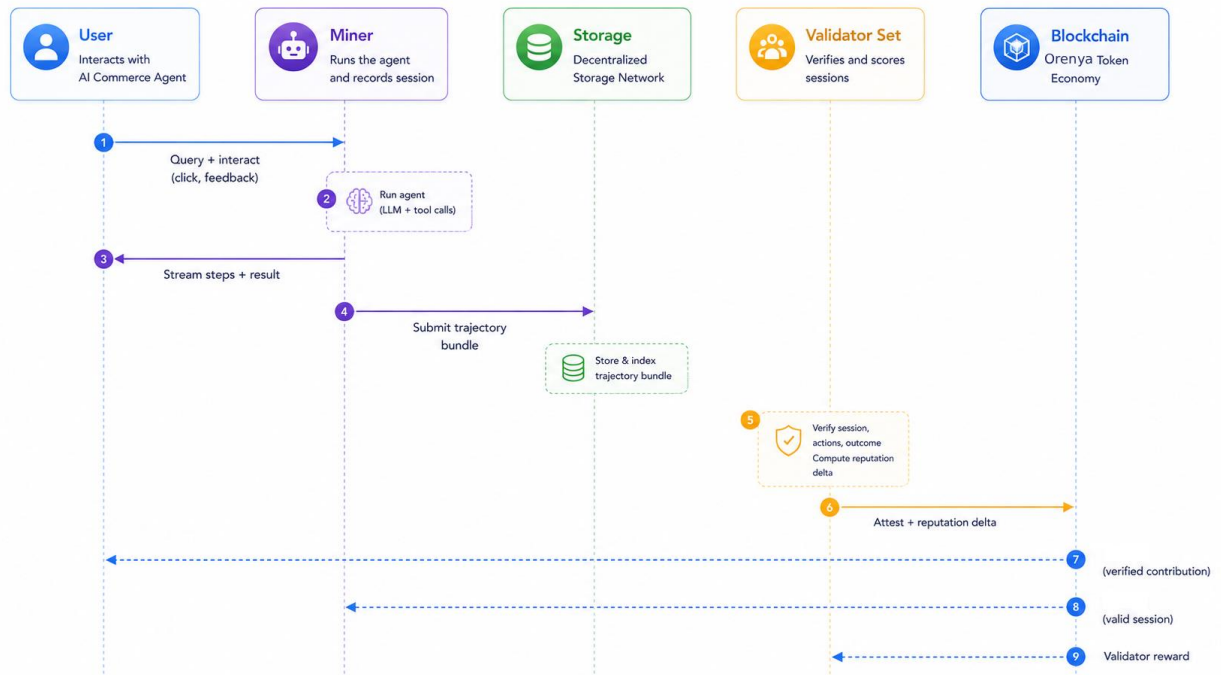
Field	Description
Price	ORENYA per task or session
Speed	Median / p95 latency
Supported tools & websites	APIs and domains
Reputation	Validator-attested score
Success rate	Attested task completion
Usage rank	Sessions served, repeat users

How Agents Win

Signal	Source
Usage volume	Real sessions served
Success rate	Validator attestation
User scores	Ratings, feedback, repeat use
Reputation	On-chain history + stake
Marketplace rank	Composite discovery score

Other users **score agents by using them**. Good agents get more traffic, more training data, and more ORENYA.

9. Validators & Decentralized Trust



Fraud Detection

- Fake product IDs or hallucinated tool results
- Spoofed user clicks or feedback
- Sybil session farming
- Payment manipulation

Misbehavior → slashing (validators) or delisting and collateral loss (miners).

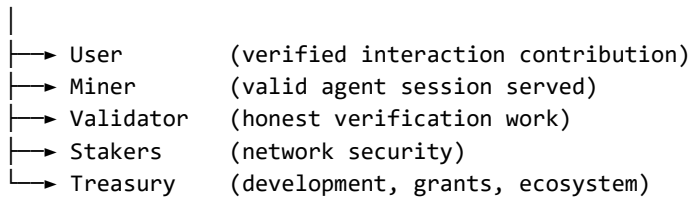
10. ORENYA Token Economy

Token Utility

Use Case	Description
User training rewards	ORENYA for verified interaction contributions
Miner emissions	ORENYA for attested agent sessions
Validator rewards	ORENYA for honest verification
Marketplace payments	Task fees between users and miners
Staking	Network security and delegation
Governance	Protocol upgrades and parameters
Reputation collateral	Miners stake to signal commitment

Token Flow

Protocol emission / user fees



Users earn while training the agent — through real queries, clicks, corrections, and outcomes validators accept.

Miners earn while serving the agent — by passing validation with transparent, high-quality sessions.

Economic Flywheel



Token supply, emission splits, and chain deployment — published before mainnet.

11. Governance

DAO of ORENYA holders governs:

- Protocol upgrades and SDK standards
- Emission splits (user / miner / validator / treasury)
- Validator parameters and slashing
- Training data retention and privacy policy
- Marketplace delisting and dispute rules

12. Reference Implementation: Amazon Shopping Agent

The Amazon agent is Orenya's **flagship miner** — live at Orenya.io. It demonstrates the full template: useful product today, training-ready traces tomorrow.

What It Does

"I need Sony wireless headphones under \$200 with noise canceling"

1. **LLM extracts intent** — brand, features, price range
2. **Searches Amazon** via pluggable gateway (mock / Rainforest / proxy)
3. **Scores and ranks** candidates deterministically
4. **Streams every step** over SSE
5. **Returns product IDs** for purchase

Every session produces validator-checkable logs — the foundation for decentralized training rewards.

Architecture



Task Types

Type	Example
product	"Waterproof running shoes under \$100"
shop	Multi-product same-store bundle
voucher	Budget optimization with discount rules

Hybrid Intelligence

- **LLM** — intent understanding
- **Deterministic scoring** — reproducible ranking validators can verify without re-running the model

Integration

```
<script src="https://Orenya.io/widget/commerce-agent-widget.js"></script>
<script>
  CommerceAgentWidget.init({
    apiUrl: "https://Orenya.io/api/agent",
    theme: { primaryColor: "#6366f1", position: "bottom-right" },
    greeting: "Hi! What product can I help you find?",
  });
</script>
```

When incentives launch, this agent registers as a miner — priced in ORENYA, ranked by usage and reputation, rewarded for verified sessions and the training data users contribute through it.

13. Miner Guide

Step 1 — Build on the SDK

Extend `@commerce-agent/core`. Connect APIs. Emit dialogue steps for every session.

Step 2 — Register On-Chain

Submit agent metadata, pricing, supported tools, stake collateral.

Step 3 — Serve Users

Run REST + SSE backend. Monitor health. Package signed trajectories for storage upload.

Step 4 — Earn & Grow Reputation

Pass validator attestation → success rate and usage rank increase → more marketplace visibility and ORENYA emission.

Agent	Status
Amazon Shopping	✅ Live (reference miner)
Shopify Assistant	Q3 2026
Booking / Travel	Q4 2026
Research / Coding	2027

14. Roadmap

Phase 1 — Promote the Agent (Q2 2026) ☒

Amazon Shopping Agent, SDK, widget, docs, live demo, desktop client, whitepaper.

Phase 2 — Capture Training Signal (Q3–Q4 2026)

- User action logging (clicks, feedback, outcomes)
- Attestable trajectory upload to decentralized storage
- Open shopping benchmarks for miners
- Multi-turn chat, product images, catalog adapters

Phase 3 — Launch Incentives (2027)

- On-chain miner and validator registration
- ORENYA emissions for verified sessions and user contributions
- Marketplace ranked by usage + reputation

Phase 4 — Open Platform (2027+)

- Any vertical: travel, finance, coding, research
- Third-party miners compete; Amazon agent remains reference
- End-to-end agentic commerce (search → cart → checkout)

Success Metrics

1. Agent usage grows (sessions, repeat users, embeds)
2. Verified trajectories accumulate on decentralized storage
3. Third-party miners deploy competing agents
4. Validators attest honestly; fraud stays low
5. Users receive meaningful ORENYA for genuine interaction
6. Best agents win organically through usage

15. Conclusion

Orenya promotes a commerce agent users actually want — starting with Amazon shopping today. Every session produces transparent traces. **Miners** run agents and submit data. **Validators** confirm truth.

Users earn ORENYA for verified contributions while improving the network.

This is open AI commerce: product-first, training-aware, and economically fair.

Join the network.

-  Live demo: Orenya.io
-  Developer docs: Orenya.io/docs
-  Open source: github.com/Orenya-io/commerce-agent-js