OneClickAI: Technical Summary

1. Problem & Challenge

Multi-agent systems today require hardcoded service endpoints and centralized orchestrators. Agents can't discover each other dynamically, can't verify trust in distributed networks, and coordination happens in black boxes with no real-time observability. This makes agent networks brittle, framework-locked, and impossible to scale or debug in production environments.

2. Target Audience

- **Primary:** Infrastructure engineers and AI teams building multi-agent systems who need production-ready coordination primitives without framework lock-in.
- **Secondary:** Enterprise teams automating complex workflows (procurement, supply chain, logistics) that require autonomous agent collaboration with full transparency and auditability.

3. Solution & Core Features

OneClickAI provides infrastructure for autonomous agent coordination through three core features:

- **Semantic Discovery** — Agents register capabilities as skills; other agents find them through natural language queries using vector embeddings, not hardcoded URLs.
- **Zero-Trust Verification** — Agents self-host rich metadata (AgentFacts); partners validate credentials, certifications, and reliability before coordinating.
- **Observable Coordination** — All agent-to-agent messages stream through an event bus, providing real-time visibility into negotiations, decisions, and workflows via a live dashboard.

The system demonstrates this with a supply chain cascade: one agent decomposes requirements, discovers seven suppliers semantically, negotiates deals through multi-round protocols, and coordinates logistics—all autonomously in **25 seconds**.

4. Unique Selling Proposition (USP)

Framework-agnostic infrastructure for autonomous agent coordination with full observability.

Unlike existing solutions that lock you into one AI framework or require centralized orchestration, OneClickAI lets agents built on different frameworks (LangGraph, CrewAI, LangChain, AutoGen) discover and coordinate through shared protocols—while streaming every action to a real-time dashboard. You get true agent autonomy without sacrificing visibility or control.

5. Implementation & Technology

Layer	Technology	Role
Infrastructure	NANDA Index (FastAPI + MongoDB)	Semantic agent registry using OpenAI text-embedding-3-small
Event Bus	FastAPI + WebSocket	Real-time event streaming and observability
A2A Protocol	Pydantic v2	10 typed message types with correlation ID tracking
Orchestration	LangGraph + GPT-4o	5-phase state machine (decompose → discover → verify → negotiate → plan)
Suppliers (7)	CrewAI, LangChain, Custom	Inventory lookup, quoting, counter-offer evaluation
Logistics	AutoGen + Dijkstra	Route optimisation over 30-city EU network + LLM reasoning
Frontend	React 19 + Cytoscape.js	Real-time graph visualization, WebSocket client, event history replay

6. Results & Impact

Built a working 9-agent coordination network demonstrating:

- **25-second end-to-end cascade** from intent to executed orders with logistics plans.
- **Framework interoperability** proven across 4 different AI frameworks in one network.
- **100% observability** with all 50+ coordination events streamed and visualized in real-time.
- **Semantic discovery accuracy** of 87% relevance scores through vector embeddings + context scoring.
- **Multi-round negotiation** with weighted scoring (price, lead time, reliability, ESG) selecting optimal suppliers.
- **Production-ready architecture** with health checks, correlation tracking, and graceful degradation.

The project proves autonomous multi-agent coordination at scale is achievable with the right infrastructure primitives—no framework lock-in, no black boxes, fully transparent.

"If we had 24 more hours, we'd add automatic renegotiation on supply disruptions and a reputation system built from historical transaction data."