One Click AI - Supply Chain Agents NANDA-Native "Internet of Agents" Simulation

VC Track

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1. Motivation / Goal to Achieve

Global supply chains are the backbone of the world economy — an economic system exceeding **$115 trillion in annual output**, with more than **$35 trillion in global trade flows**, and roughly **90% of physical goods transported via maritime logistics networks**. Every day, hundreds of thousands of shipping containers change ownership or location state, supporting industrial production systems coordinating billions of components annually. This infrastructure underpins energy systems, healthcare delivery, food supply, transportation, and digital infrastructure — yet its coordination layer remains fragmented and manual.

The 100× moonshot of this challenge is to explore what happens when that coordination layer becomes programmable.

Imagine moving from a world where procurement requires armies of humans managing emails, spreadsheets, and contracts to one where you can declare a single intent:

"Buy all the parts required to assemble a Ferrari in one click."

Not the finished car — but the entire dependency graph behind it:

- Tens of thousands of components

- Thousands of suppliers

- Multi-tier sourcing relationships

- Logistics routing

- Compliance validation

- Contract negotiation

- Scheduling coordination

- Risk hedging

- Provenance tracking

All orchestrated autonomously by interoperable AI agents.

This is not e-commerce.
 This is economic infrastructure.

Supply chains span organizations, software stacks, regulatory regimes, and transport networks, yet coordination still relies on brittle integrations and human handoffs. Even though vehicles contain ~20k–30k parts and supply networks span up to 10 supplier tiers, orchestration mechanisms remain opaque and latency-bound. This challenge explores the transition from manual coordination to cascades of agents — buyer agents expressing intent, discovery agents locating suppliers, verification agents validating capability, negotiation agents structuring agreements, logistics agents routing shipments, compliance agents enforcing policy, monitoring agents tracking execution, and recovery agents adapting to disruption — all interacting across an open agent network.

Participants will model a small supply chain in which each participant operates as an independent AI agent discoverable, verifiable, and interoperable via a NANDA-style architecture. **Project NANDA — originating within the MIT Media Lab ecosystem — explores foundational infrastructure for decentralized agent discovery, identity, and coordination**, analogous to how DNS and TCP/IP underpin the web. This challenge treats NANDA concepts as design inspiration for building a prototype "Internet of Supply Chain Agents." The objective is not realism but demonstrating how discovery, verification, and interoperability primitives unlock coordination behaviors beyond centralized systems.

2. Core Features (MVP)

Hero Feature 1 — Agent-Native Supply Network (Discovery & Identity)

Participants should construct a NANDA-inspired multi-agent network representing three to five supply-chain actors such as Supplier, Manufacturer, Logistics Provider, Retailer, or Procurement Agent. Each actor must run as an independent service, process, or container capable of autonomous reasoning and decision-making.

A lightweight registry should be implemented where agents publish **AgentFacts metadata**, including:

- Identity

- Role

- Capabilities

- Endpoint

- Policy attributes

- Jurisdictional context

Agents must support semantic discovery queries such as locating region-compliant logistics providers or sourcing specific components, modeling agent-native discovery analogous to DNS. This registry functions as the identity and capability layer of the network and should enable agents to dynamically locate coordination partners rather than relying on hardcoded integrations.

Hero Feature 2 — Interoperable Coordination & Execution Cascade

Agents must communicate using MCP- or A2A-style schemas through request/response or event-driven messaging over HTTP/JSON, WebSockets, or equivalent transports. At least one interaction must demonstrate cross-framework interoperability — for example a LangGraph-based agent coordinating with an AutoGen or custom Python agent — validating ecosystem composability.

The system should simulate a coordination cascade where:

- Demand signals trigger procurement intent

- Supplier agents validate availability and lead time

- Logistics agents propose routing or scheduling

- Agents negotiate execution parameters

- Agreements propagate across the network

Participants should produce a **Network Coordination Report** documenting:

- Discovery paths

- Trust or verification logic

- Policy enforcement considerations

- Message exchanges

- Final execution plan (order, timing, routing, cost)

This feature demonstrates the behavioral layer of agent orchestration.

Hero Feature 3 — Supply Graph Intelligence & Visualization

Participants should model the supply chain as a dynamic graph and build interfaces or analytics that expose system structure and coordination behavior.

The graph may represent:

Nodes

- Agents

- Facilities

- Suppliers

- Logistics hubs

Edges

- Material flows

- Contractual relationships

- Routing paths

- Information exchange

Visualizations may include:

- Dependency graph views

- Live message-flow networks

- Coordination timelines

- Bottleneck or risk heatmaps

Analytics may be applied to:

- Path or partner selection

- Risk concentration detection

- Policy constraint evaluation

- Routing or cost optimization

These capabilities allow agents to reason over structure and enable humans to understand coordination dynamics that exceed cognitive limits.

This feature represents the cognitive interface and intelligence surface of the system.

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3. Stretch Goals (Optional Enhancements)

Advanced implementations may explore decentralized resilience by injecting disruptions such as port closures, inventory shortages, or price shocks and demonstrating renegotiation without centralized orchestration. Registry-level policy enforcement or reputation filtering may be introduced to support reliability thresholds, ESG constraints, or compliance validation. Cross-domain agent composition may incorporate marketing or channel agents coordinating downstream actions once supply execution is secured. Visualization layers may present dependency graphs, agent metadata, and live communication flows, helping humans reason about coordination dynamics that exceed cognitive limits. Trust and identity layers may add capability attestations or scoring systems representing early steps toward programmable trade governance.

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4. Hints and Resources

Participants should approach this as infrastructure experimentation rather than application design. Conceptually, treat NANDA-style architectures as:

- DNS for agent discovery

- TCP/IP for coordination

- HTTPS for trust and verification

Multi-agent orchestration frameworks such as CrewAI, LangGraph, AutoGen, or Assistants may be used for reasoning and dialogue layers, while MCP schemas or lightweight HTTP/WebSocket messaging can emulate A2A coordination. Visualization layers may be built with Streamlit, React, or D3-based event subscriptions. Implementations should prioritize clarity and depth — a simple in-memory registry supporting register/list/search functionality is sufficient — while logging human-readable explanations of agent decisions and focusing on narrow scenarios rather than large simulations.

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5. Why It Matters

The internet unlocked trillions in economic value by enabling discovery, interoperability, and trust across digital information flows. A similar shift in production coordination could transform global trade. If agents can discover partners, verify capabilities, negotiate autonomously, and adapt to disruption:

- Integration friction collapses

- Markets become composable

- Logistics adapts in real time

- Supply chains become resilient

- Production becomes programmable

Even modest improvements in coordination efficiency across multi-trillion-dollar trade flows translate into massive economic and societal impact — affecting healthcare access, climate transition infrastructure, food systems, and technological progress. This challenge invites participants to explore infrastructure patterns that hint at that future: a world where complex sourcing and logistics orchestration can be expressed through intent and executed across decentralized networks of cooperating agents.

Participants are not building simulations — they are prototyping primitives that may define how the next generation internet orchestrates the physical economy.