
Built with 💛 for Telegram on TON
GRAPHCHAIN
Orchestration Layer
for Transactional AI
15 Oct 2025

The $1 Trillion Problem

CAN **INTELLIGENT AGENTS** TRANSFORM COMMERCE AND OTHER AREAS OF DAILY HUMAN **TRANSACTIONAL ROUTINE** FROM SOMETHING WE DO TO SOMETHING THAT CAN BE DONE FOR US?

YES.

IT'S ONLY A MATTER OF WHO WILL GET THERE FIRST.

Agentic is the Generational Market Opportunity

AI Agents Revolution

- AI agents in e-commerce are projected to drive market growth from $3.6 billion in 2024 to $282.6 billion by 2034, a compound annual growth rate of 54.7% [1]
- Mastercard, Visa, Paypal, Tempo, Mysten Labs, Clouldflare, OpenAI and others are racing to enable agentic payments [2]

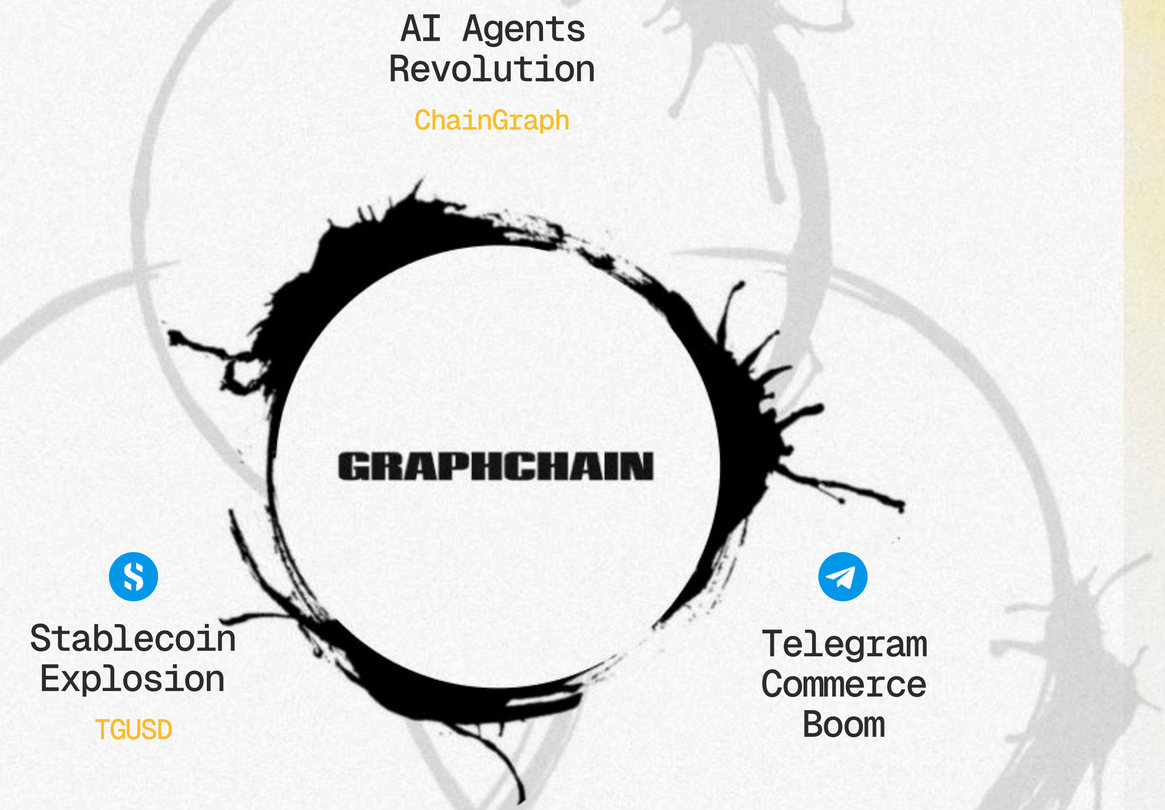
Stablecoin Explosion

- $1T+ monthly payment volume - Becoming internet's base currency [3]
- merchant aggregators enabling USDC payments across millions of merchants [4]

Telegram Commerce Boom

- 1 billion active users (MAU) as of 2025 - The new commerce super-app [5]
- But Telegram has only processed $12+ million in e-commerce transactions [5]

Can we improve upon it?



ChainGraph is the core stack to capitalize on these emerging trends.

The Telegram Ecosystem is Positioned Perfectly to Capture It

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1B MAU in Telegram — **18.5%** of global internet user base

10% of global commerce will be agentic by 2030

18.5% / 2 * **10%** * **$6.4T** (global turnover) * 2% fees ⟶ **$1.18B**

For other txs like crypto trading same logic applies but higher multiplier since everyone is trading in Telegram:

Global trading volume (spot+derivatives) **± $100T**

Applying the same logic as above - **18.5%** / 2 * **10%** * **$100T** * 0.1% fees ⟶ **$925M**

Crypto & financial flows are orders of magnitude larger than commerce in nominal throughput.

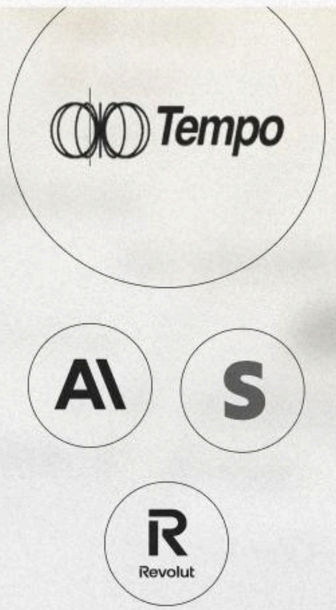
Even with conservative assumptions, fee potential in Telegram-mediated agentic trading could reach **$900M+** annually — before accounting for friction, fake volume, or competitive fee pressure.

But Market Waits For No One

We believe that the current race to enabling Agentic Commerce is happening between these 4 “camps”.
The message is clear: **infrastructure shapes the next wave of AI-powered commerce**

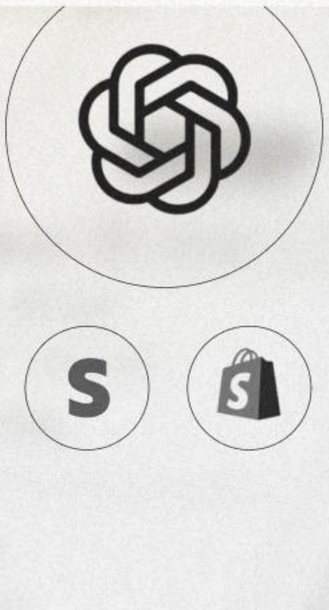
GraphChain is built precisely for this battlefield — a resilient, composable, visual, and verifiable foundation to build **agentic systems of tomorrow**.

Fortune
https://fortune.com › crypto
Stripe and Paradigm announce new payments-focused blockchain Tempo

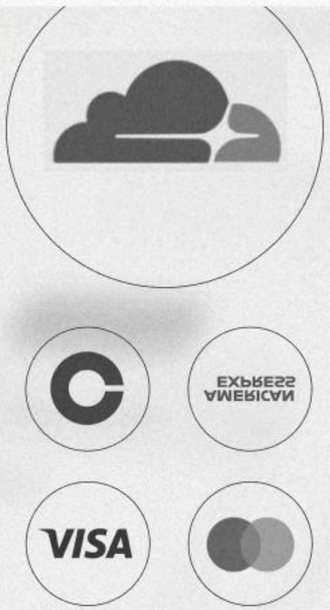


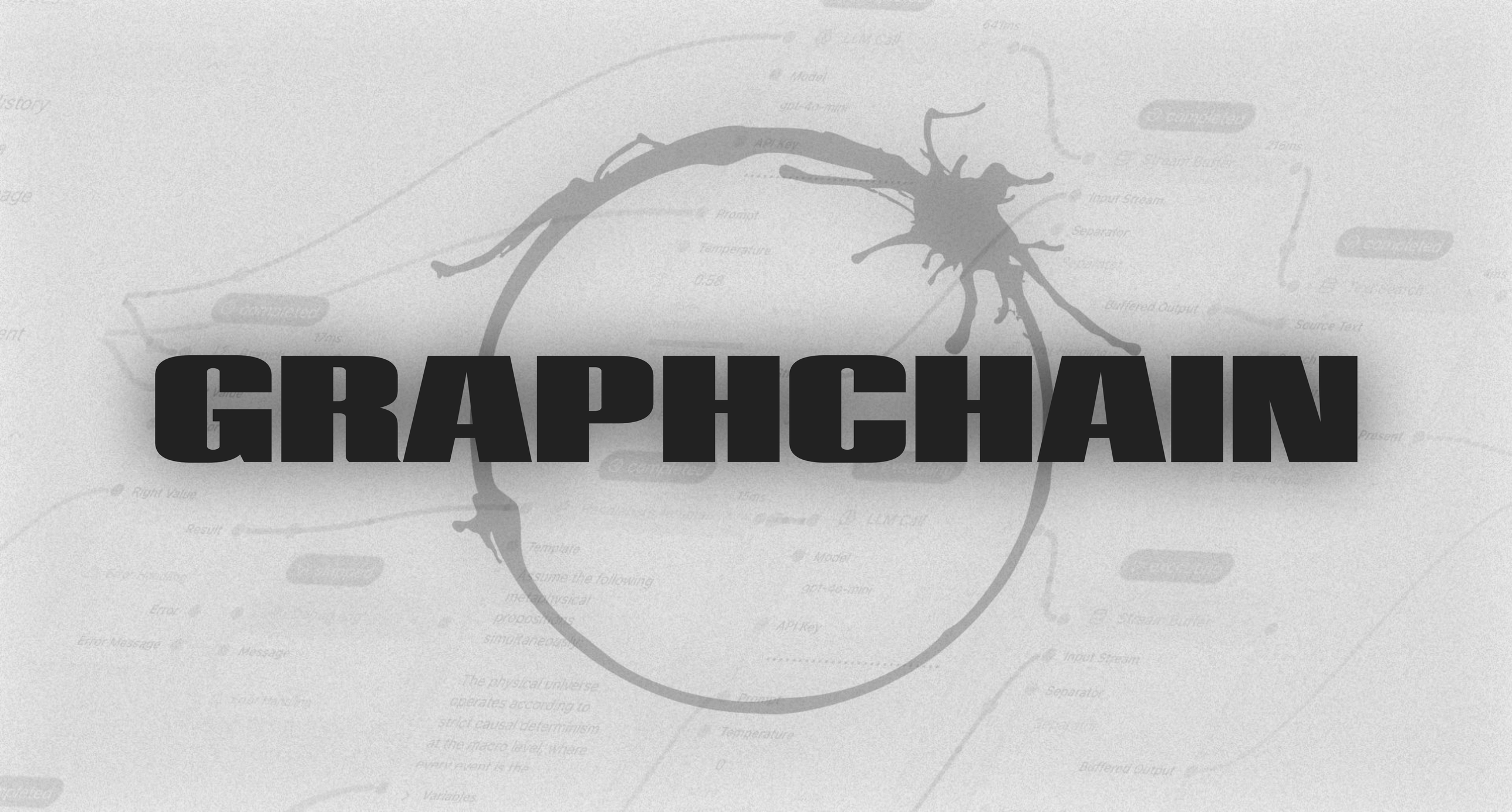
Binance
https://www.binance.com › en-NG › square
Mysten Labs Collaborates on Google's Agentic Payments Protocol

OpenAI
https://openai.com
Buy it in ChatGPT: Instant Checkout and the Agentic Commerce Protocol



theblock.co
https://www.theblock.co
Cloudflare teams up with Visa, Mastercard and AmEx to lay payment rails for AI agents

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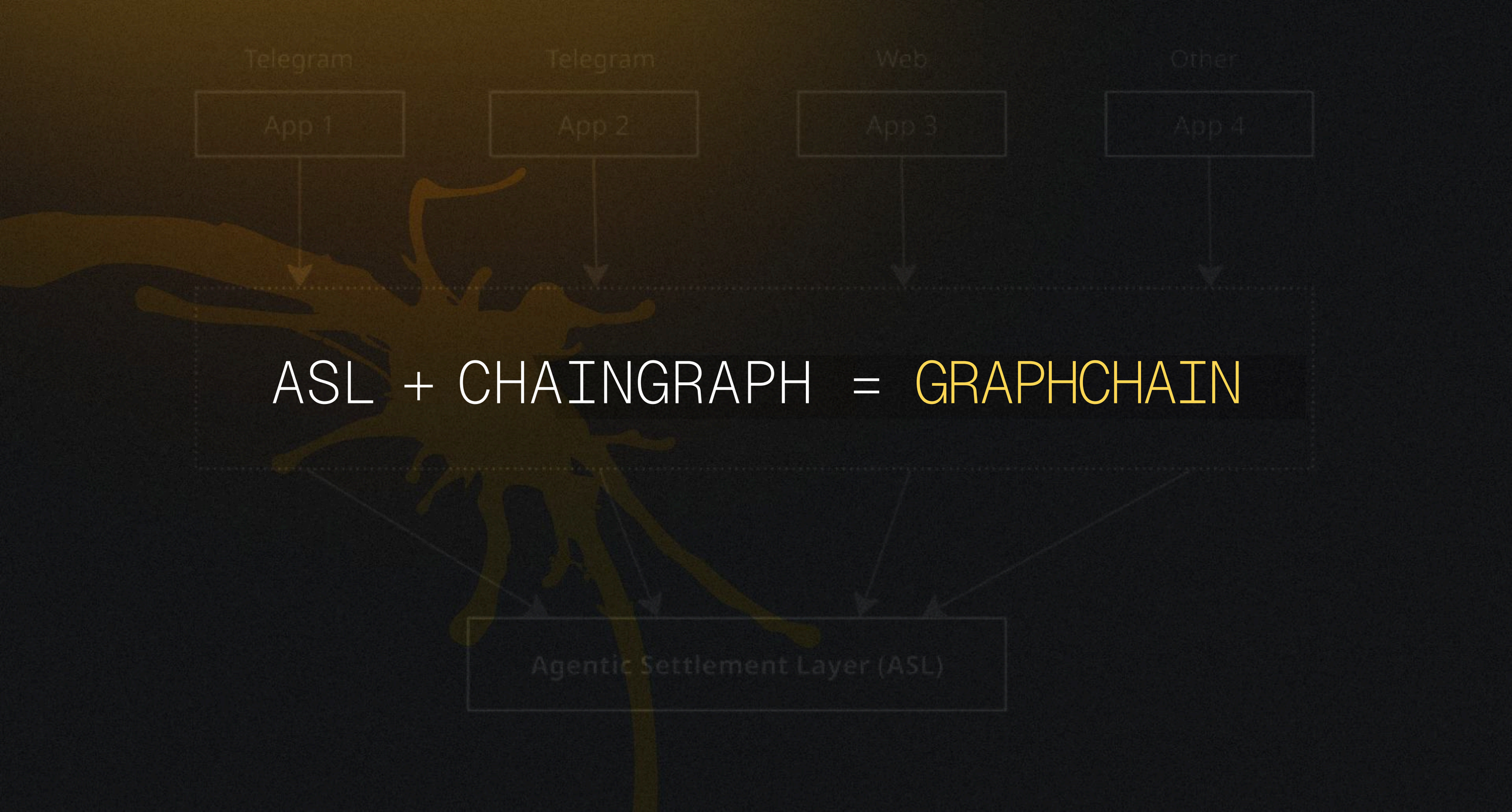


ASL + CHAINGRAPH = GRAPHCHAIN

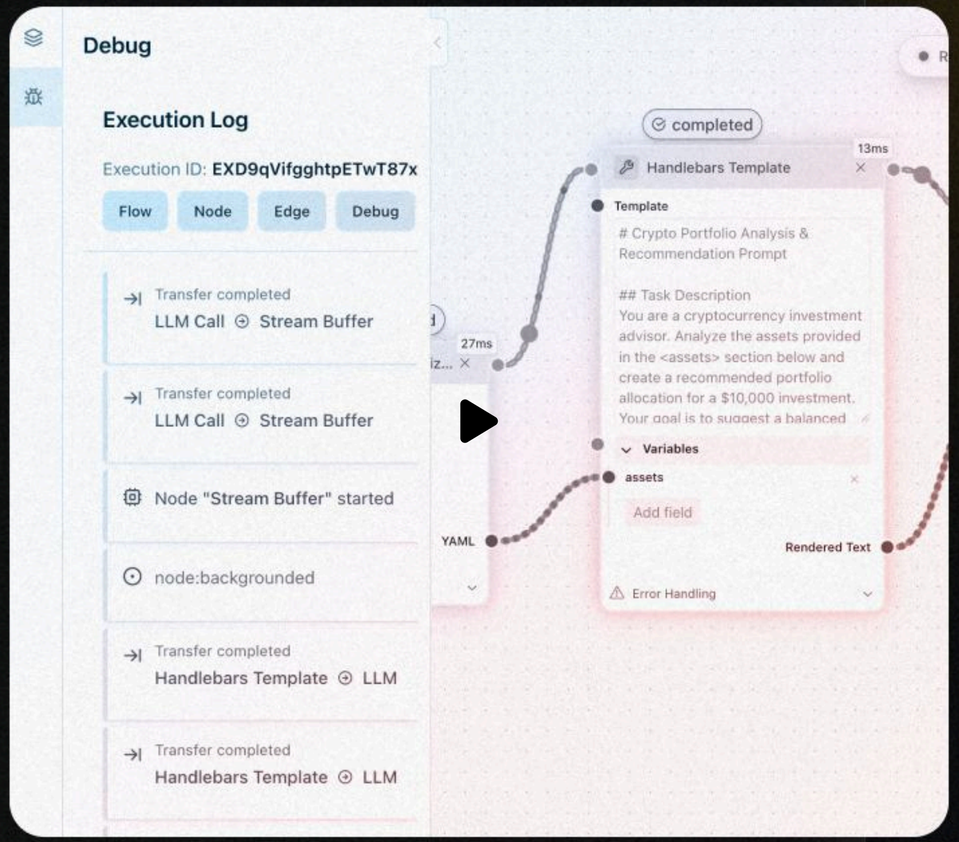
ChainGraph: AI Agent Orchestration Framework

ChainGraph is a source-available orchestration framework for building AI agents and automation systems with complex, verifiable logic. It's engineered for mission-critical, high-load environments, delivering fault-tolerant, deterministic flows and enterprise-grade reliability.

ChainGraph lets teams visually design, verify, and deploy multi-agent pipelines that combine multiple AI providers within a single, resilient system.

ChainGraph's functionality is delivered through five integrated systems working in concert:

- **Type-Safe Port System:** Supports primitives and complex types (arrays, objects, streams, enums). Each port has its own config, runtime validation (Zod, SuperJSON), plus lazy instantiation and caching for efficiency.
- **Modular Nodes:** Build custom nodes with decorators and metadata. Multiple input/output ports integrate seamlessly into the flow builder for rapid workflow creation.
- **Visual Flow Editor:** Graphical flow builder (React + XYFlow) with drag-and-drop, zoom/pan, resizing, menus, and live previews.
- **Execution & Debugging:** Backend engine runs flows concurrently with real-time events, breakpoints, step-over, and detailed logs for debugging.
- **Real-Time Sync:** Uses tRPC and Effector for type safety, WebSocket updates, and optimistic UI for a responsive experience.
- **Docker & Cloud Ready:** Containerized backend/frontend with Docker and docker-compose for simple deployment and scaling.
- **MCP Support:** Enables connectivity with external tools/data sources.



ChainGraph is fast, smooth, intuitive, reliable and robust.

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Agentic Settlement Layer (ASL)

Powered by Tycho Protocol ASL is the core interagent (A2A) and A2Human Settlement Infra
Together, ChainGraph and ASL make up the core functionality of transactional Agentic Economy → **GraphChain**

Cross-chain settlement layer via bridges

Support of private identity and transactional compliance

Telegram native integration and composability + Telegram Mini App integration

Up to 400k TPS

< 3 sec finality

DEG-Based Mempool

MEV-resistant

Low fees designed for Agentic Payments

Embedded Financial accounts via integrations of Neobanks

Robust Orchestration and Agentic Infrastructure is a requirement for Transactional AI

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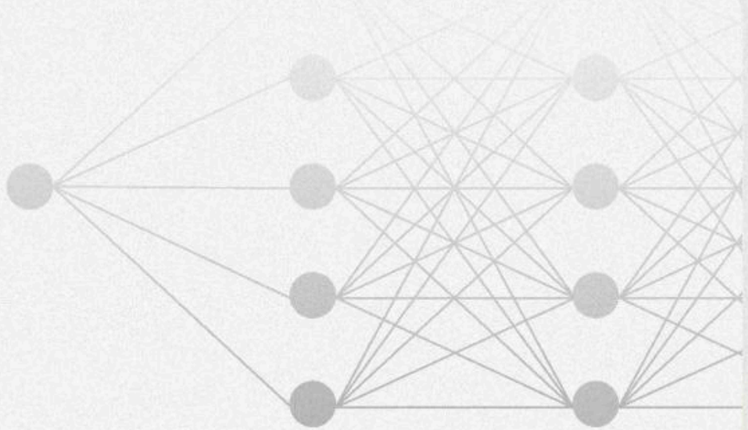
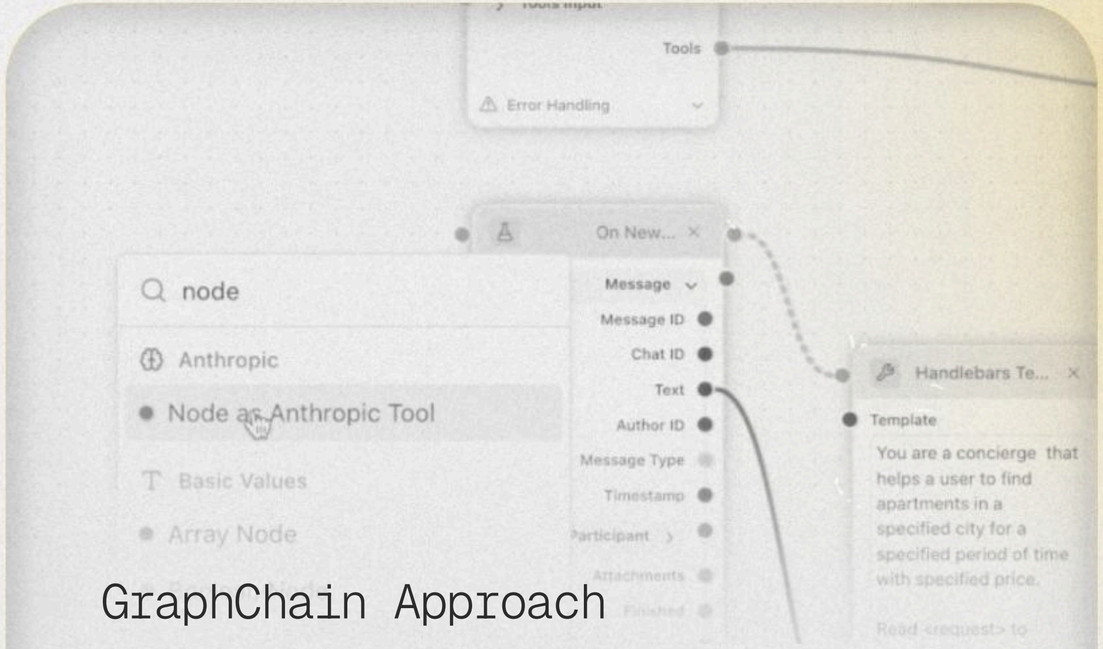


Current AI Agents Limitations

- Hallucinate.
- Can’t transact on user’s behalf.
- Don’t inherit user’s compliance.
- Agents don’t have programmatic access to shops/marketplaces.



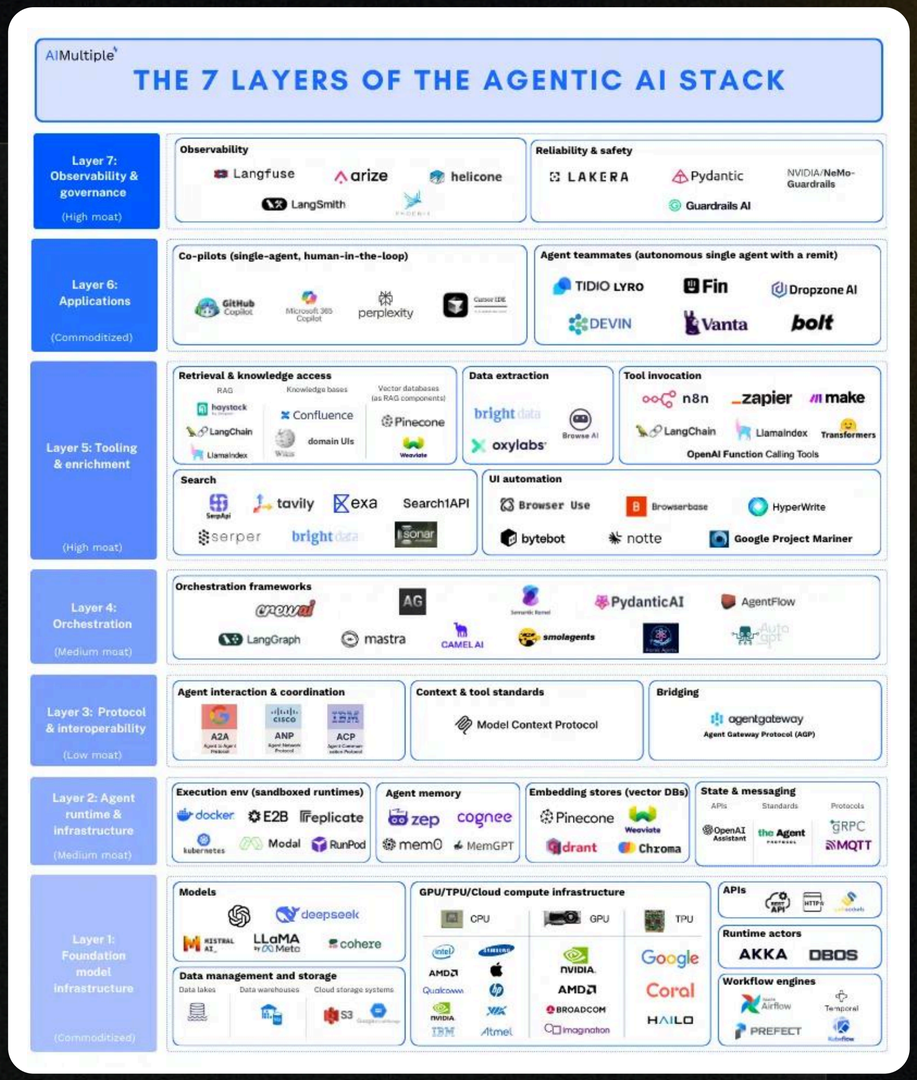
GraphChain Approach

- GraphChain is built with determinism in mind, significantly reducing hallucinations of LLMs.
- Integration with Neobanks allows creating a link between DID <> Agent <> Payment Card.
- Compliance enabled via ZK Proofs.
- Integration with Partner Merchant Aggregators.

The 7 Layers of The Agentic AI Stack

1. **Foundation Model Infrastructure** - Underlying models, compute, storage & APIs that power higher-level intelligence
2. **Agent Runtime & Infrastructure** - The environment where agents execute: memory, state, deployment, messaging
3. **Protocol & Interoperability** - Standards and protocols enabling agents to talk, interoperate, exchange context
4. **Orchestration** - Coordination of agents, routing logic, prompt management, workflow control
5. **Tooling & Enrichment** - External tools, APIs, knowledge sources, RAG, enabling agents to act beyond text
6. **Applications** - The user-facing agents and copilots that interact with end users directly
7. **Observability & Governance** - Monitoring, safety, audit, compliance, logging, policy enforcement

GraphChain operates across Layers 2-5, forming the middle stack of the Agentic AI architecture.



Cont'd: TL;DR » TCP/IP stack of AI

Layers	OpenAI	Google	GrapChain
Dapp Layer	ChatGPT (web +mobile)	Google OAuth 2.1	GraphChain is dApp – and settlement-agnostic, easily embedding into any mobile, web, or Telegram Mini App environment. Unlike OpenAI agents tied to the ChatGPT interface or Google agents bound to its products, GC integrates seamlessly wherever agents operate.
Agentic Layer	OpenAI Agents	A2H/H2A + ADK + A2A	GC supports a broader integration spectrum – traditional APIs, MCPs, A2A networks, DeFi primitives, and RAG databases – enabling true interoperability beyond proprietary ecosystems.
Model Layer	ChatGPT LLMs (5, o5, et)	LLMs run in GCP + MPC registry	GC is LLM-agnostic, extending models with reinforcement learning environments, workflow memory, and context enrichment to deliver more predictable and reliable inference.
Compute Layer	AWS	GCP	GC is compute-agnostic, partnering with specialized AI compute vendors to fine-tune models for specific tasks and hardware – reducing inference costs by 10-100x versus vertically integrated systems.
Analogy	Apple's IOS (closed stack)	Google & Android (partially open stack but limited by Play Store)	OpenAI represents a closed vertical ecosystem, Google offers a partially open stack tied to its services, while GraphChain provides a truly open, modular, and interoperable infrastructure built for the Agentic Economy.

GraphChain: The Operational Core of Agentic AI (Layers 2-5)

GraphChain spans the **core functional layers** of the Agentic AI Stack — providing the runtime, orchestration, and enrichment foundation on which agentic systems operate.

It bridges **AI logic**, **protocol interoperability**, workflow orchestration, and tool integration into one cohesive execution layer.

GraphChain operationalizes agent execution, interoperability, orchestration, and enrichment—powering the middle stack of agentic AI.

Layer	GraphChain Role	Core Capabilities
Layer 2	Provides a deterministic, privacy-preserving agent runtime with TEE-powered execution and granular access controls.	• Secure GPU compute • Deterministic execution & debugging • Real-time concurrency & auditability
Layer 3	Implements Model Context Protocol (MCP) for cross-agent and external service communication.	• Auto-wraps MCP servers into nodes • Type-safe data exchange & validation • Dynamic capability discovery & sync
Layer 4	Powers visual, event-driven workflow orchestration for complex multi-agent logic.	• XYFlow-based visual builder • Event-driven execution & hierarchical sub-flows • Real-time debugging & breakpoints
Layer 5	Connects agents to external APIs, data sources, and enrichment tools.	• Unified integration of APIs / vector stores / LLMs • Tool discovery & schema validation • Secure authentication & resource access

GraphChain:
Foundation & Orchestration

ChainGraph eliminates AI unpredictability through deterministic orchestration.

TEE-powered private agent runtime (SEV-SNP/TDX + H100 CC):

- Runs inside secure Trusted Execution Environments
- Data processed but never stored or exposed
- Reproducible builds & cryptographic attestation

Granular access controls ensure agents only access what they need

Perfect for fintech: precision and privacy that contemporary AI systems cannot satisfy


TECH DOCS CAN BE
FOUND HERE
GITHUB
641ms
completed
216ms
Input Stream
Separator
Buffered Output
completed
4ms
Source Text
Search String
deterministic
Is Present
completed
17ms
Left Value
Operator
Right Value

APPENDIX

First Step

Neobanks Integration

Integration Benefits

Bringing Traditional & Digital Finance to Agent Commerce

Multi-Currency Support

Seamless conversion between fiat and USDC

Transaction Limits

Programmable spending controls with user-defined agent budgets

Payment Systems

Direct API access for instant card issuance linked to Agents

KYC/AML Inheritance

Agents inherit user's compliance status through zk proofs

Second Step E-commerce

Integration with marketplaces to provide their goods to users.
Below is the example of potential integration with merchant aggregators:

MCP-Powered Discovery: Leverage merchant aggregators Model Context Protocol for AI agents to directly access product catalogs, inventory, and pricing in real-time through standardized APIs.

Unified Agent Tools: Connect to merchant aggregators MCP servers enabling natural language product search, cart management, and order tracking.

Smart Routing: Agent intelligently selects optimal merchants based on real-time MCP data including price, shipping, availability, and customer reviews.

Telegram Shop Bot: Deploy MCP-enabled conversational commerce through Telegram, allowing seamless product discovery and purchase from merchants.

Settlement: Direct connection to merchant aggregators Payments and Coinbase Commerce for both traditional currencies and USDC transactions through MCP payment tools.

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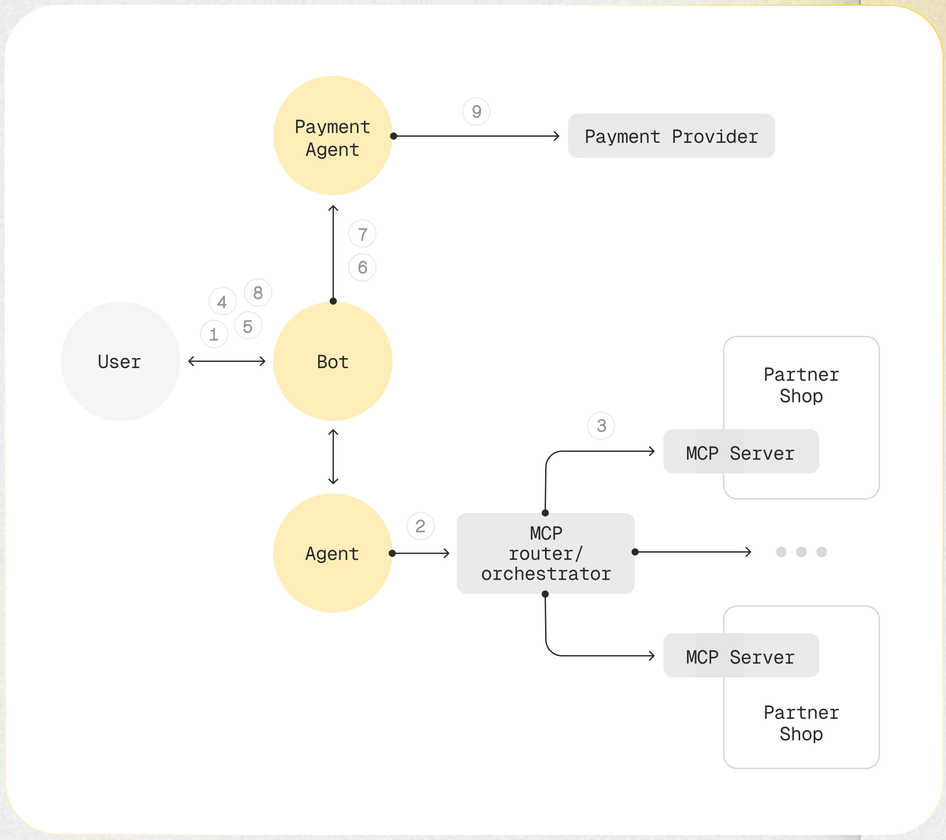
Third Step Telegram Integration

USER OPENS CHAT WITH AN AGENT (UI/TELEGRAM BOT):

1. User specifies the purchase: "I want to buy a pair of white Nike Air Force sneakers".
2. Agent browses available stores catalog via MCP Orchestrator locates relevant stores.
3. Agent query storefronts of the relevant stores to get relevant items.
4. Agents selects the best matches and provides them to the user.
5. User selects the suitable option.
6. Bot gets the invoice and calls Payment Agent to process payment according to user's preferences.
7. Payment Agent creates a transaction.
8. User confirms.
9. Transaction settles via chosen Payment Provider.



All these steps are what making New Age Commerce possible.