

DynaGraph: Cross-Domain Task Automation by AI Agents

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Motivation

- Enterprises adopt AI agents but often **rebuild similar patterns** (task decomposition, orchestration, oversight).
- Current systems **lack scalability** and **offer opaque reasoning**, insufficient trust.
- Needed a **standardized yet flexible framework** to scale across domains, automate tasks efficiently, and ensure transparency.



How can we design a **scalable, trustworthy agentic framework** for enterprise workflows?

Solution : DynaGraph Framework

Graph-based orchestration framework (built on LangGraph)

Planning : Decompose tasks into action blocks

Execution : Automate actions with optional Human-in-the-Loop

Response & Tracking : Response and generate execution trace

Context Memory : Maintain multi-turn interaction seamlessly

Action Blocks (Extendable depends on business domain)

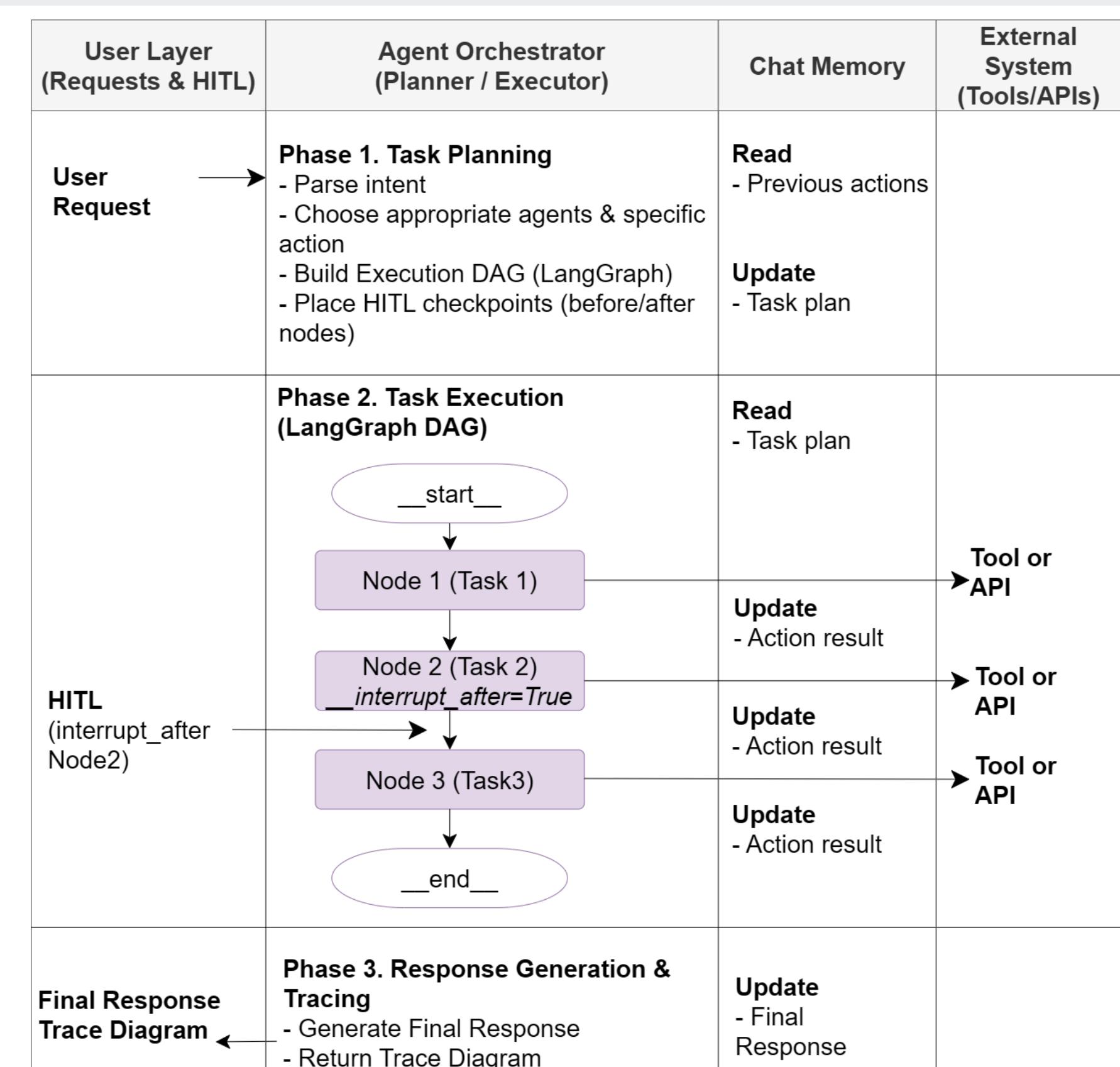
Reasoning

Web Search

Vector DB Search

SQL Generation / Execution

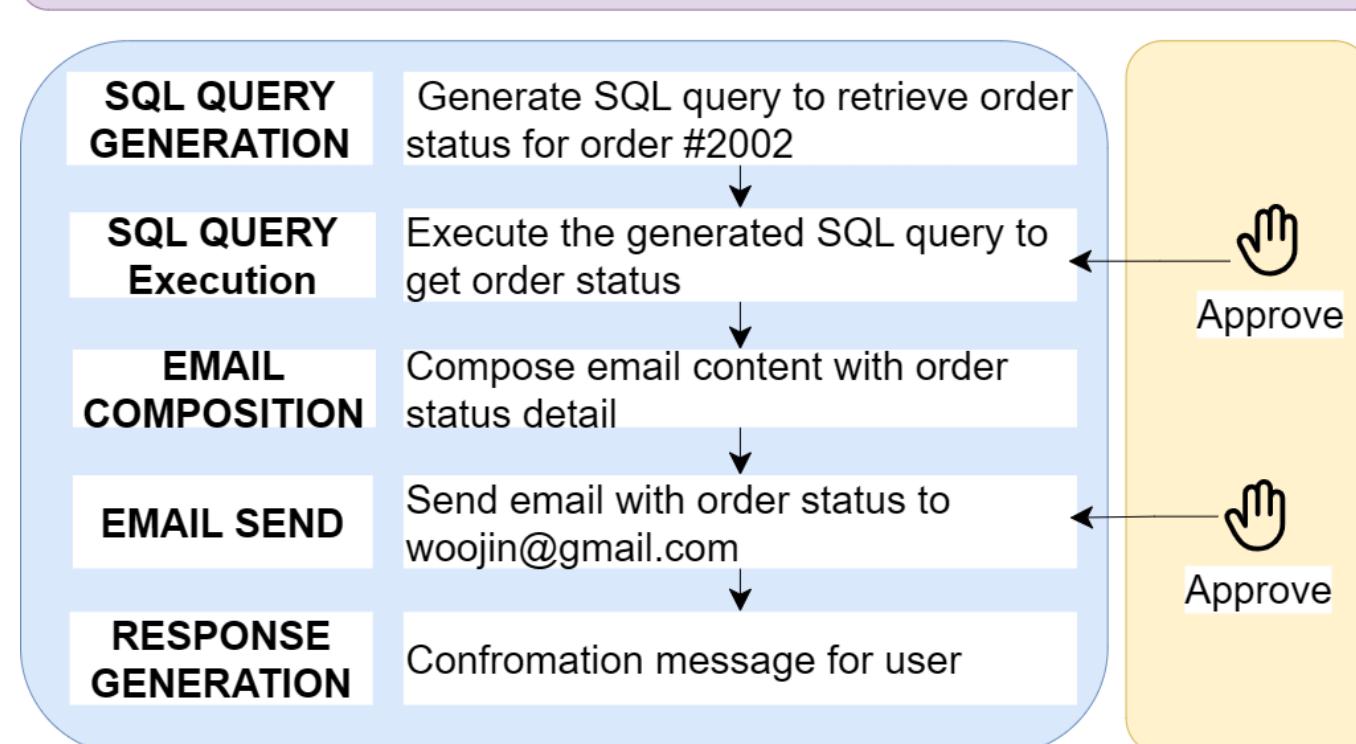
Email Composition / Management



Case Studies

Customer Service Automation

Check the order status #2002 and sent the result to this client email. Email address is woojin@gmail.com



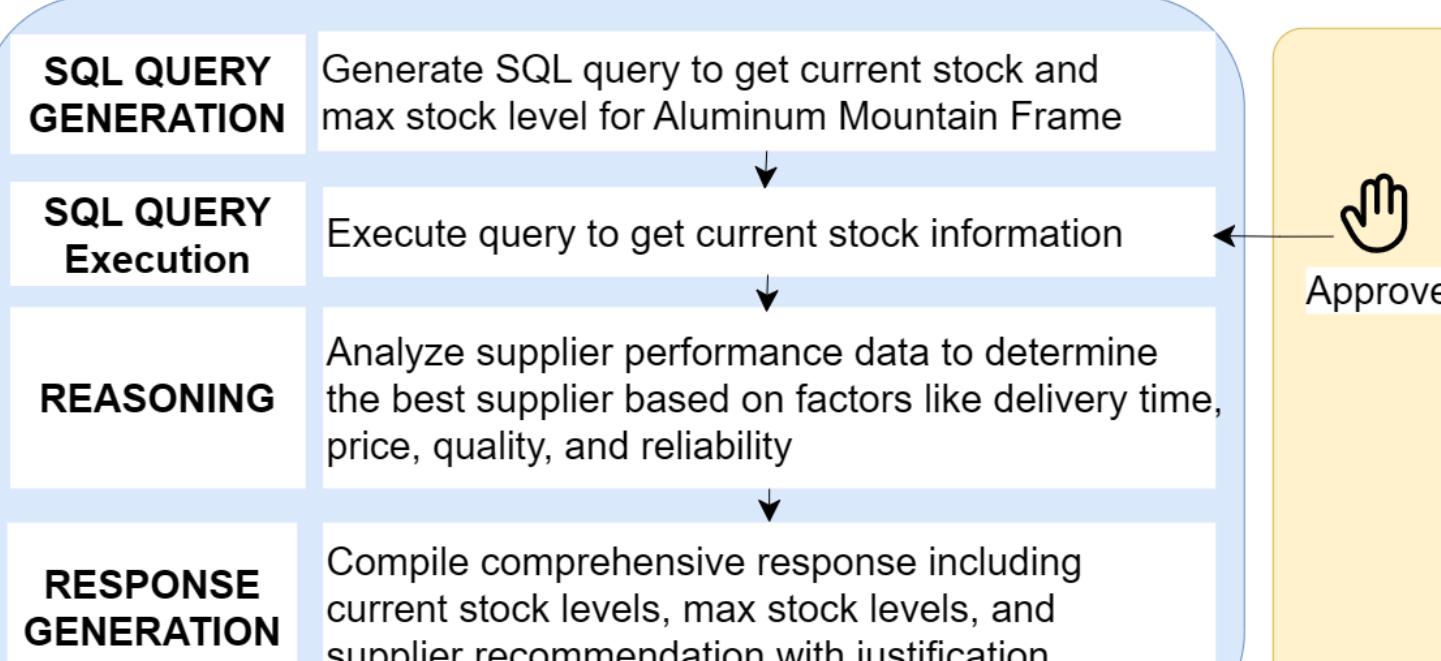
I've checked the status of order #2002 and sent the details to this email address (woojin@gmail.com). Here's what I found and did:

- I retrieved the order information from the database.
- Found that **order #2002 has been shipped**.
- Sent you a detailed email with the following information:
 - Order was placed on June 21, 2024
 - Shipped on June 22, 2024
 - Shipping carrier: FedEx (Tracking number: FEDX2024062101)

The **email has been successfully delivered** to inbox. Is there anything else you'd like to know about your order?

Procurement Decision Support

We need to replenish Aluminum Frame for Mountain Explorer Pro model. What is current stock/available quantity and max stock level? Among suppliers that previously fulfilled this component, who is the best choice and why?



Both Nippon Alloy Co. and Asian Components Ltd have prior transaction history, but **Nippon stands out as the stronger choice**.

- Quality:** 4.6 vs 4.2; defects 0.83% vs 1.70%
- Reliability:** 4.7 vs 4.5
- Delivery:** 9 days vs 14 days
- Cost:** \$160 vs \$163.50

While Nippon has fewer past orders (1 vs 2), its superior quality, reliability, speed, and cost make it the best overall supplier.

HR Policy Compliance

How does our company's severance policy for 5+ year employees comply with Korean labor law, and are there any gaps we need to address?



Korean Labor Law:

- Requires 30 days' average wage x years of service
- For 5+ years : ≥ 5 months average wage, paid within 14 days.

Our Policy:

- 2 months base salary +2 weeks per extra year (cap: 6 months)
- Base salary only, payment within 30 days.

Gaps:

Our payout is too low, calculated only on base salary instead of average wage, and the payment deadline is longer than the legal requirements.

Business Value

- Scalability** : One architecture, multiple domains → Reduce development / operational cost
- Efficiency** : Automates multi-step workflows → Reduce execution time & User burden.
- Transparency** : Human oversight & Traceability → Boost trust and verifiability for enterprise adoption
- Adaptability** : Modular tools → Easily extendable to new use cases.

