

MessageState

add_message

Async and Streaming

Async

request1

request2

request3

invoke



ainvoke

Streaming Types

values

updates

messages

custom

debug

Reflection



Generates an initial solution

Reviews and evaluates its own output

Improves based on feedback

Repeats until a stopping criterion is met

Tree Of Thought

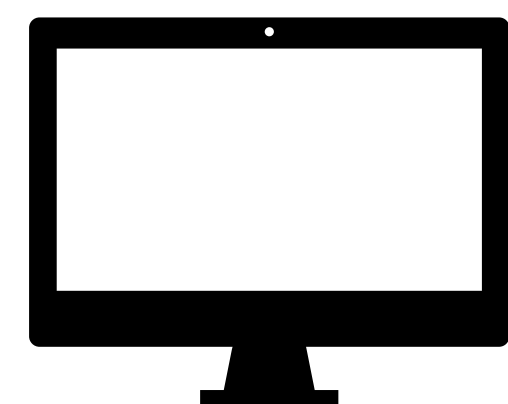


AGENT

Generates multiple solutions

Breaks down and evaluates

Ranks and selects the best option



User

Input

Agent

Tools

Prompt

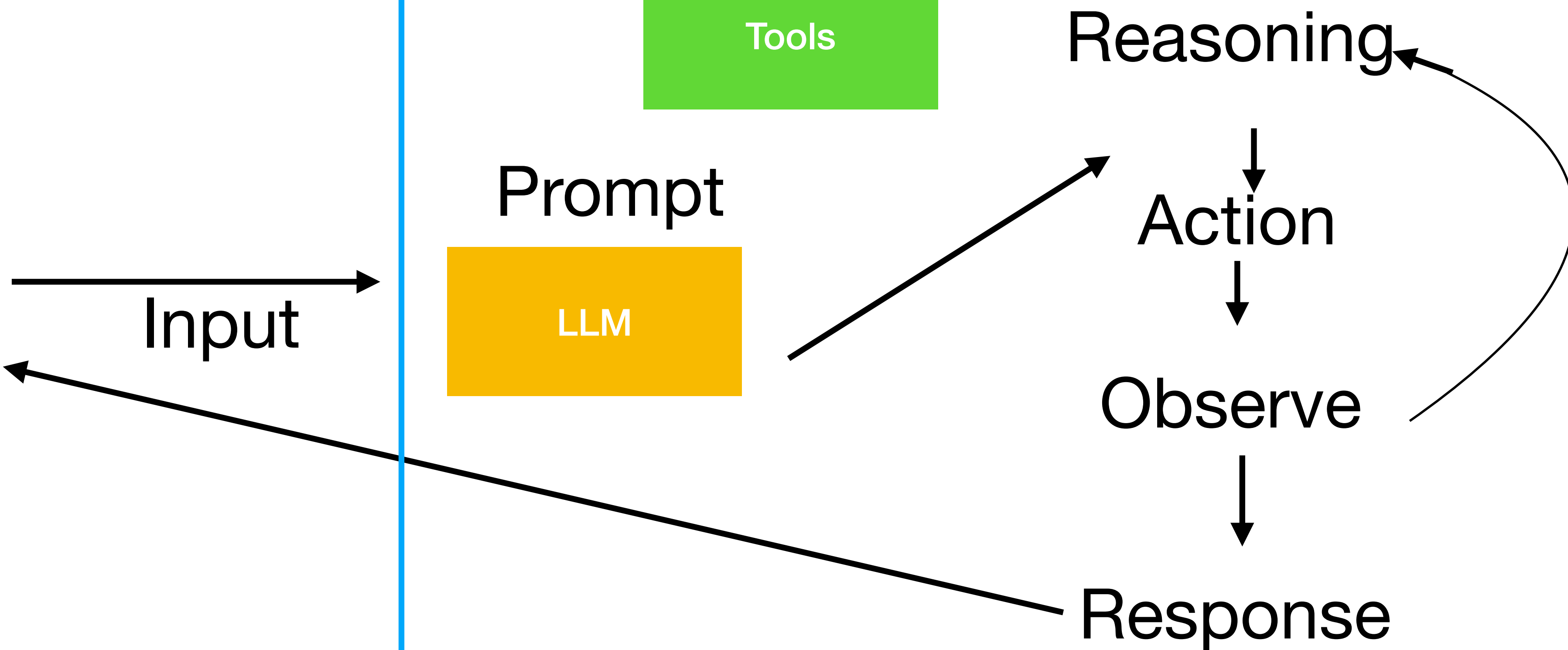
LLM

Reasoning

Action

Observe

Response



Tools

Search Tools

Retrieval Tools

Calculation Tools

Code Execution Tools

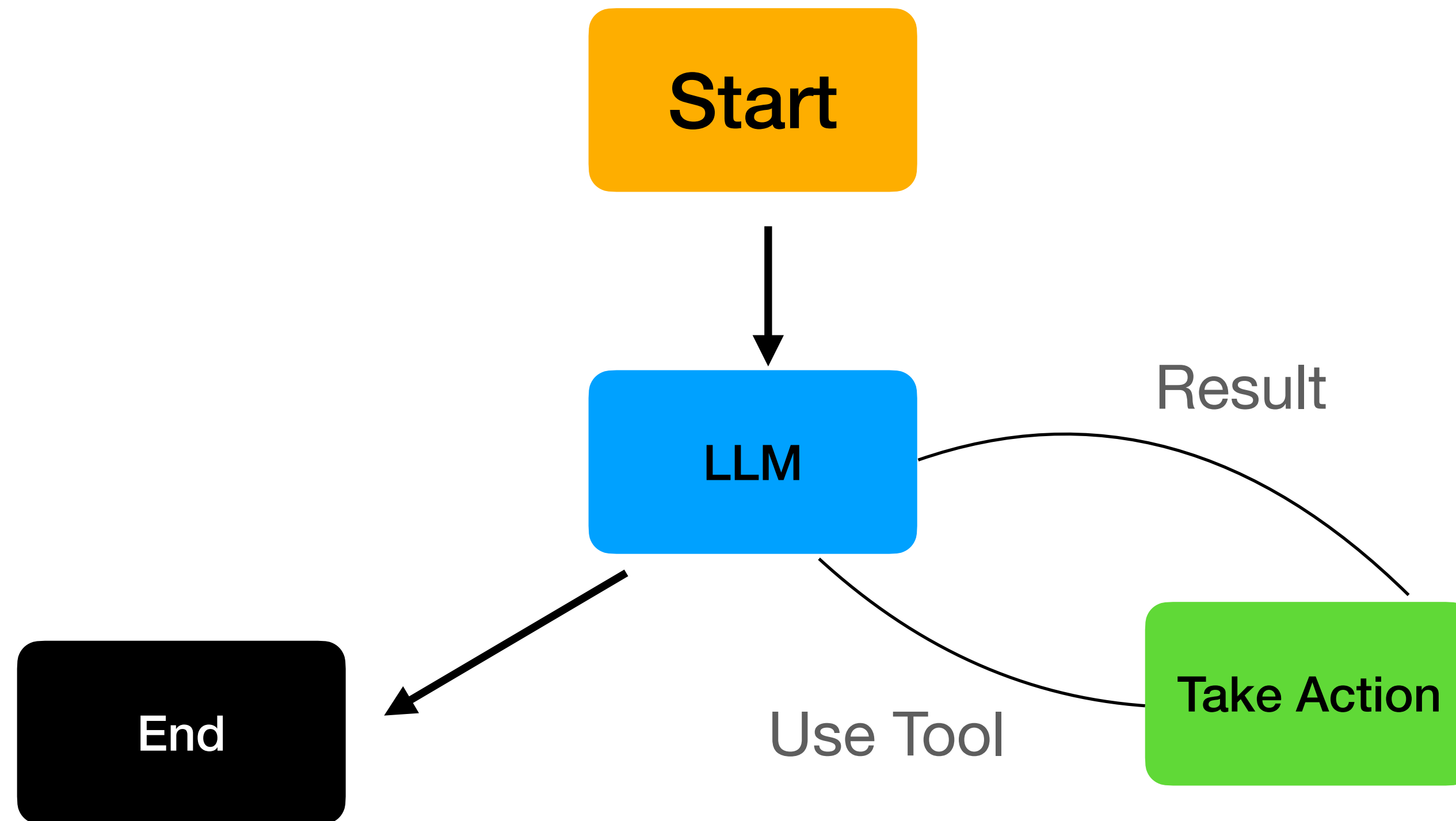
Data Querying Tools

File Manipulation Tools

Custom API Tools

Browser Tools

What is LangGraph



Workflow

Why

Memory/state sharing

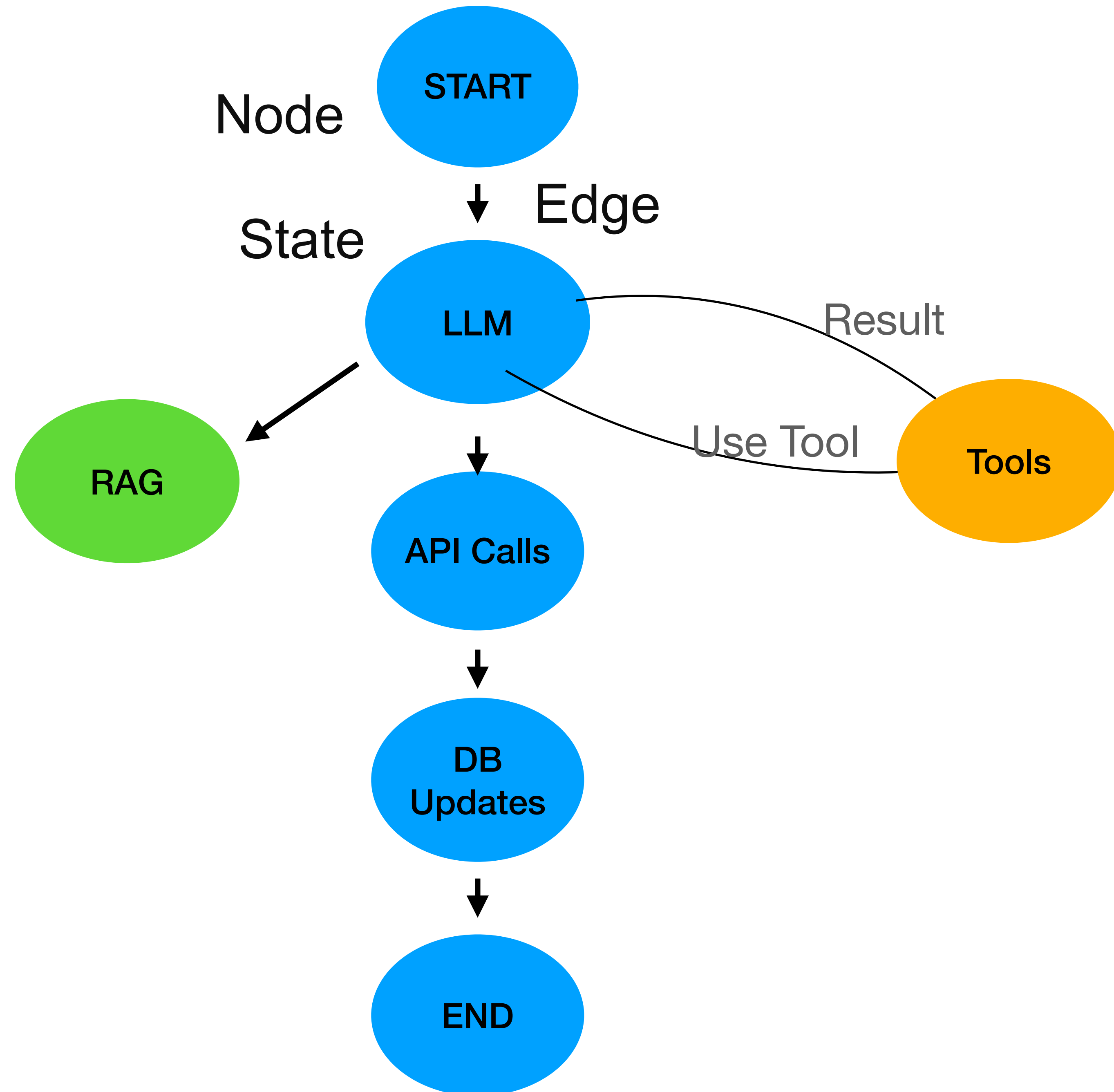
Conditional Routing

Tool Calling

Human in the loop

Persistence

Async and Streaming



Usecases

Multi-Agent Research Assistant

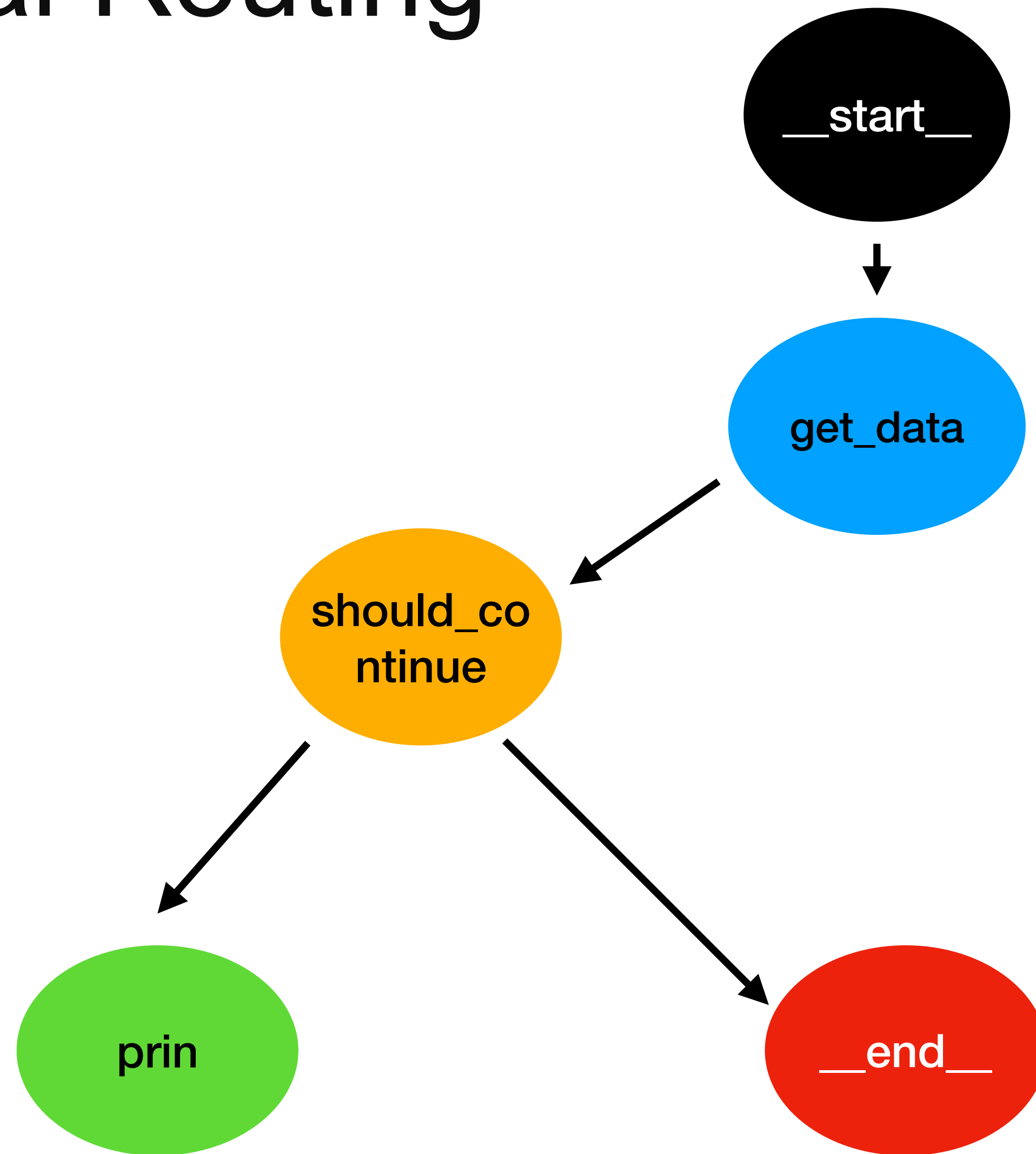
RAG-Based Knowledge Bot

Intelligent Claim Processing System

AI-Powered Student Tutor

Autonomous Coding Assistant with Reviewer Loop

Conditional Routing



Checkpoint

Checkpoint ID

Graph State

Current Node Info

Edge info

Metadata (optional)

HITL



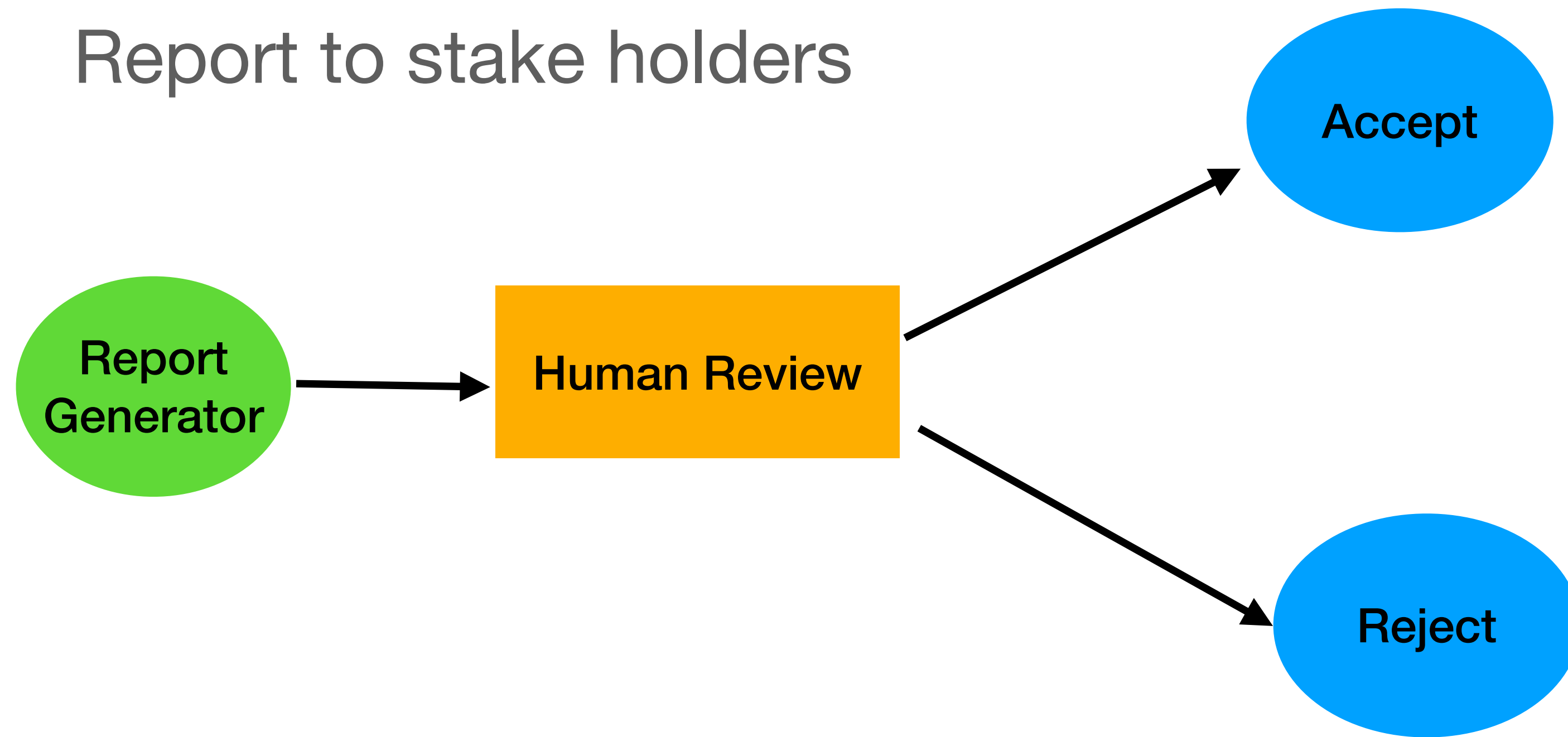
Validation

Input

Decision

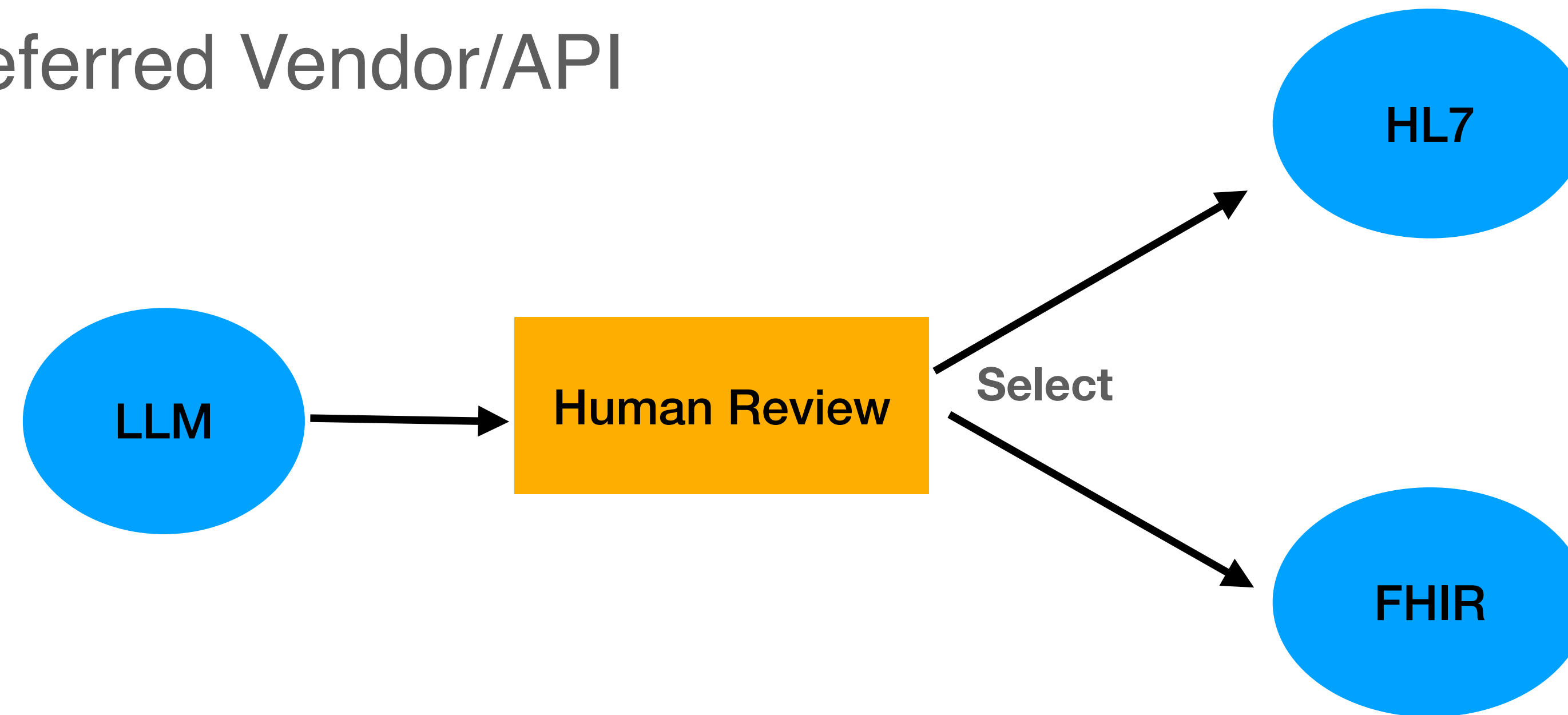
Accept/Reject

Report to stake holders



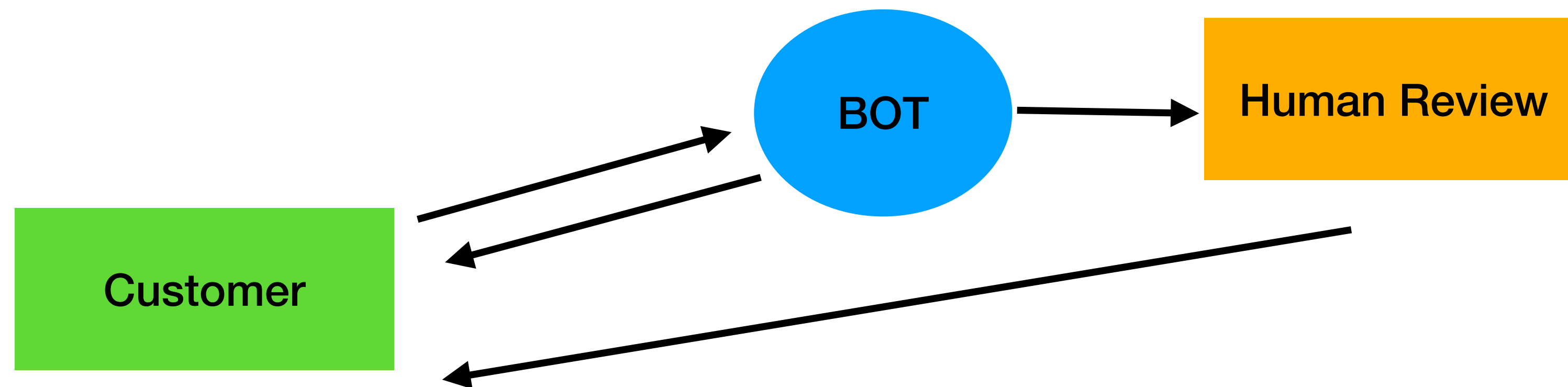
Review Tool Calls

Preferred Vendor/API



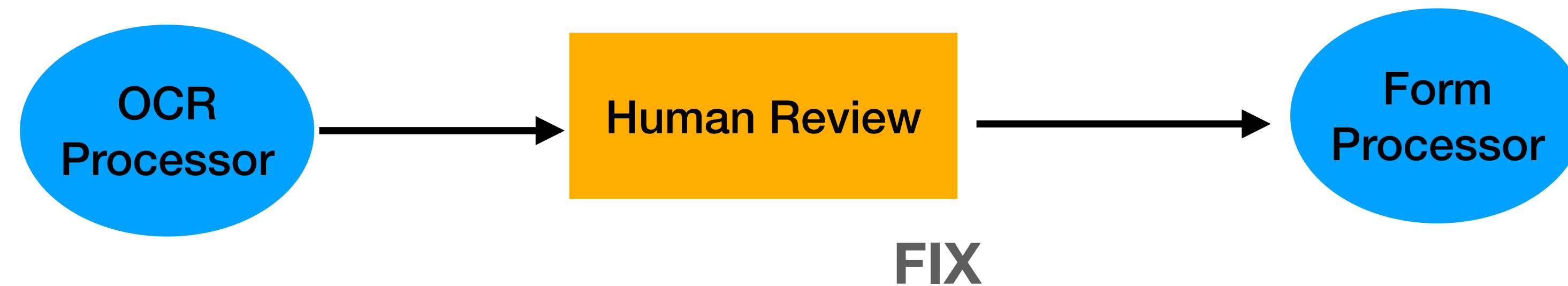
Fallback when agent is uncertain

Complex Customer Service Issue

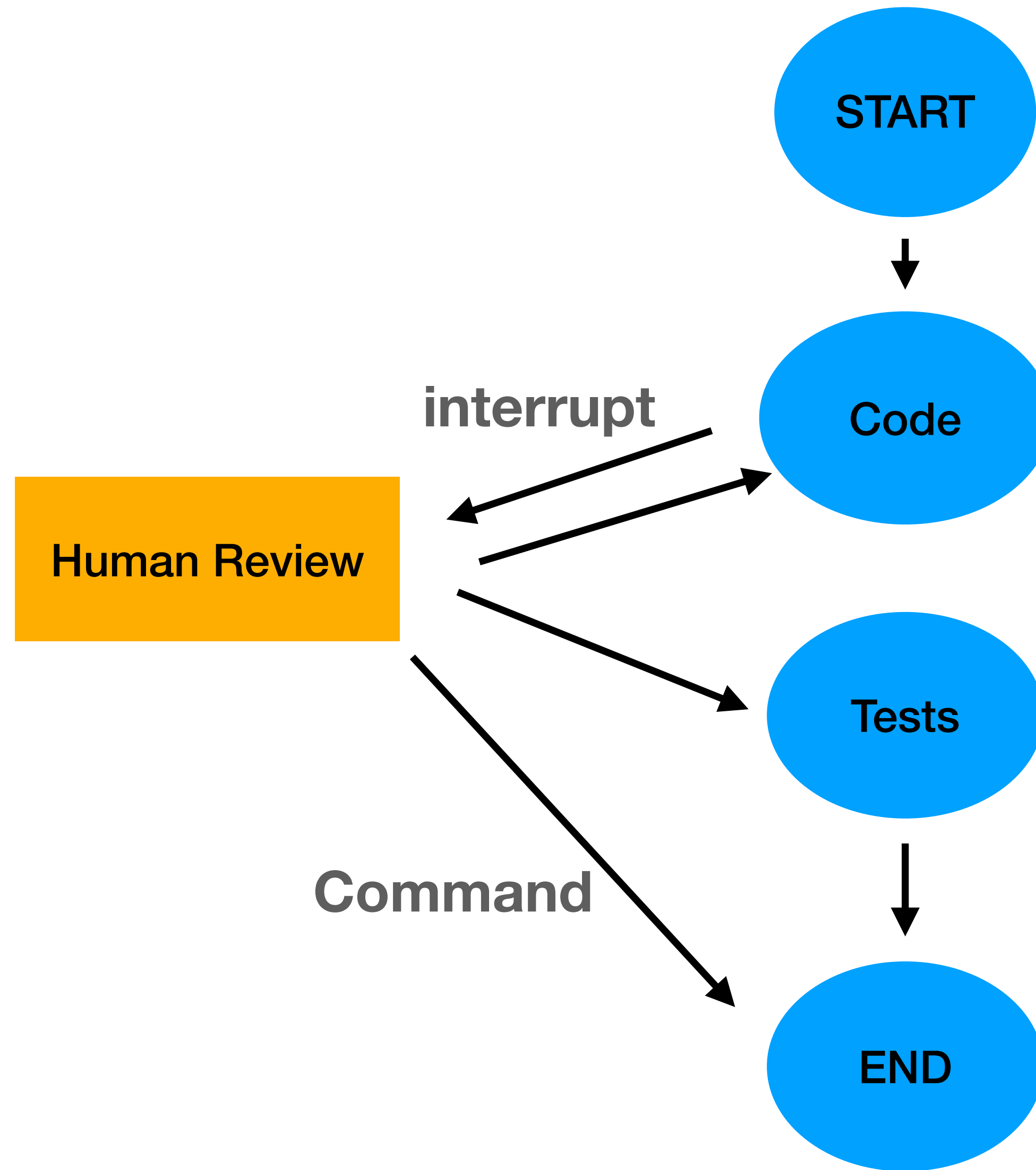


Review and Edit State

OCR to Form



Code and Test Generation

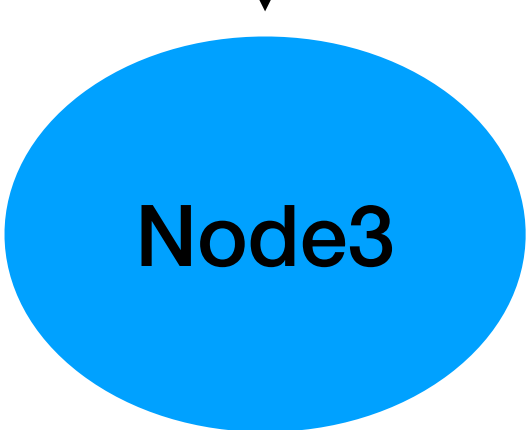
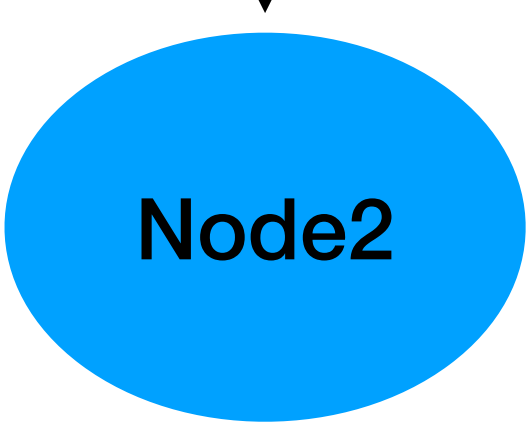
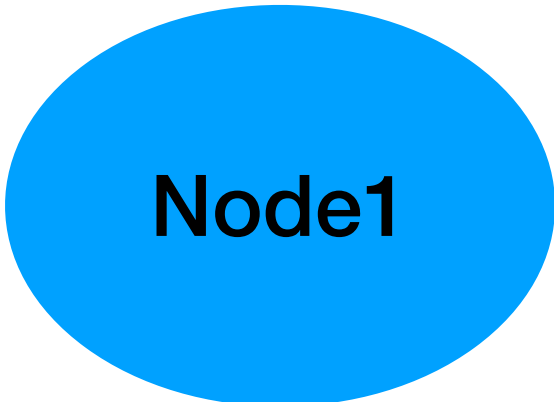
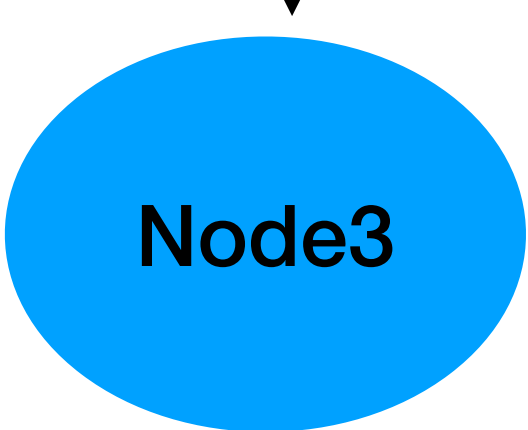
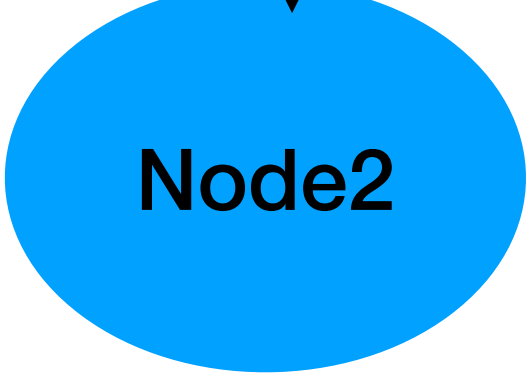
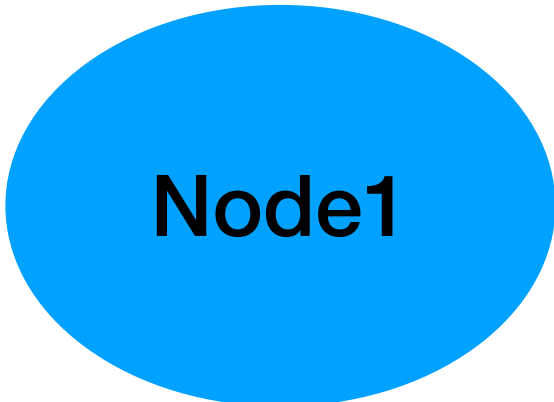
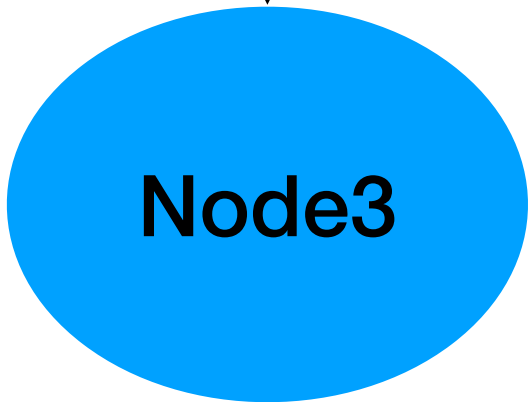
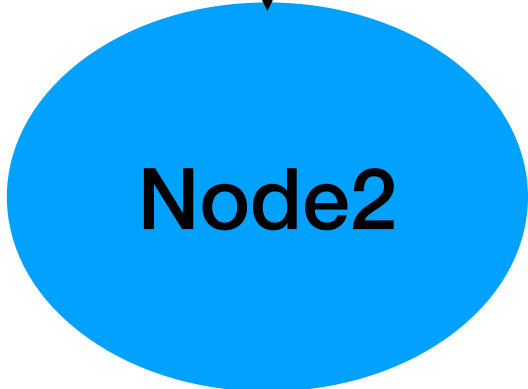
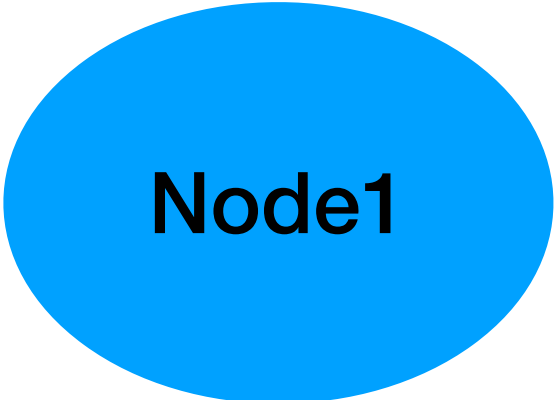


Subgraphs

Graph1 → Graph2 → Graph3

State

State



Multi Agentic Systems

Modularity

Reusability

Testability

Clean Design

As Node

Verify Insurance

Check



Confirm

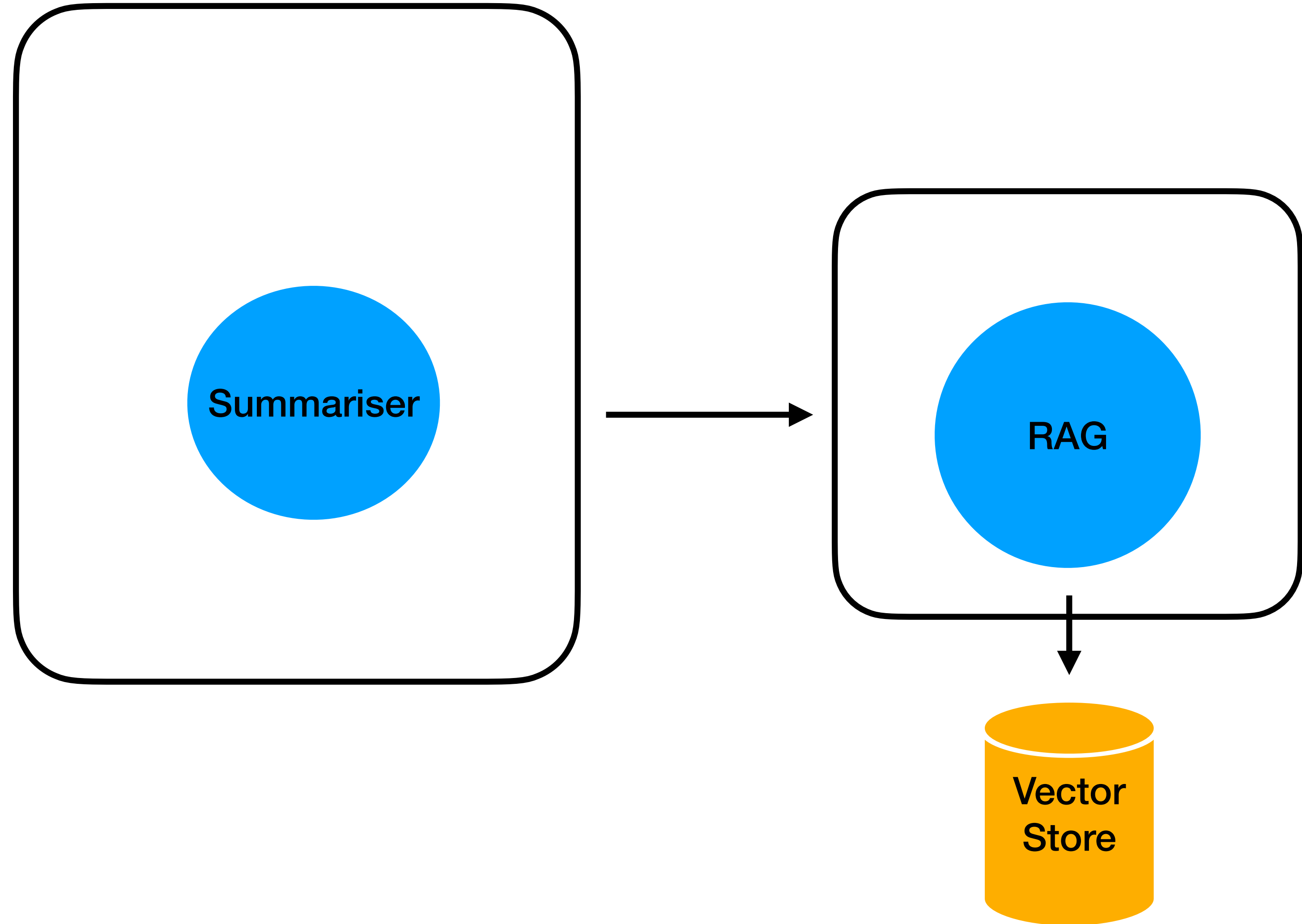


Schedule Appointment

Schedule
Appointment

Invoke

**Generate Current
Affairs Summary**



Insurance Claim Processing Flow



Agentic Patterns

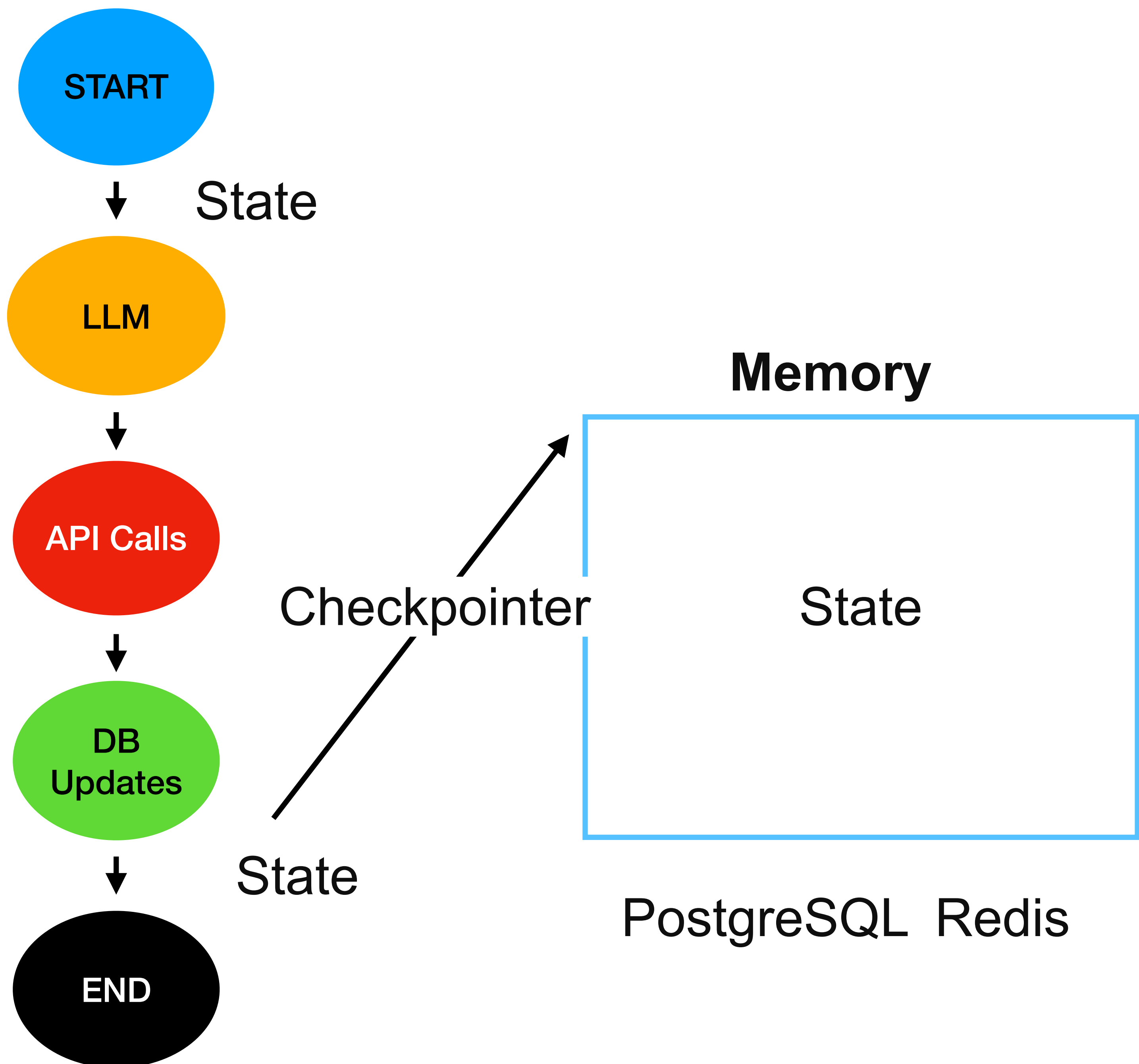
Blueprint

Reflection

Tree Of Thought

Parallel Execution

Memory



LangSmith

LangChain

LangGraph

Observability