สยามชำนาญกิจ
SIAM CHAMNAN KIT

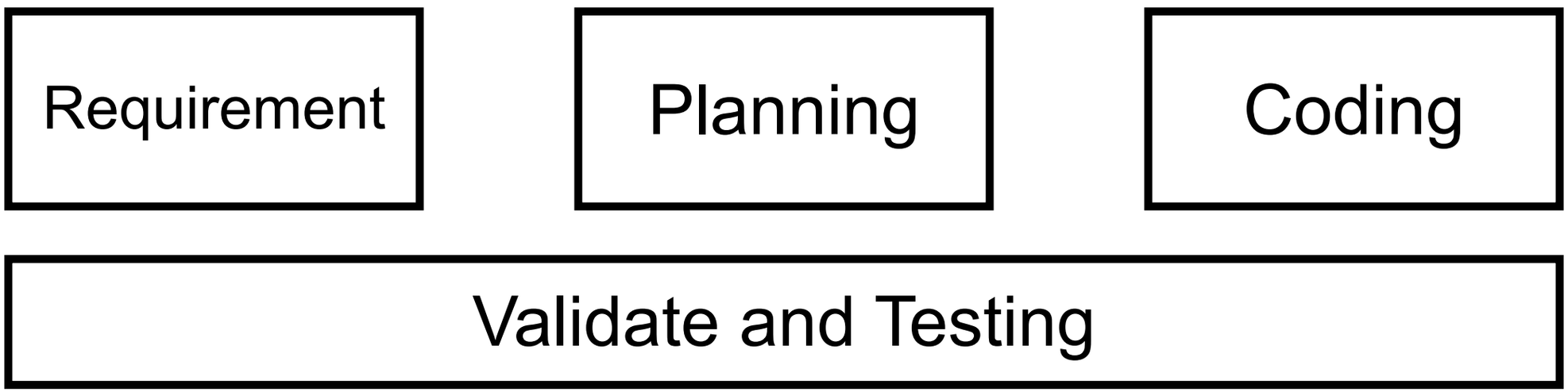
Coding with AI

https://github.com/up1/course-ai-coding-2026

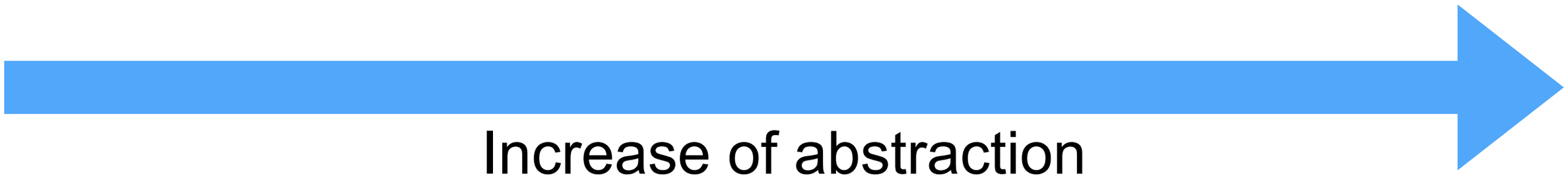
Coding with AI

Topics

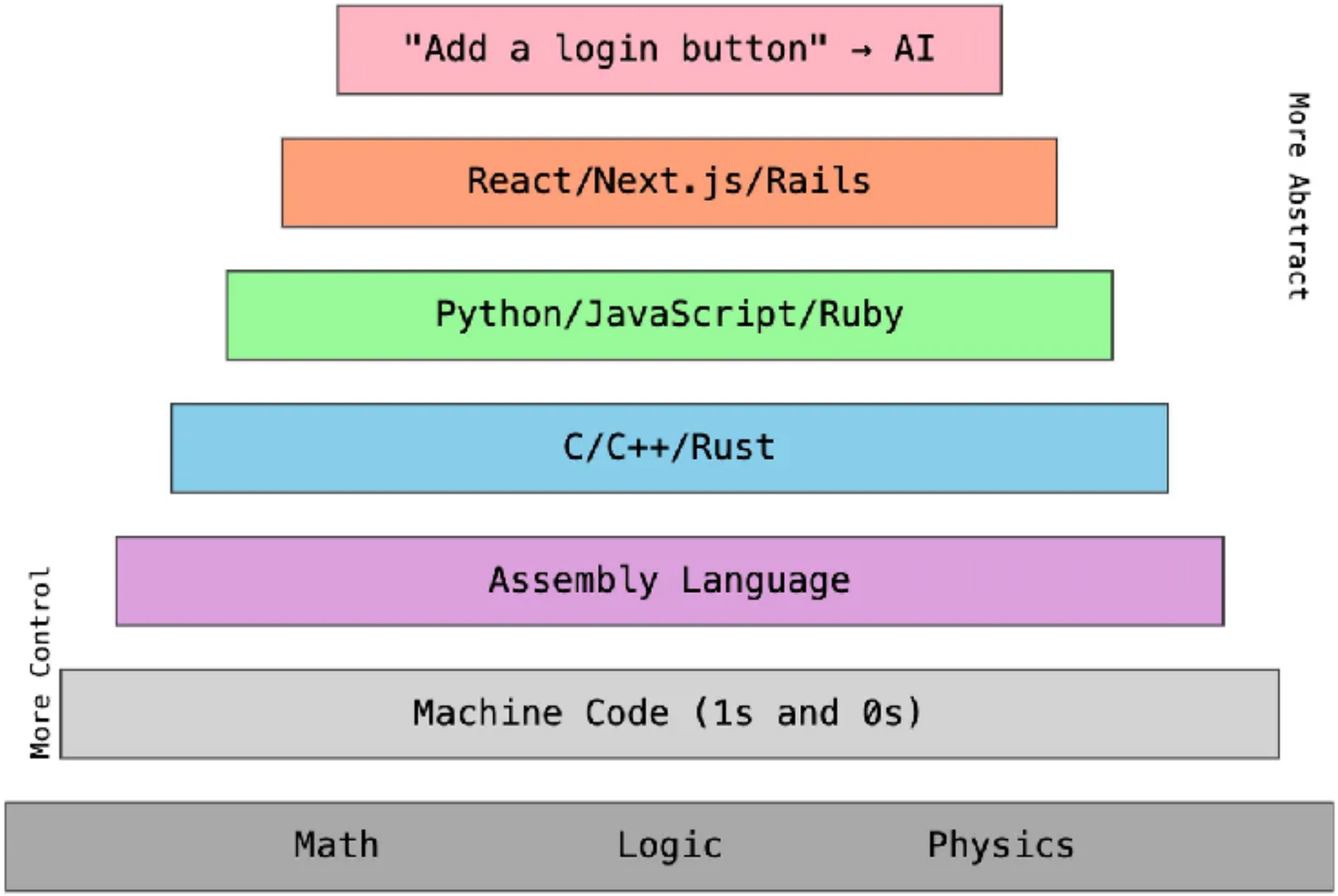
Programming/Coding workflow
Specification-Driven Development (SSD)
Model-Driven Development (MDD)
Coding with AI Agent workshop



History of Programming

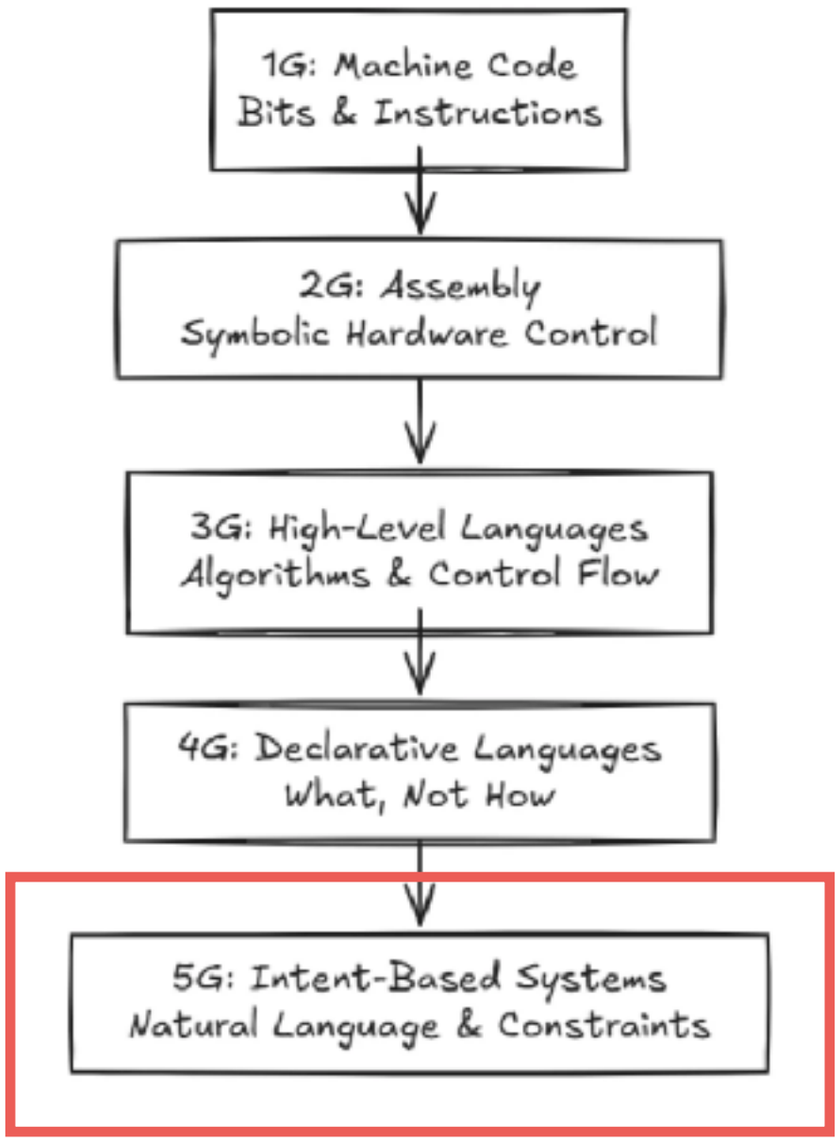


The Modern Tower of Abstraction



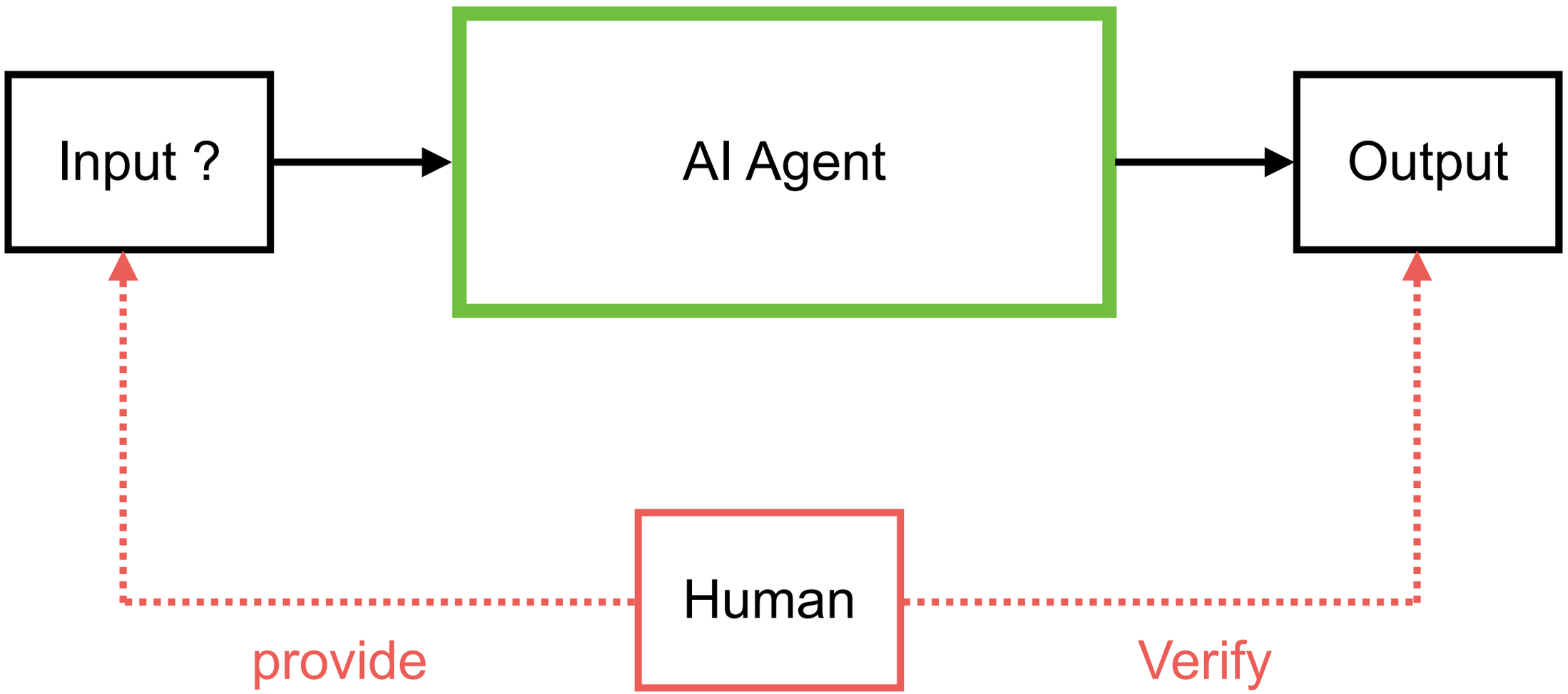
https://cline.bot/blog/from-assembly-to-ai-why-vibe-coding-is-just-another-chapter-in-our-abstraction-story

Generation of Programming languages

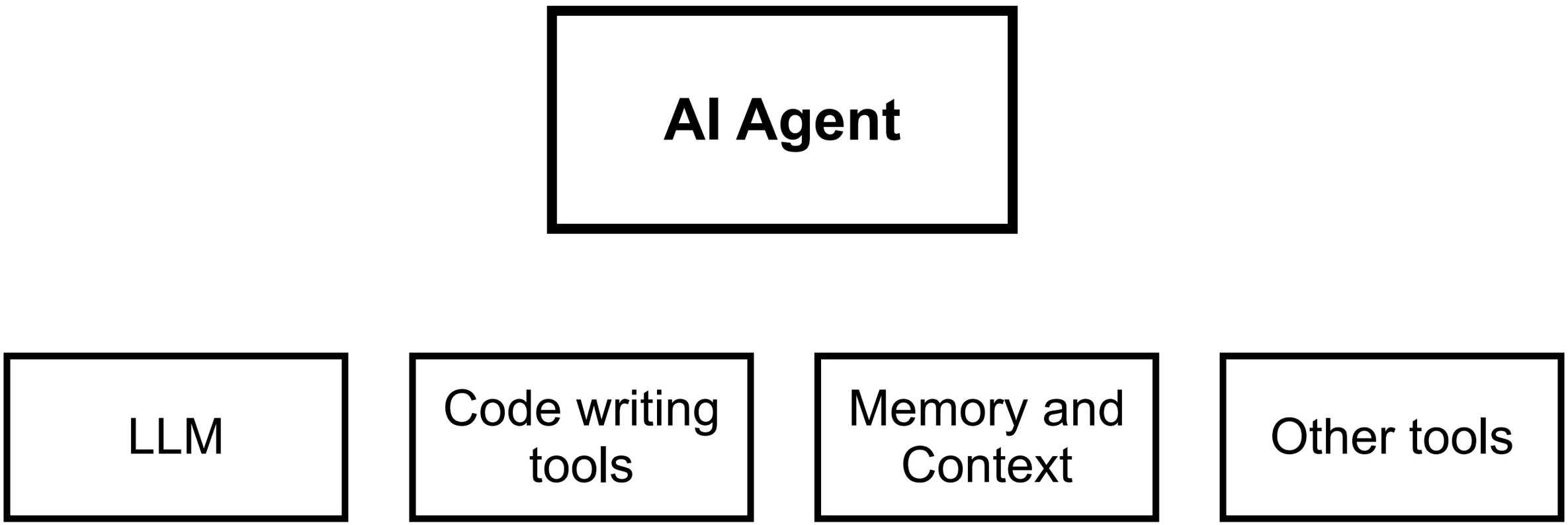


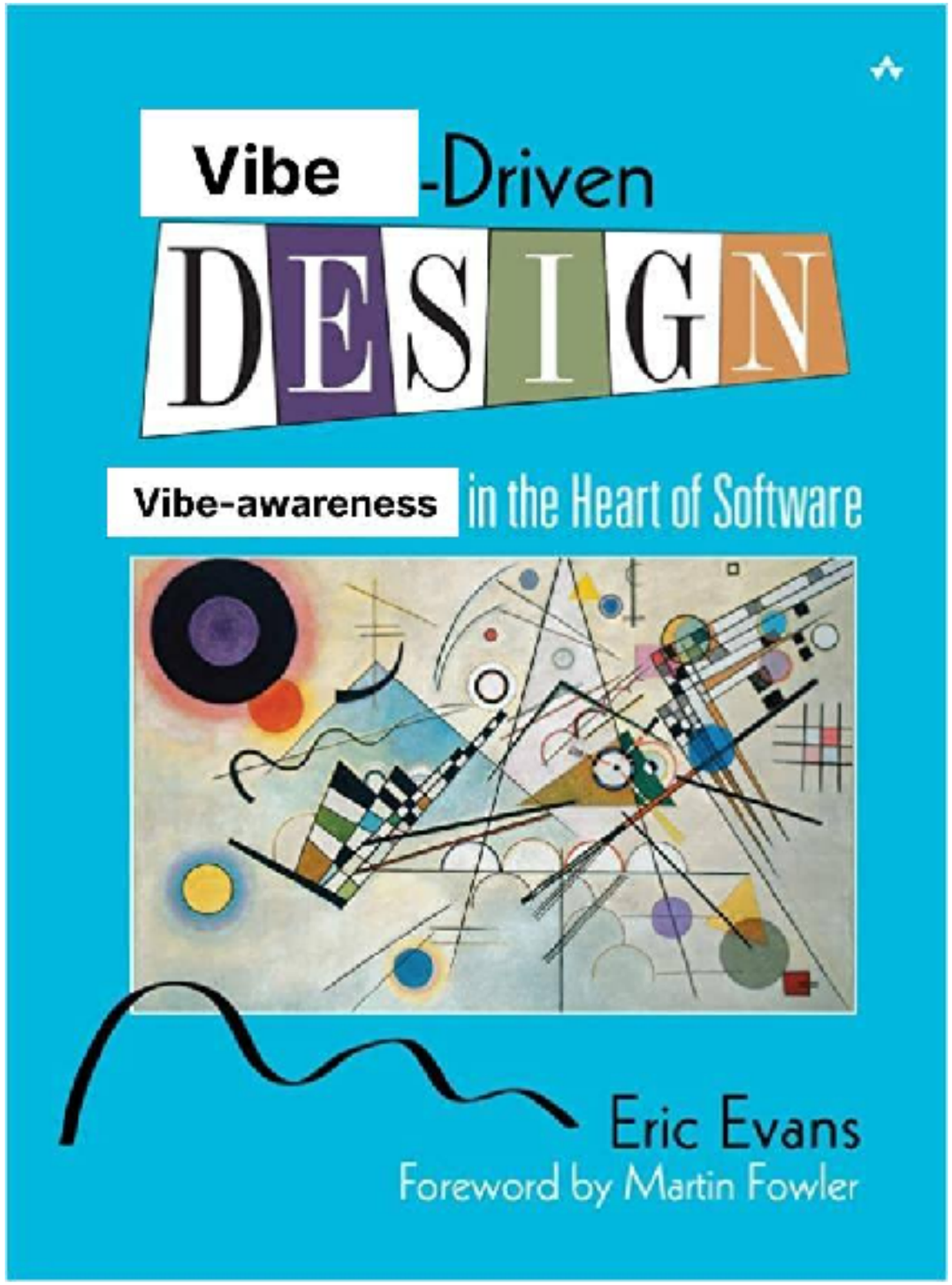
https://medium.com/@ajuatahcodingarena/generations-of-programming-languages-bed30d19ea8e

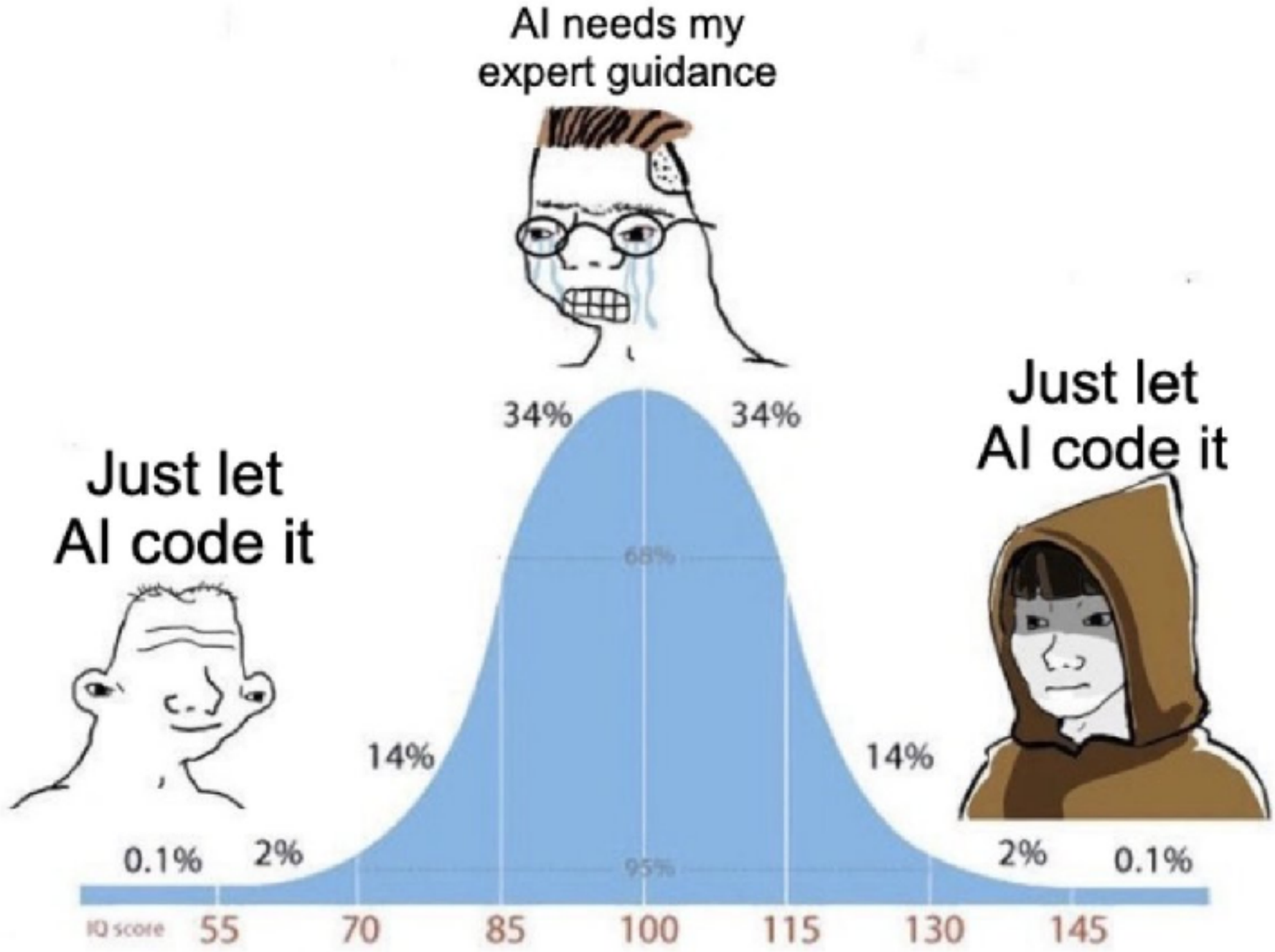
Coding with AI Agent



AI Agent for Coding







Andrej Karpathy
@karpathy

There's a new kind of coding I call "vibe coding", where you fully give in to the vibes, embrace exponentials, and forget that the code even exists. It's possible because the LLMs (e.g. Cursor Composer w Sonnet) are getting too good. Also I just talk to Composer with SuperWhisper so I barely even touch the keyboard. I ask for the dumbest things like "decrease the padding on the sidebar by half" because I'm too lazy to find it. I "Accept All" always, I don't read the diffs anymore. When I get error messages I just copy paste them in with no comment, usually that fixes it. The code grows beyond my usual comprehension, I'd have to really read through it for a while. Sometimes the LLMs can't fix a bug so I just work around it or ask for random changes until it goes away. It's not too bad for throwaway weekend projects, but still quite amusing. I'm building a project or webapp, but it's not really coding - I just see stuff, say stuff, run stuff, and copy paste stuff, and it mostly works.

6:17 AM · Feb 3, 2025 · **5.3M** Views

https://x.com/karpathy/status/1886192184808149383

Vibe Coding

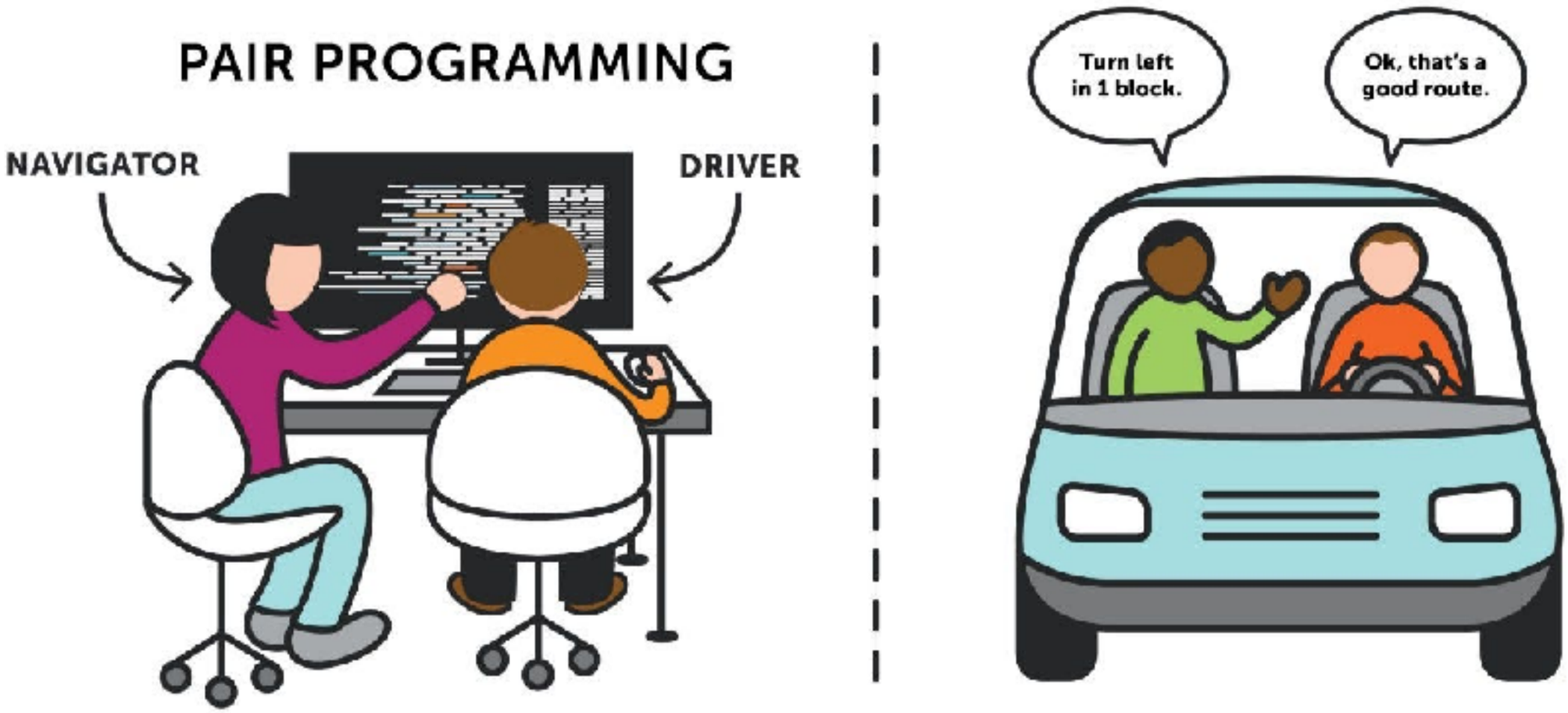
Software development practice that uses artificial intelligence (AI) to generate functional code from **natural language prompts**, accelerating development, and making app building more accessible, especially for those with limited programming experience

https://cloud.google.com/discover/what-is-vibe-coding

Types of Vibe coding ?

Pure vibe coding

Responsible AI-assist development



Reviews, Tests and Understands
with experience

Workflows ?

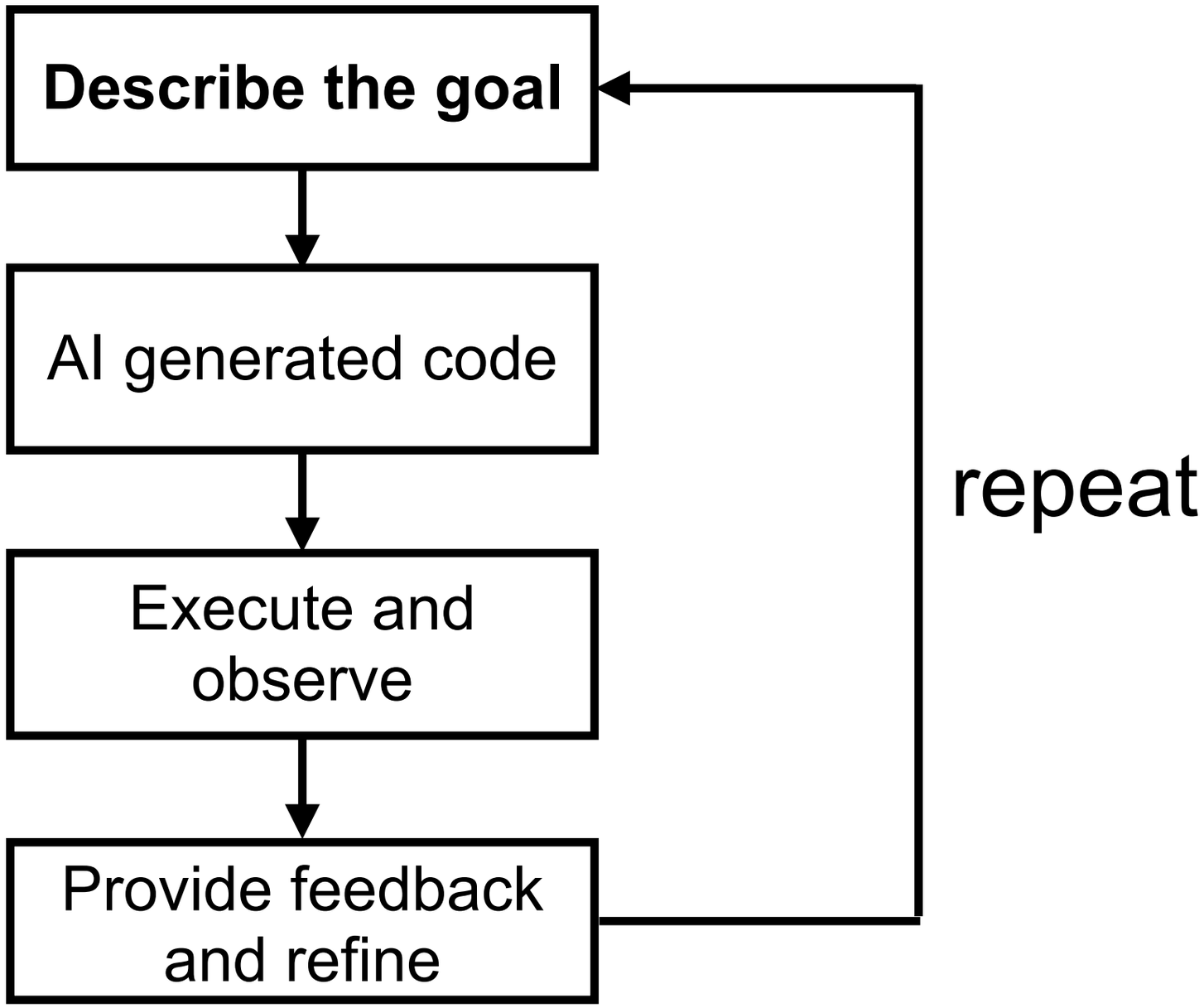
Application level

Code level

https://cloud.google.com/discover/what-is-vibe-coding

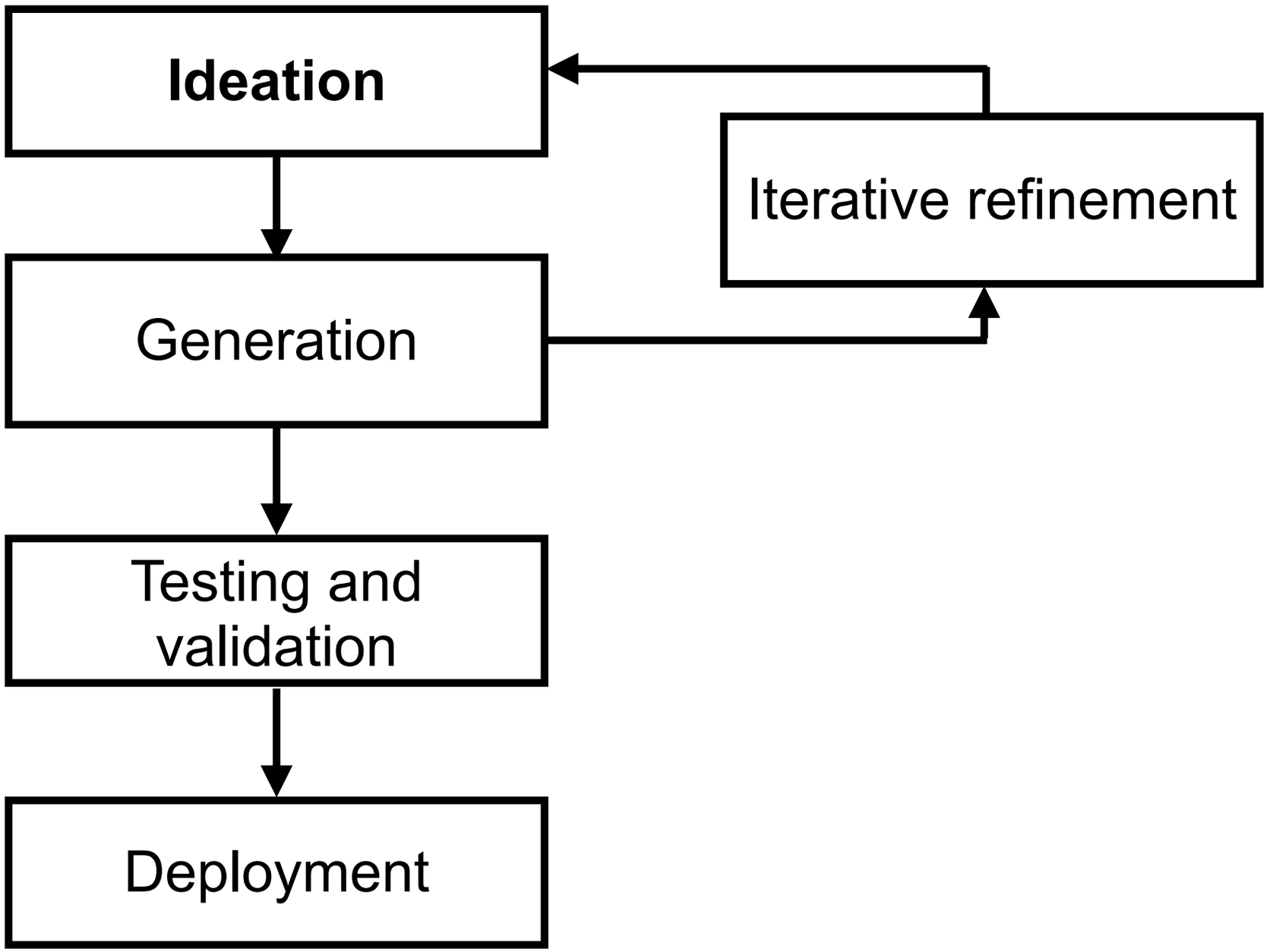
Code level workflow

Conversational loop to create a specific code



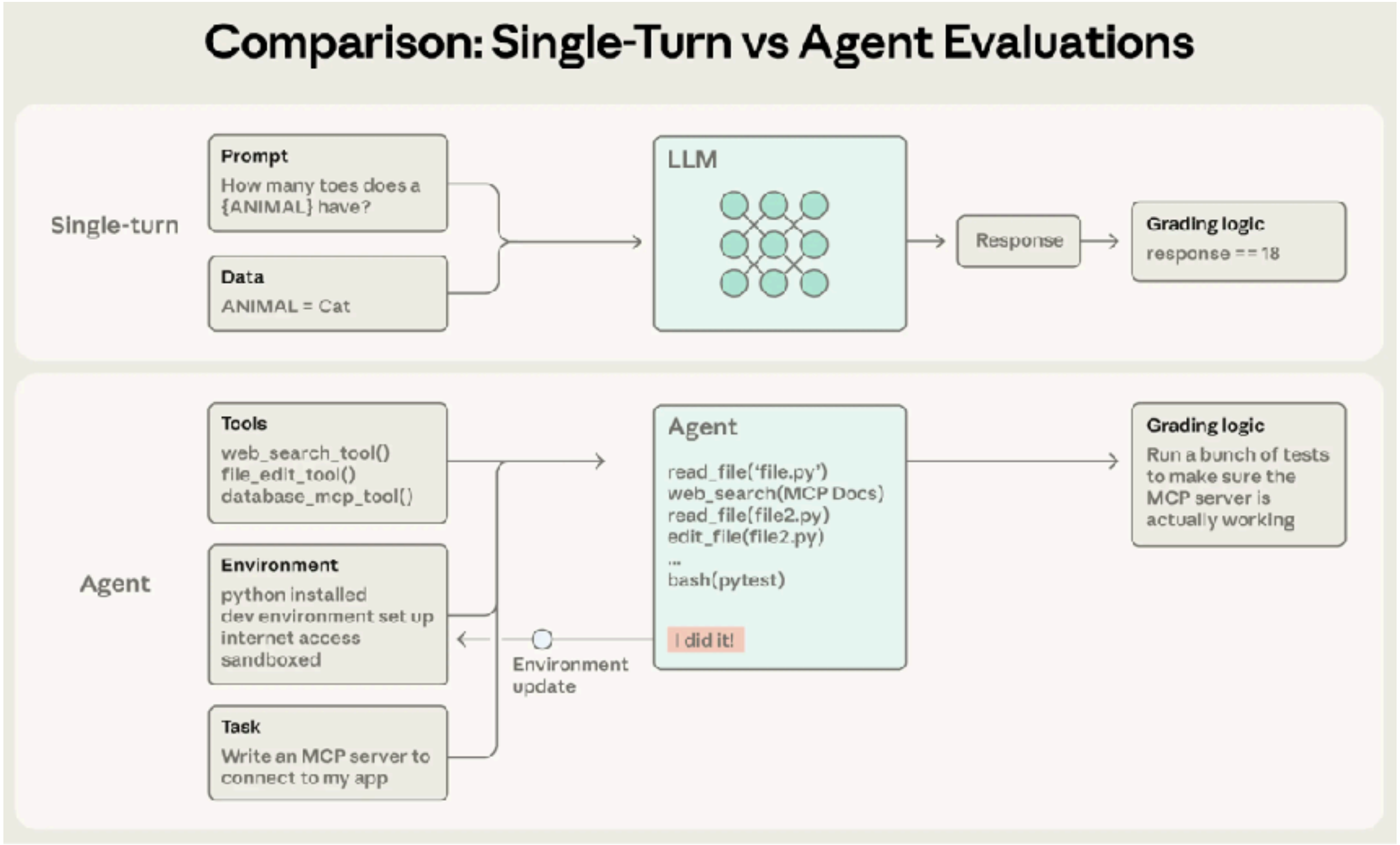
Application level workflow

Talking about high-level idea from concept to deployment



AI Agent for Coding

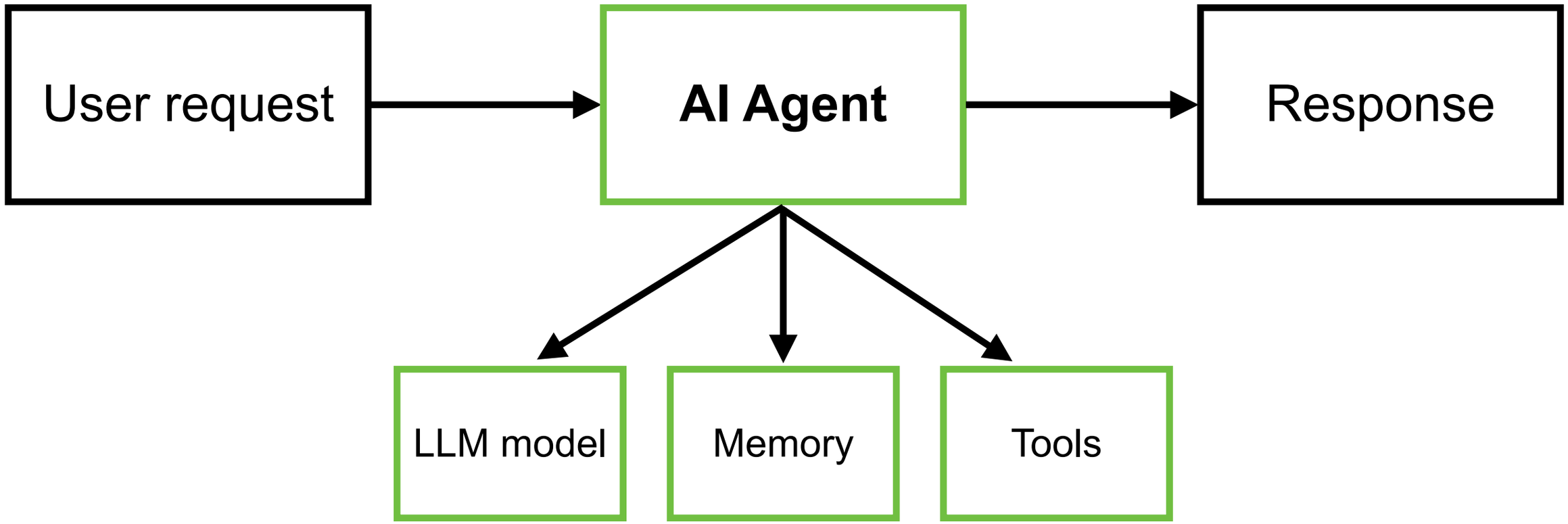
AI Agent for Coding



https://www.anthropic.com/engineering/demystifying-evals-for-ai-agents

AI Agent for Coding

Simple AI Agent



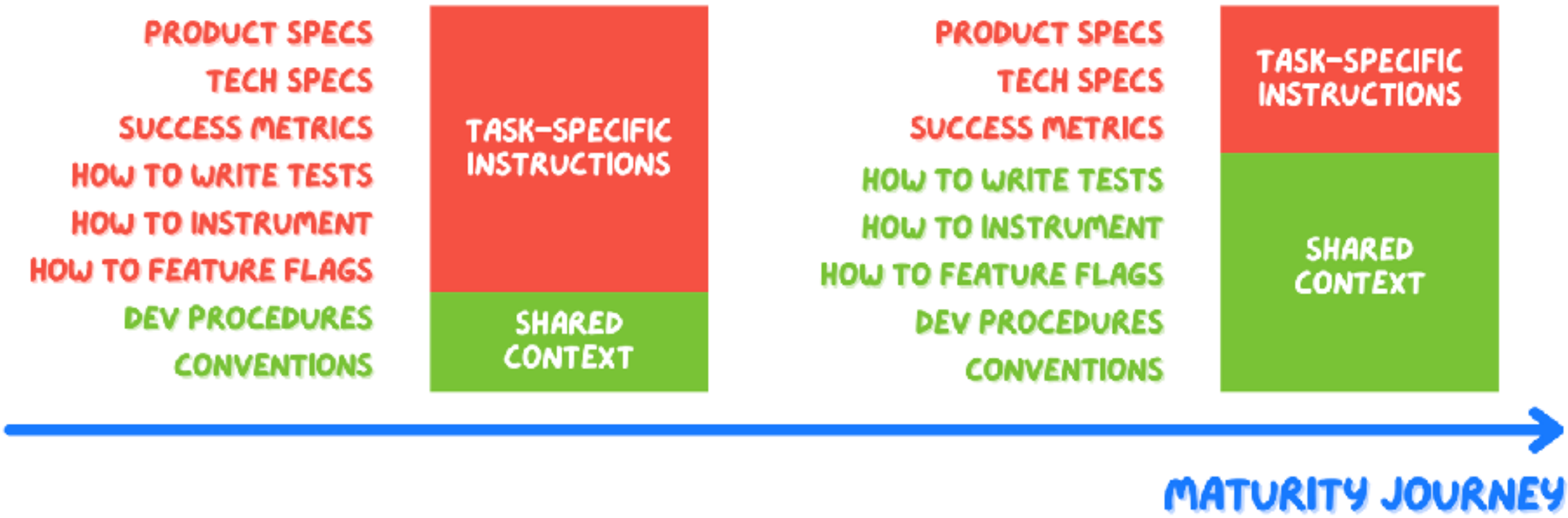
How to manage context or knowledge for Agent ?

Types of Knowledge/Context ?

Shared context	Task context
Static Knowledge	Dynamic Knowledge
Prompt engineering	Memory
Global Instructions	Graph/Vector database
AGENTS.md	MCP tools
CLUDE.md	Specific Instructions
	Sub-agent
	Agent SKILLs

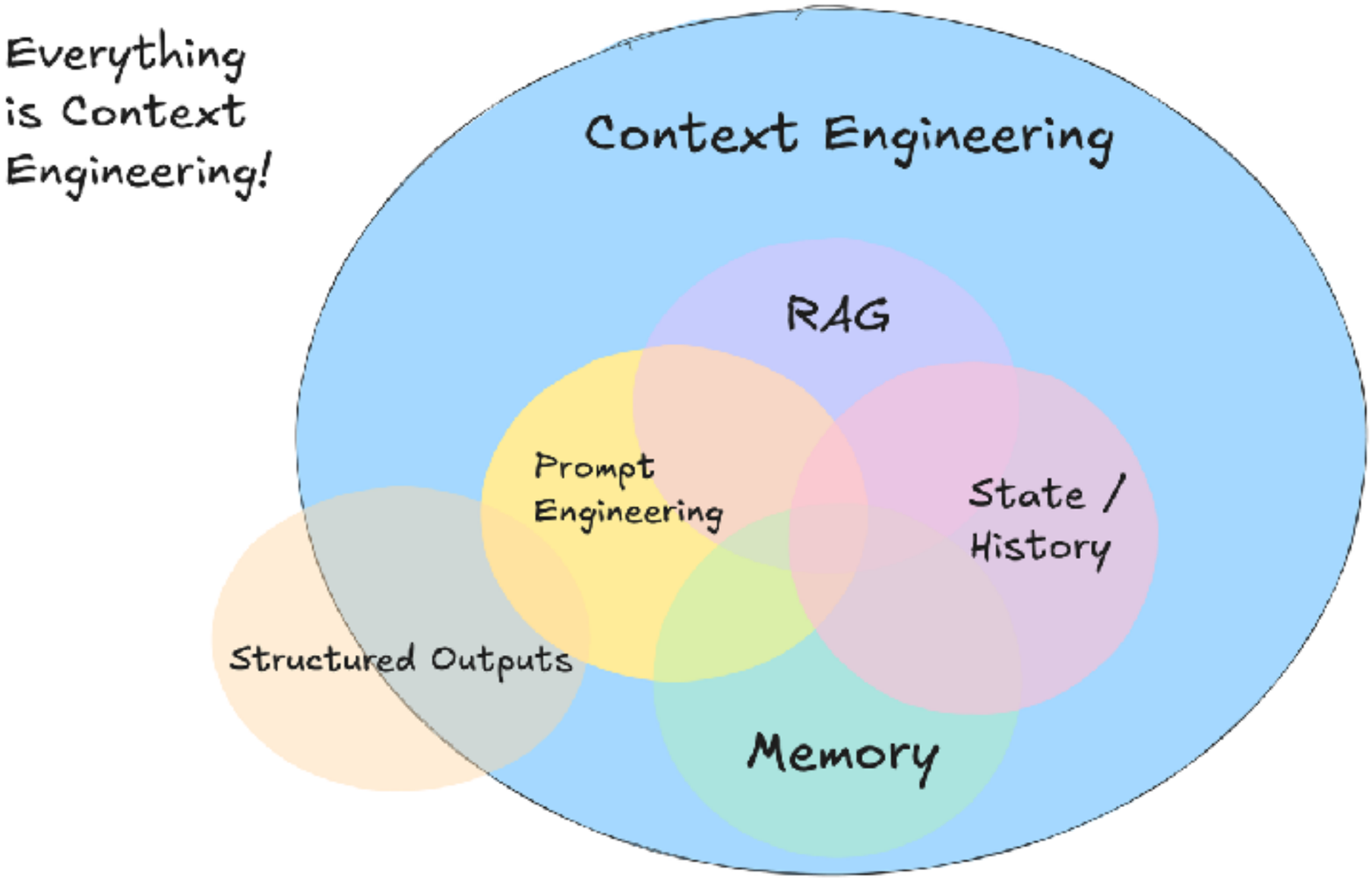
Context engineering ?

Types of Knowledge/Context ?



https://refactoring.fm/p/context-capabilities-and-tech-hubs

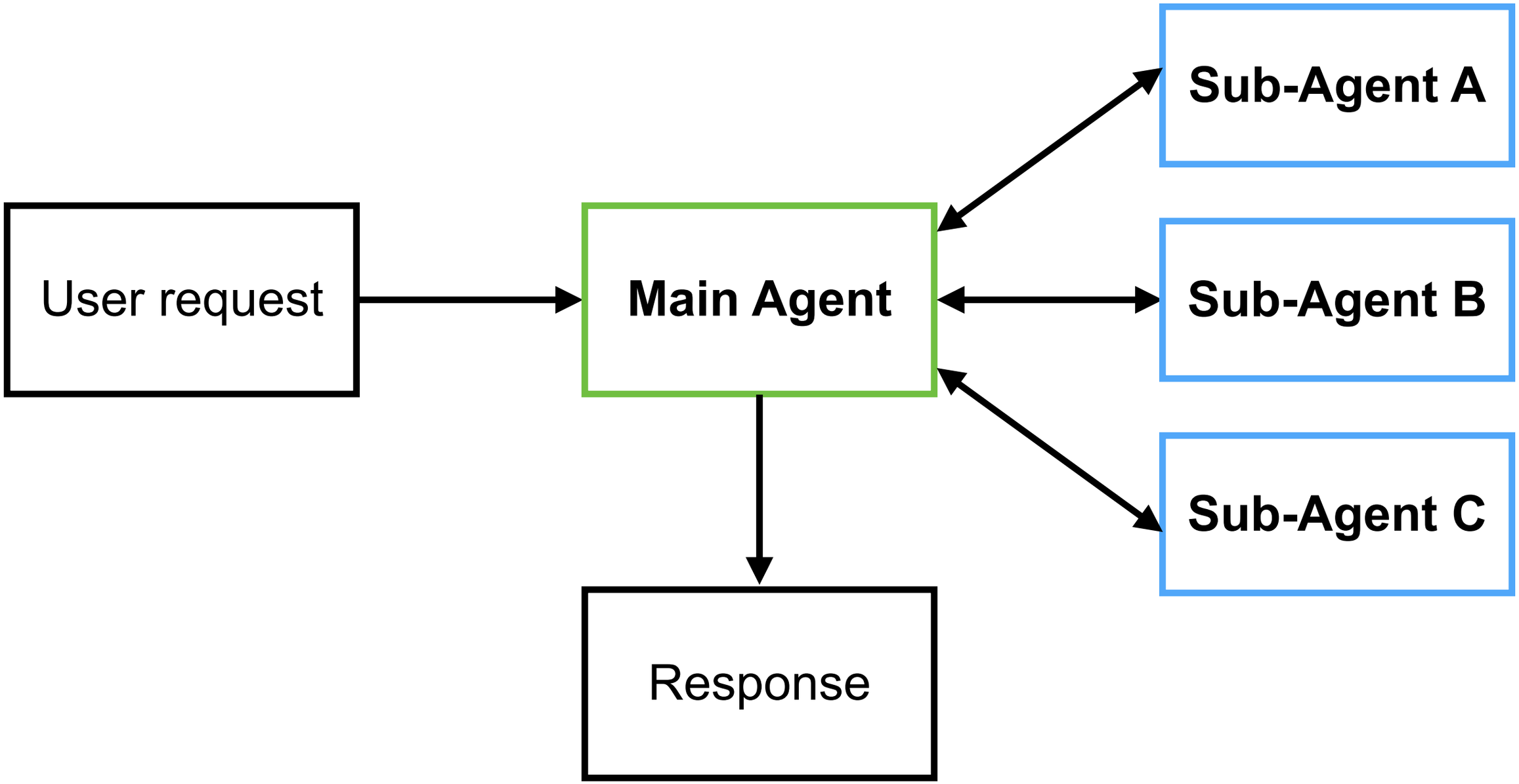
Context Engineering



https://www.promptingguide.ai/guides/context-engineering-guide

Multi AI Agents !!

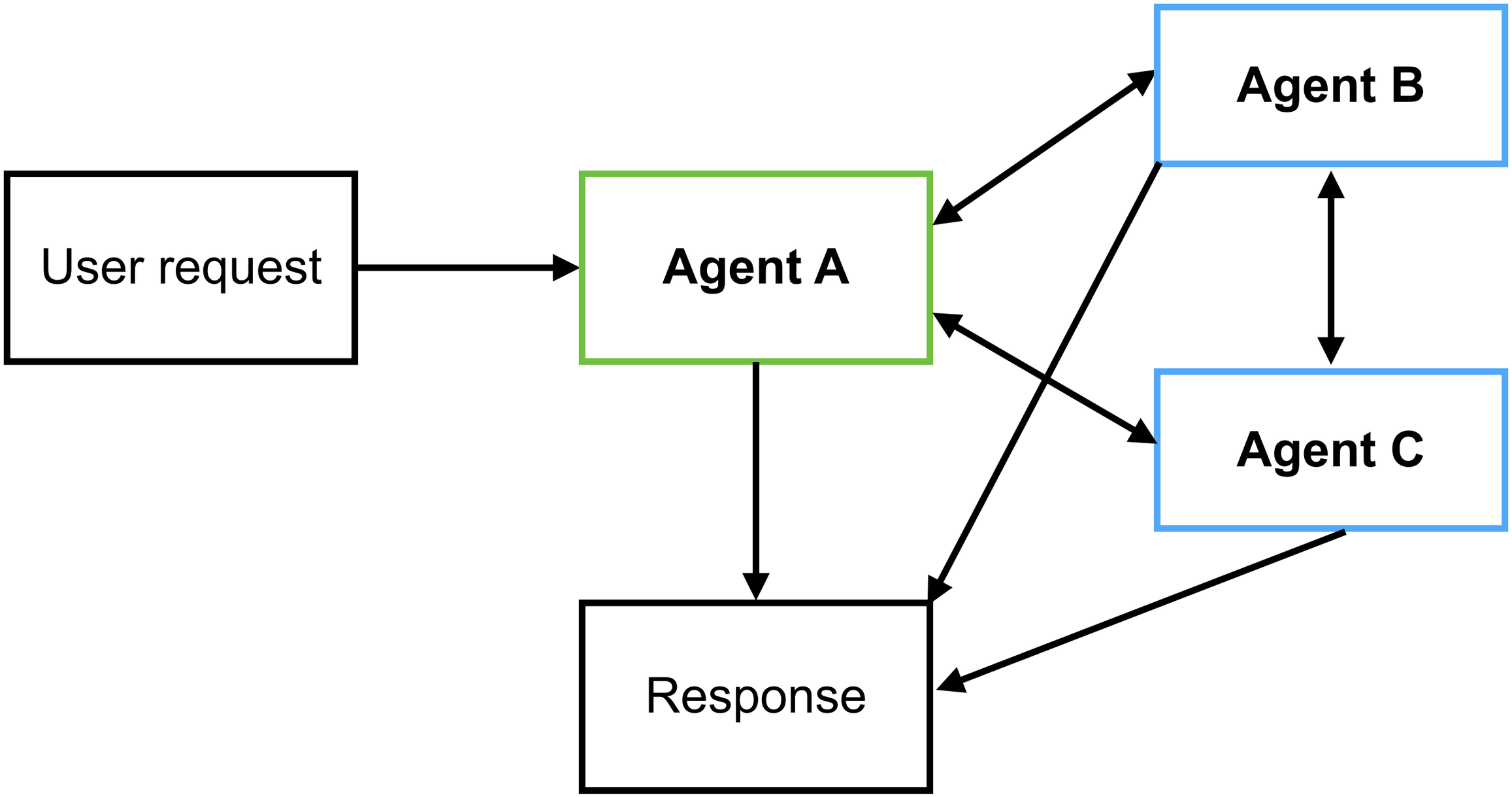
Sub-agent with **centralized** orchestration



https://www.blog.langchain.com/choosing-the-right-multi-agent-architecture/

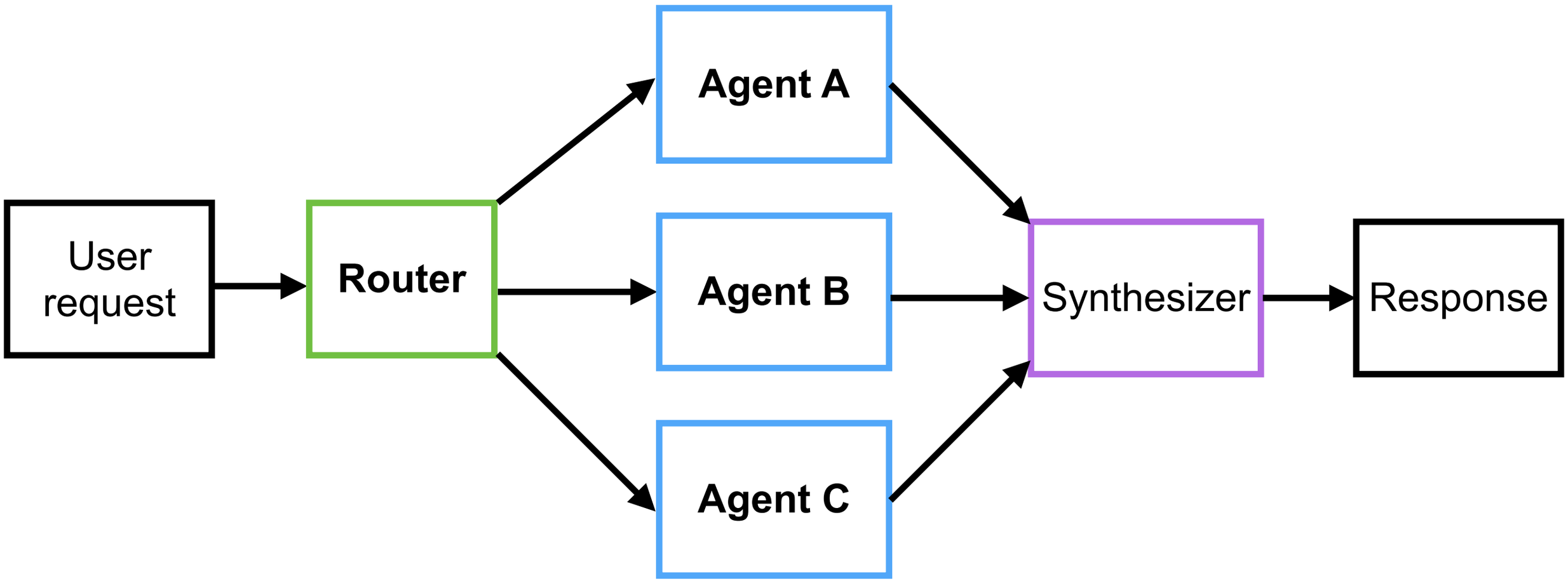
Multi AI Agents !!

State-driven transitions based-on conversation context



Multi AI Agents !!

Router and parallel run



Prompt vs Agent Skills ?

Command

https://agentskills.io/

Agent Skills

Moving from a paradigm of
“prompt” to “programming by instruction”

Agent loads specialized prompts and knowledge on-demand

Specialized task

Reduce repetition

Compose capabilities

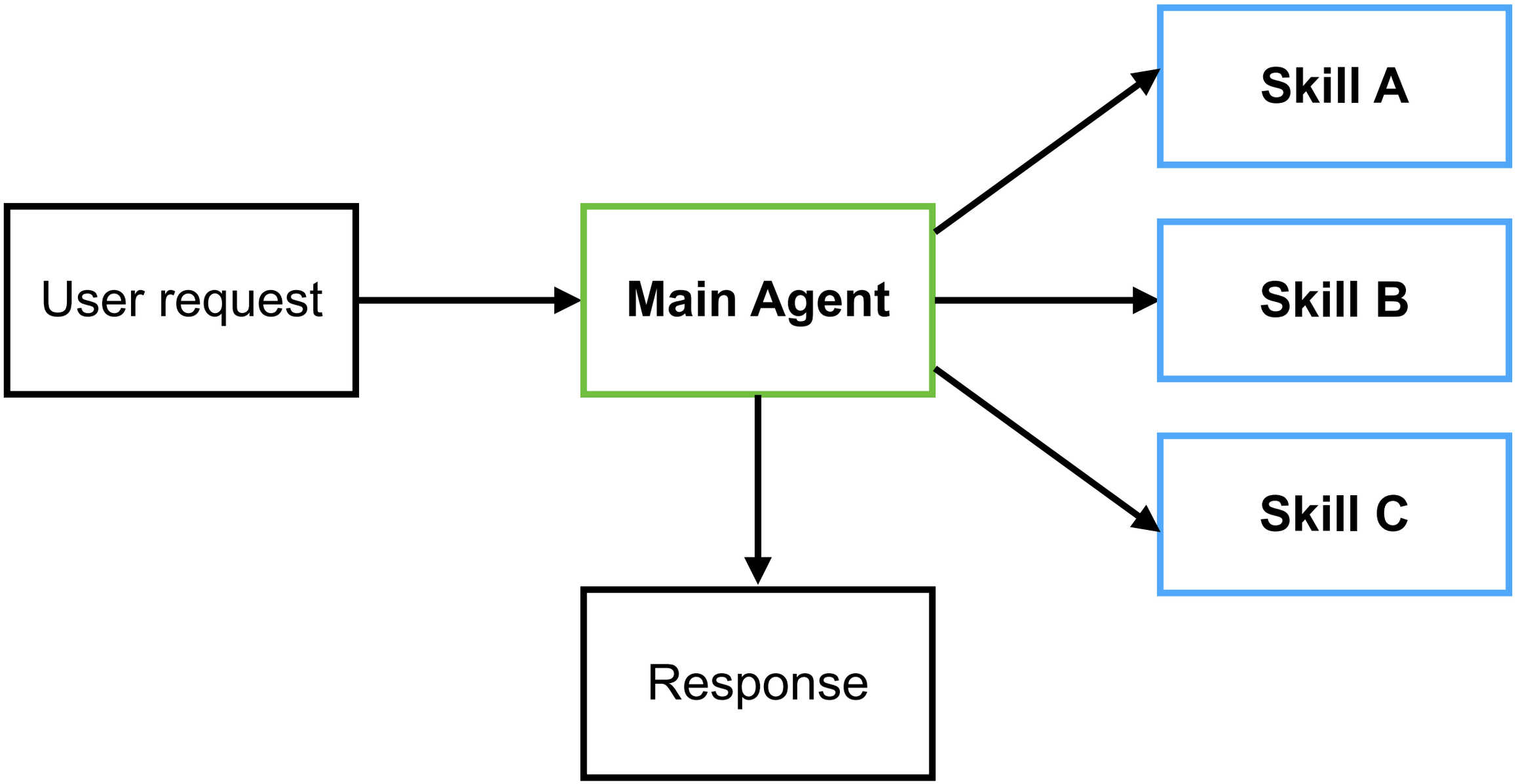
Efficient loading

Interoperability

https://agentskills.io/

Agent with Skills

Load skills on-demand from context



https://www.blog.langchain.com/choosing-the-right-multi-agent-architecture/

Structure of Agent Skills

Level 1
Metadata

Level 2
Instructions

Level 3
Resources and code

https://agentskills.io/

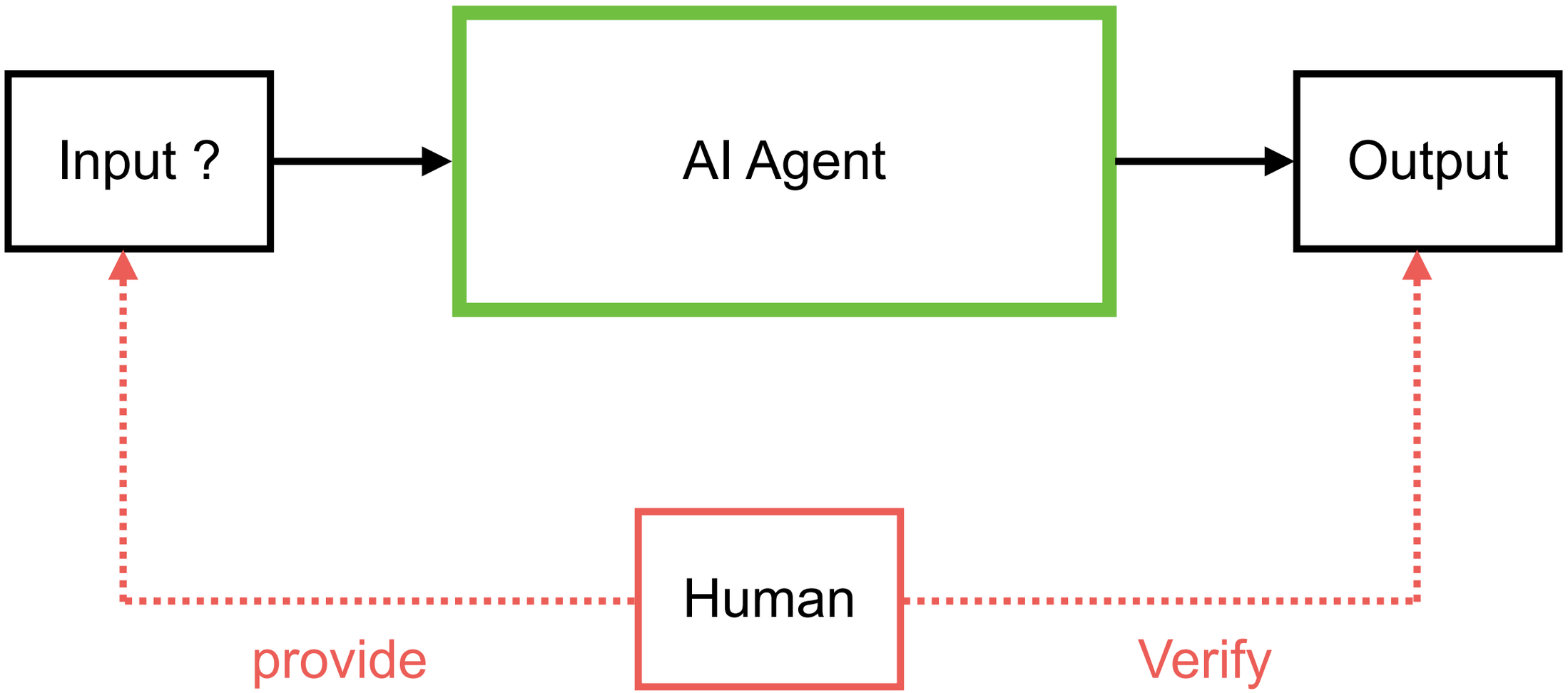
Prompt vs Skill

Features	Prompt	Agent Skills
Persistence	Ephemeral (chat-specific)	Persistent (Useable cross conversation)
Activation	Manual by user	Automatic (Triggered by context)
Structure	Unstructured text/ instruction	Structured markdown File system-based
Context load	Full instruction	Load only when needed
Token cost	Higher (Repeated usage)	Lower (Load on-demand)
Use case	One-time, creative quick query	Repeatable workflows Specialized tasks

https://agentskills.io/

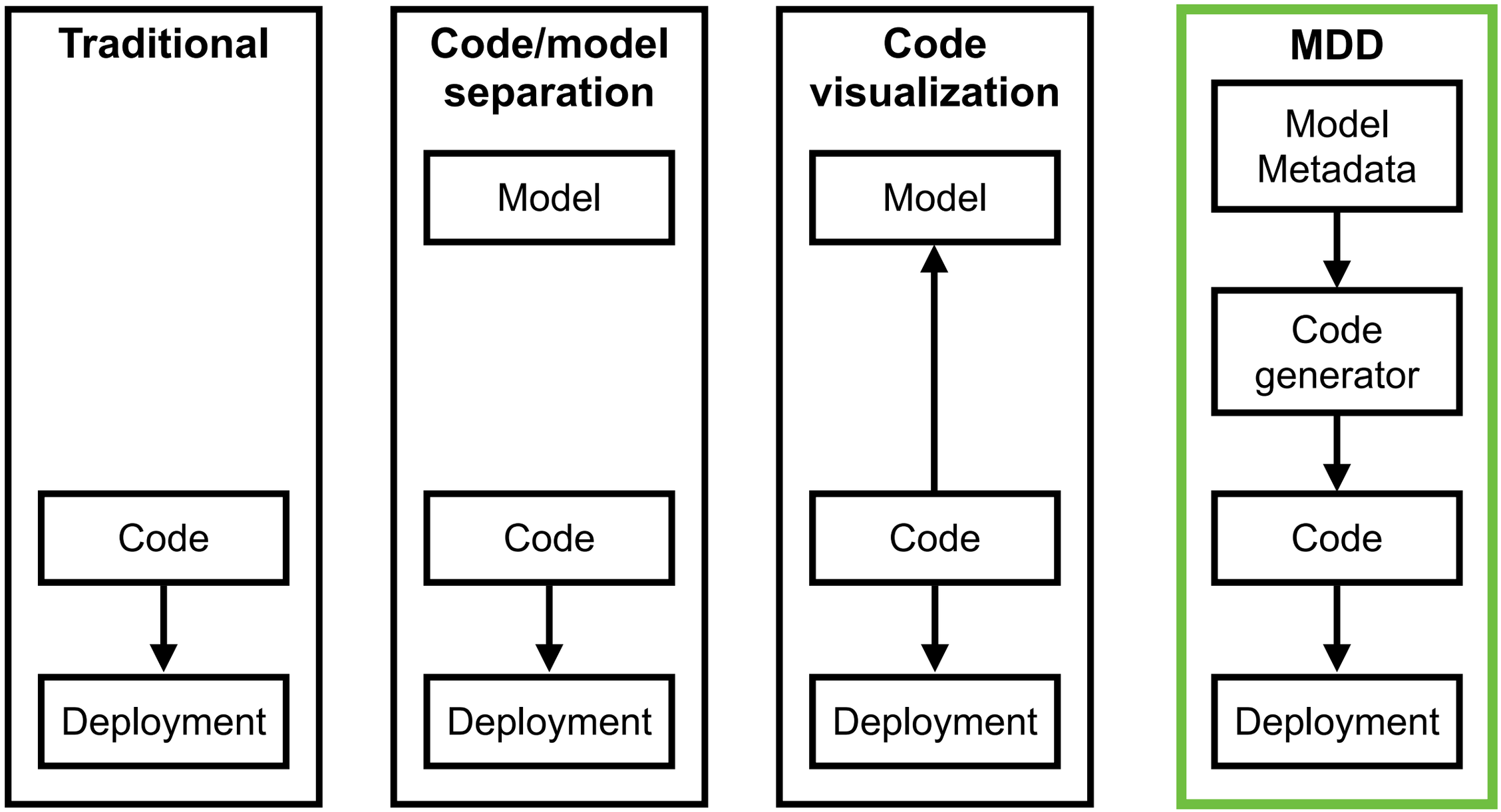
How to provide inputs ?

How to provide inputs ?



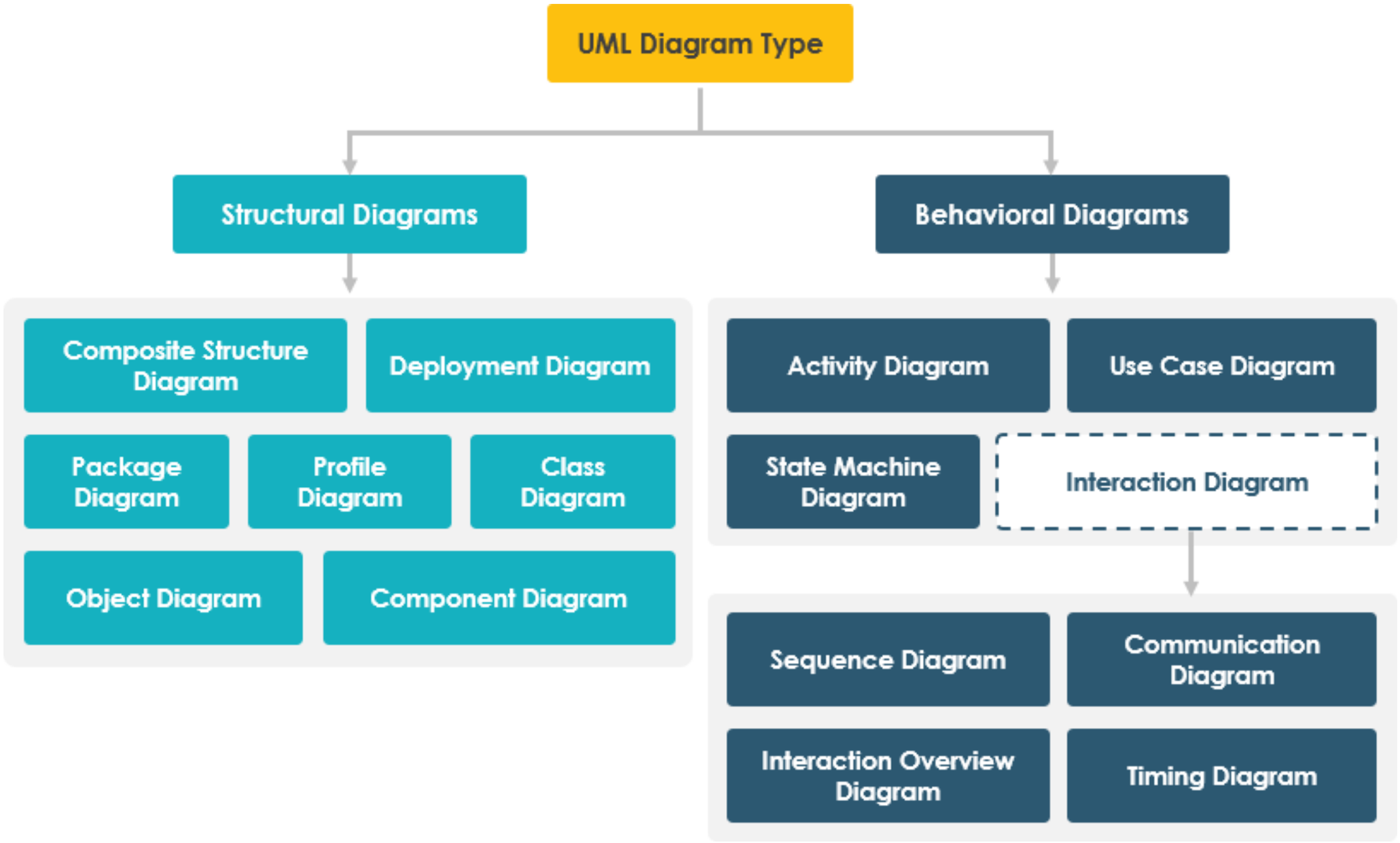
Model-Driven Development (MDD)

Traditional coding to MDD



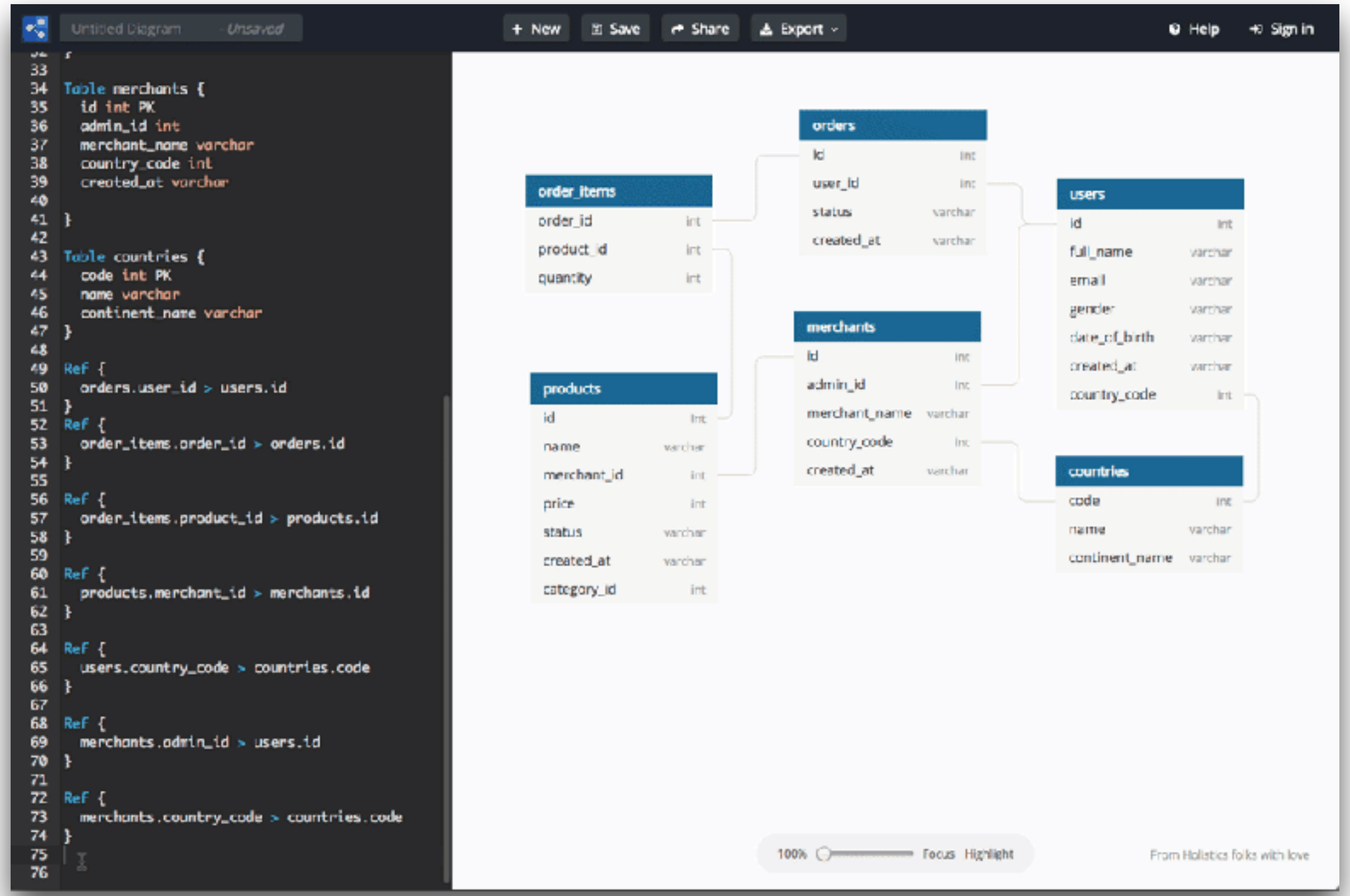
https://arxiv.org/abs/2410.18489

UML Diagrams !!



https://www.visual-paradigm.com/guide/uml-unified-modeling-language/behavior-vs-structural-diagram/

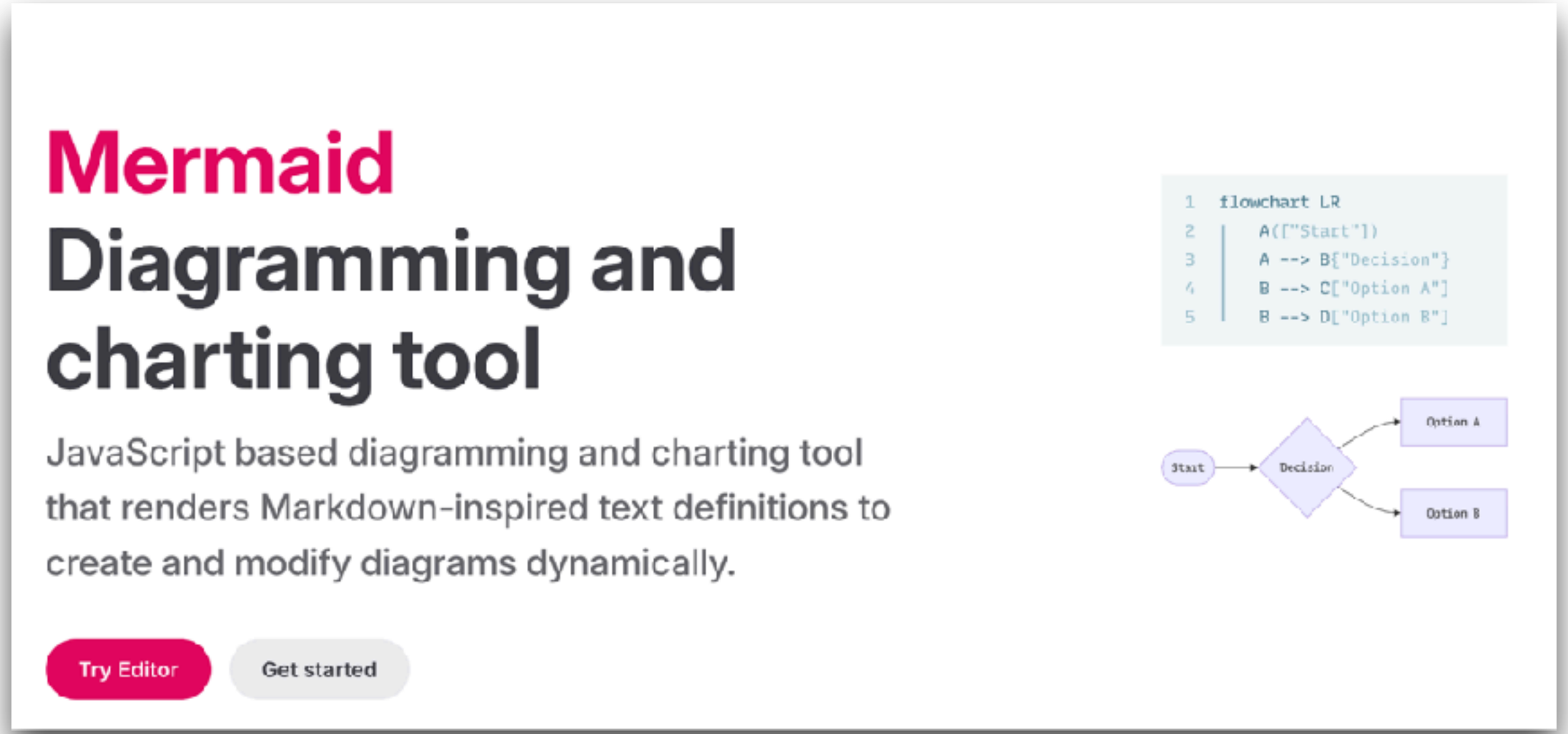
ER Diagrams for Database !!



https://dbml.dbdiagram.io/home/

Mermaid Diagram

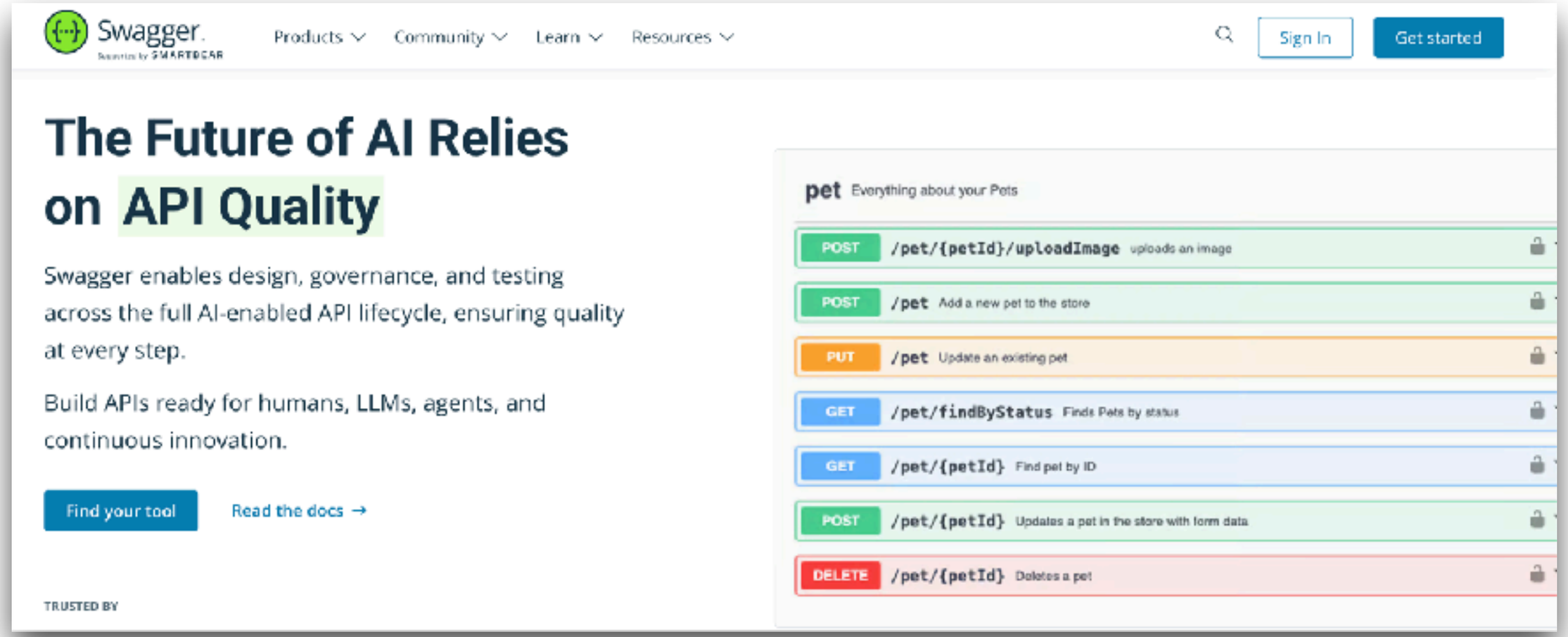
Diagram as a Code (AI-friendly)



https://mermaid.js.org/

Swagger or OpenAPI

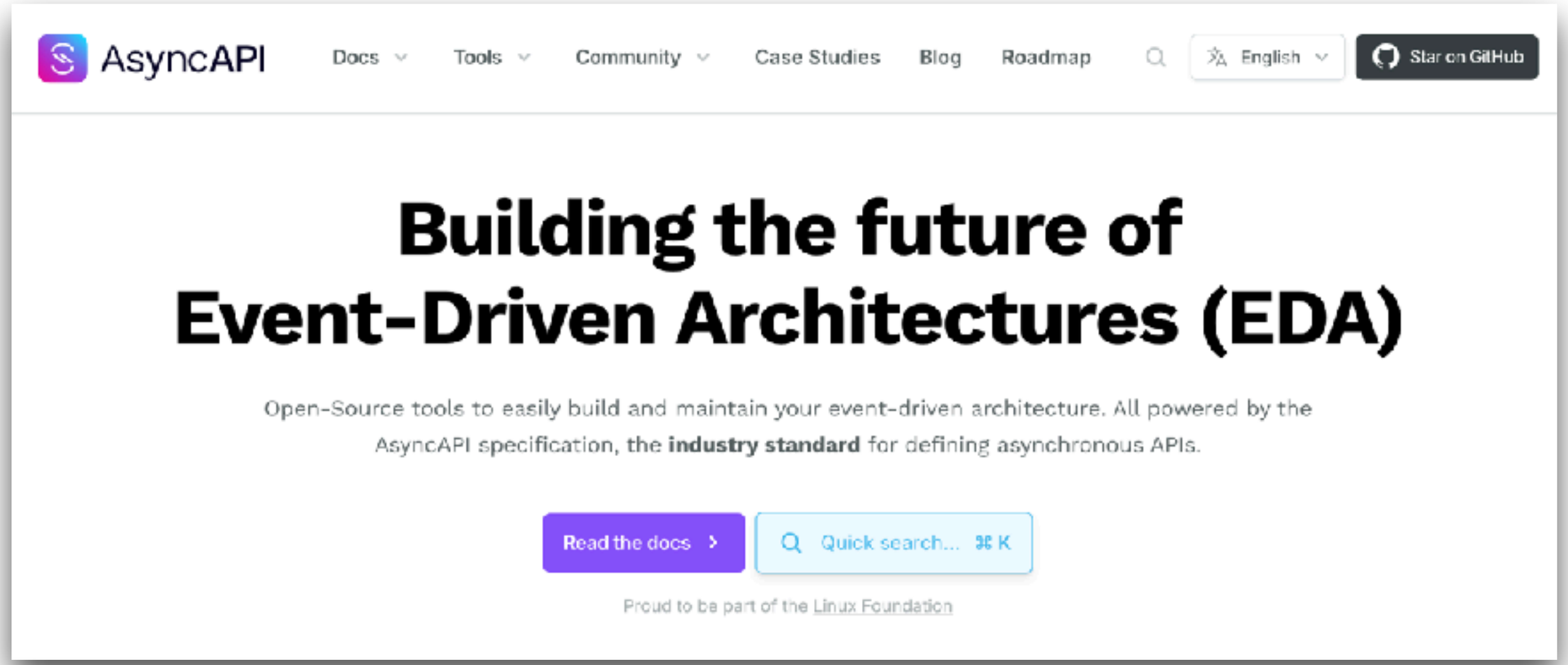
Standardized specification for describe REST APIs



https://swagger.io/

AsyncAPI

Standardized specification for describe asynchronous and event-driven APIs (Kafka, AMQP, WebSocket)



https://www.asyncapi.com/

JSONSchema

Declarative language used to annotate
and validate the structure, constraints and data type of
JSON documents

Data validation	Documentation	Automated testing

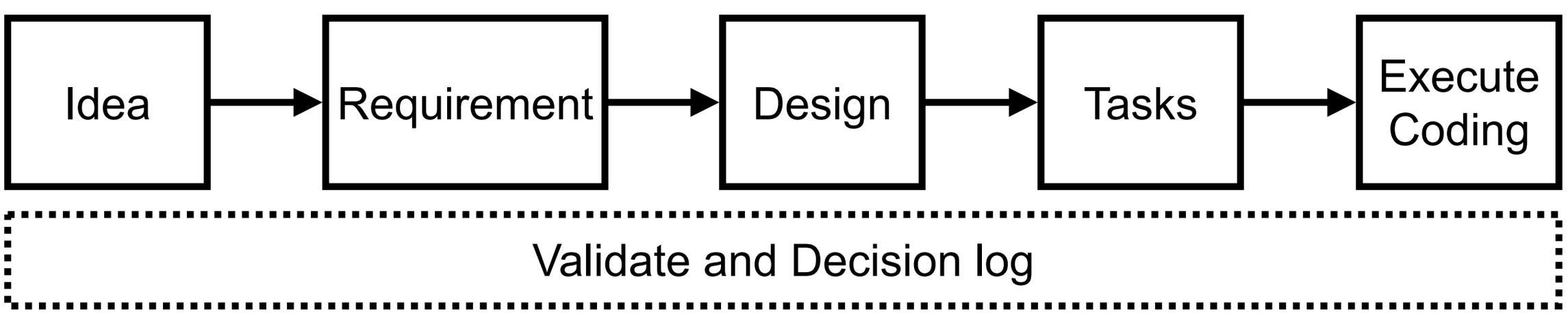
https://json-schema.org/

Specification-Driven Development (SDD)

SSD ?

Specification or Documentation-First

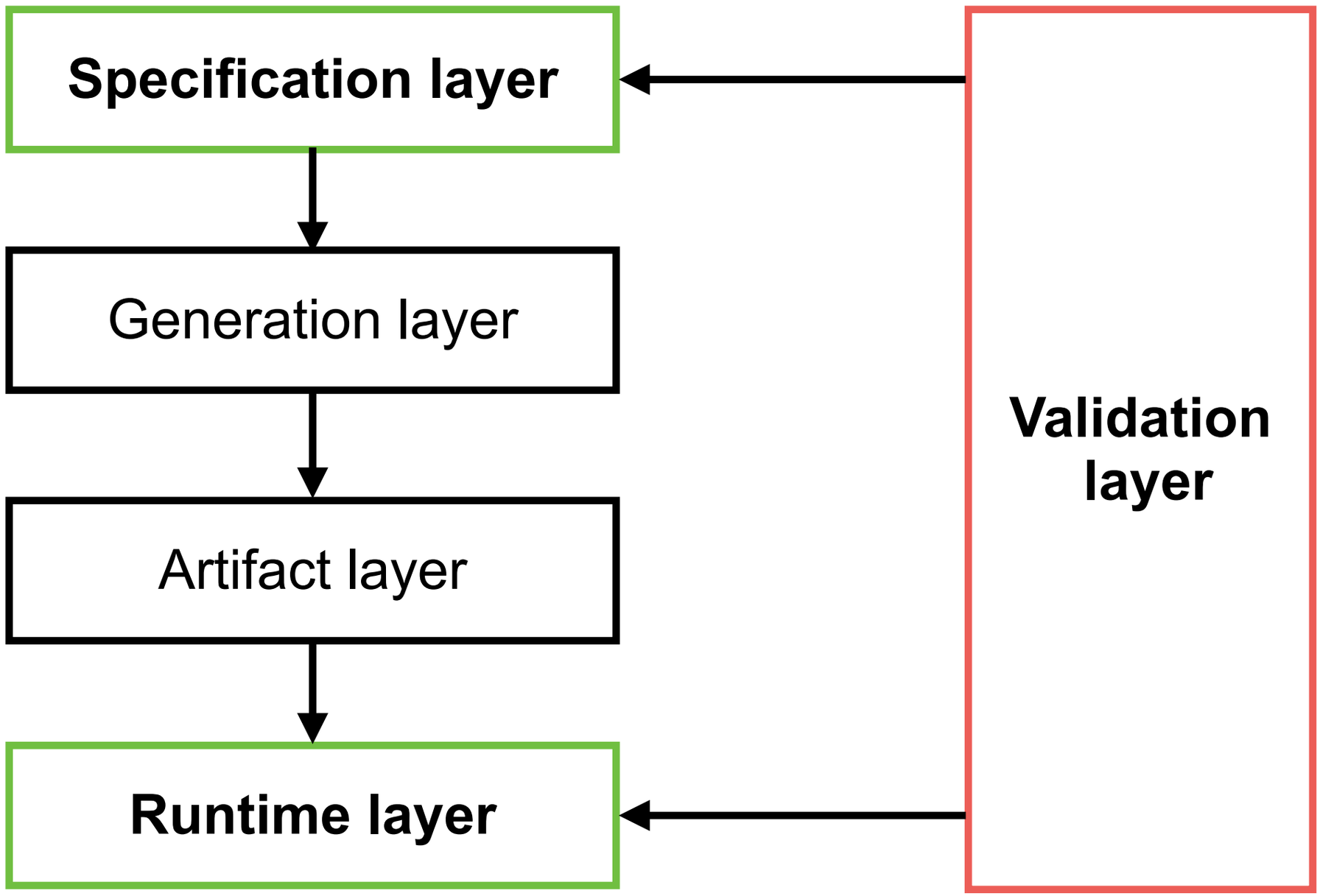
Modern software development approach where detailed, structure specifications are created before writing code



Types of Specification ?

Interface contracts (UI, API)
Data schemas
Validation rules
Data/business flows
Security policy and constraints
Versioning semantics
Resources and performance constraints

SSD Architecture



https://www.infoq.com/articles/spec-driven-development

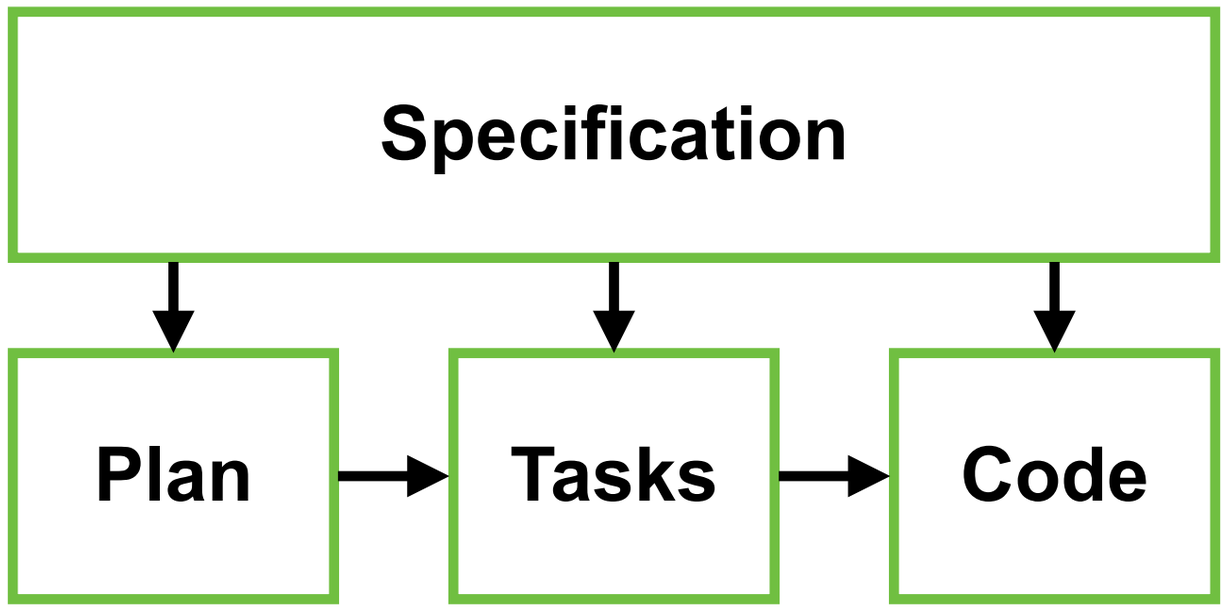
Tools ?

GitHub Spec-kit

Open Spec

Kiro.dev

Tessl



MDD + SDD == Better result

Try by yourself !!

Frontend
Web application

Backend
RESTful API +
Database

Write specification

Coding

Run and Test !!

Frontend
Web application

Backend
RESTful API +
Database

Vercel React Skill

Write spec or feature

Prompt or command

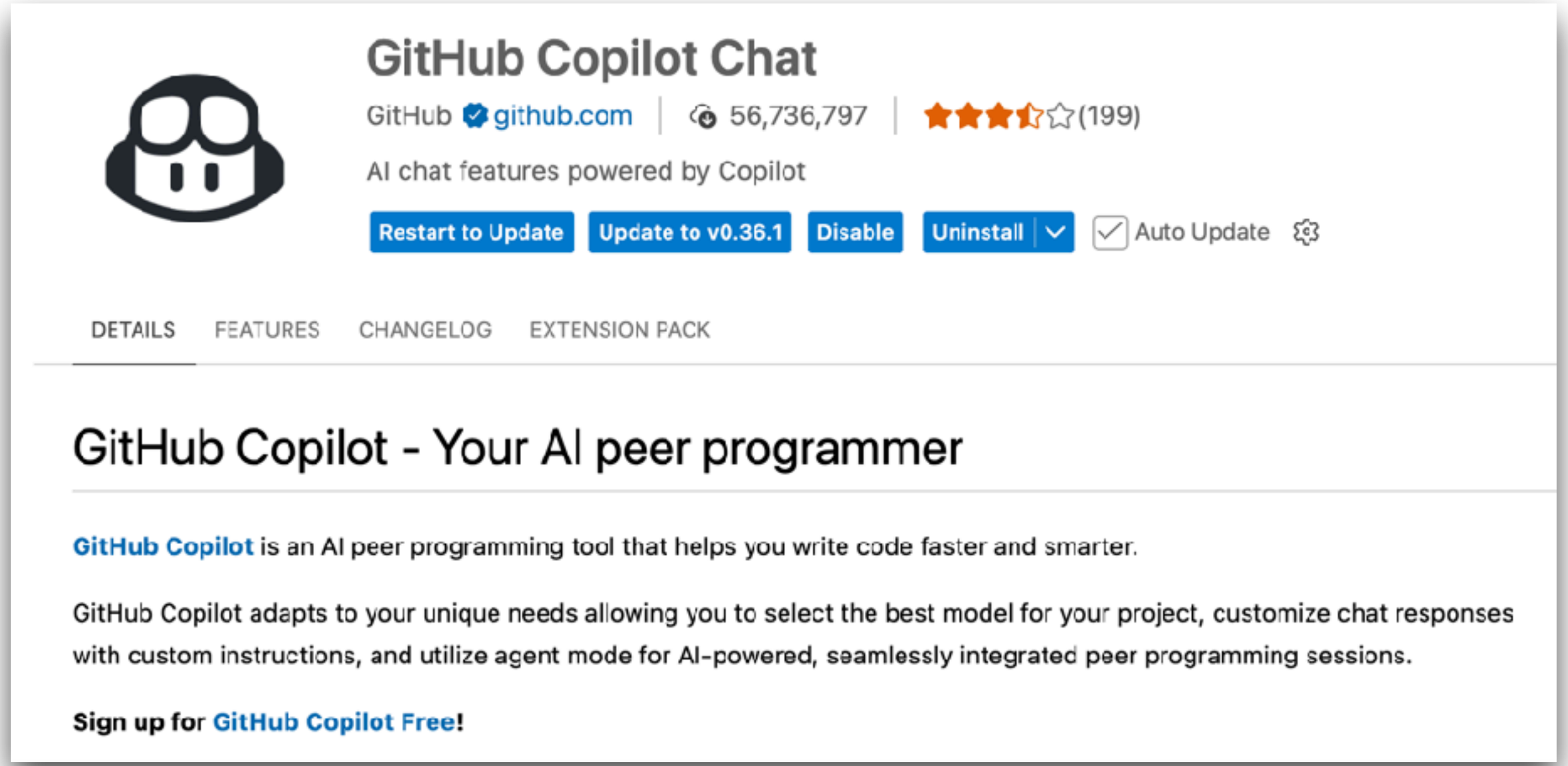
Working with MCP

Frontend Web application	**Backend** RESTful API + Database
Vercel React Skill	Global instruction
Write spec or feature	Write spec or feature
Prompt or command	Prompt or command
Working with MCP	Working with MCP

Workshop with
VS Code + GitHub Copilot Chat

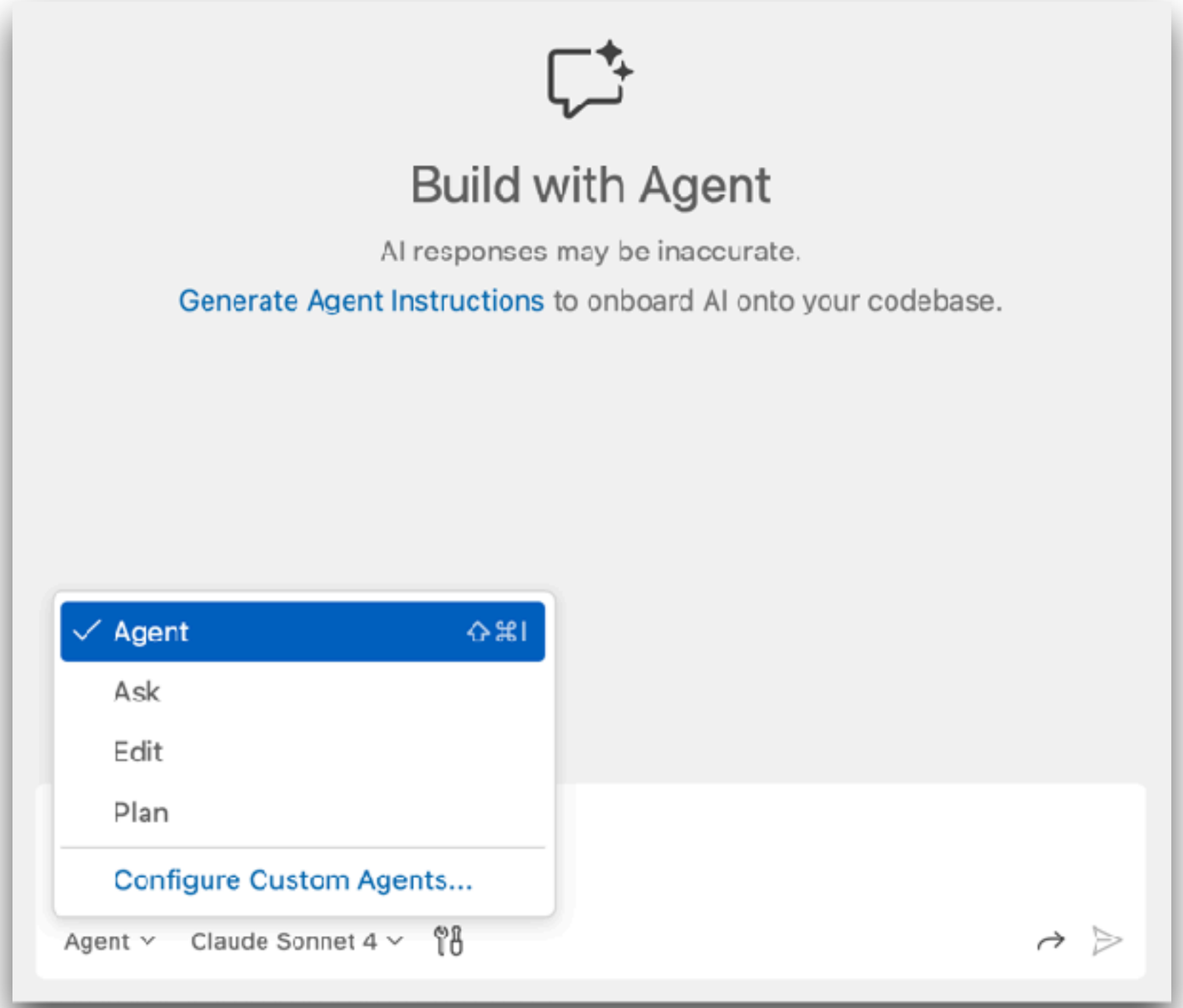
https://code.visualstudio.com/docs/copilot/chat/getting-started-chat

Install extension in VS Code



https://marketplace.visualstudio.com/items?itemName=GitHub.copilot-chat

Hello Copilot Chat in VS Code



Copilot Chat Modes

Agent

Ask

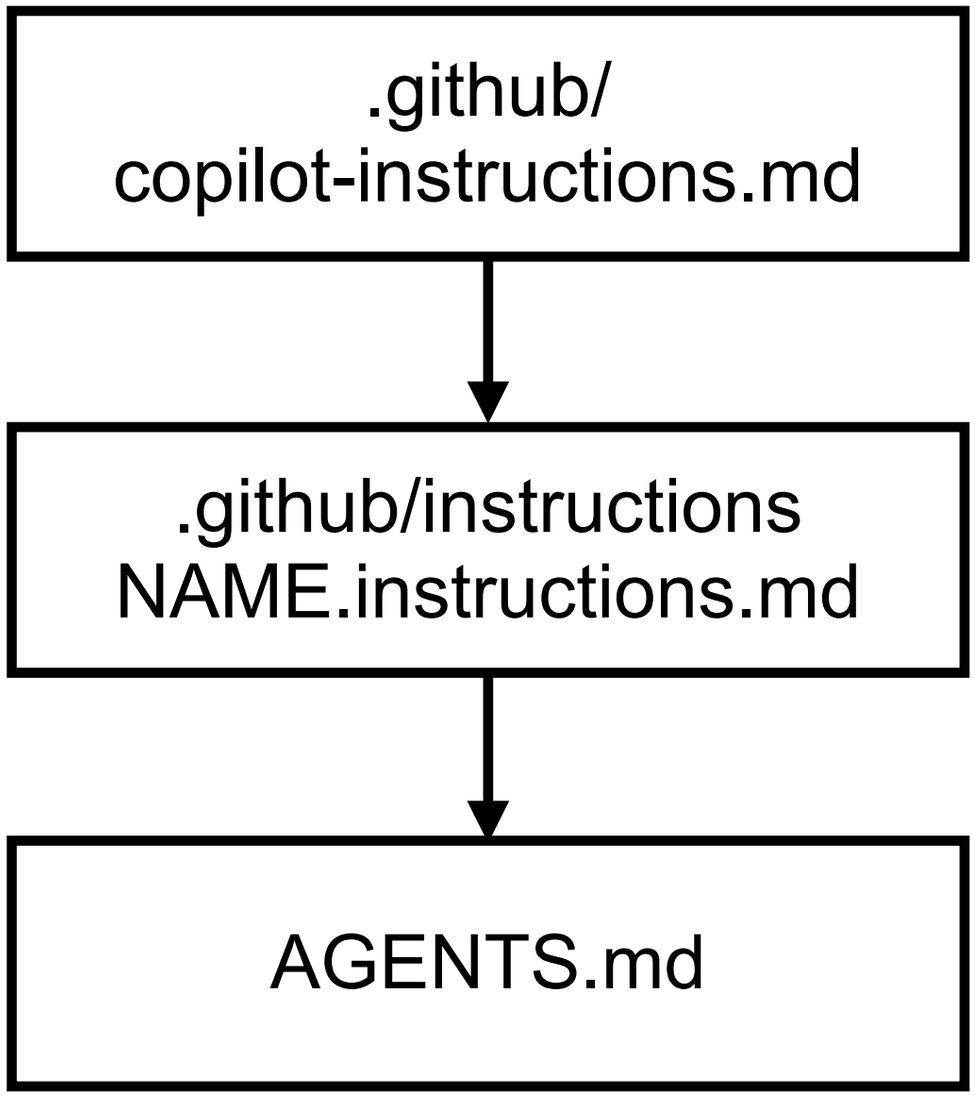
Edit

Plan

Custom Agent

https://code.visualstudio.com/docs/copilot/customization/custom-agents

Custom instructions !!



Disable by default in VS Code

https://docs.github.com/en/copilot/how-tos/configure-custom-instructions/add-repository-instructions

Customization !!

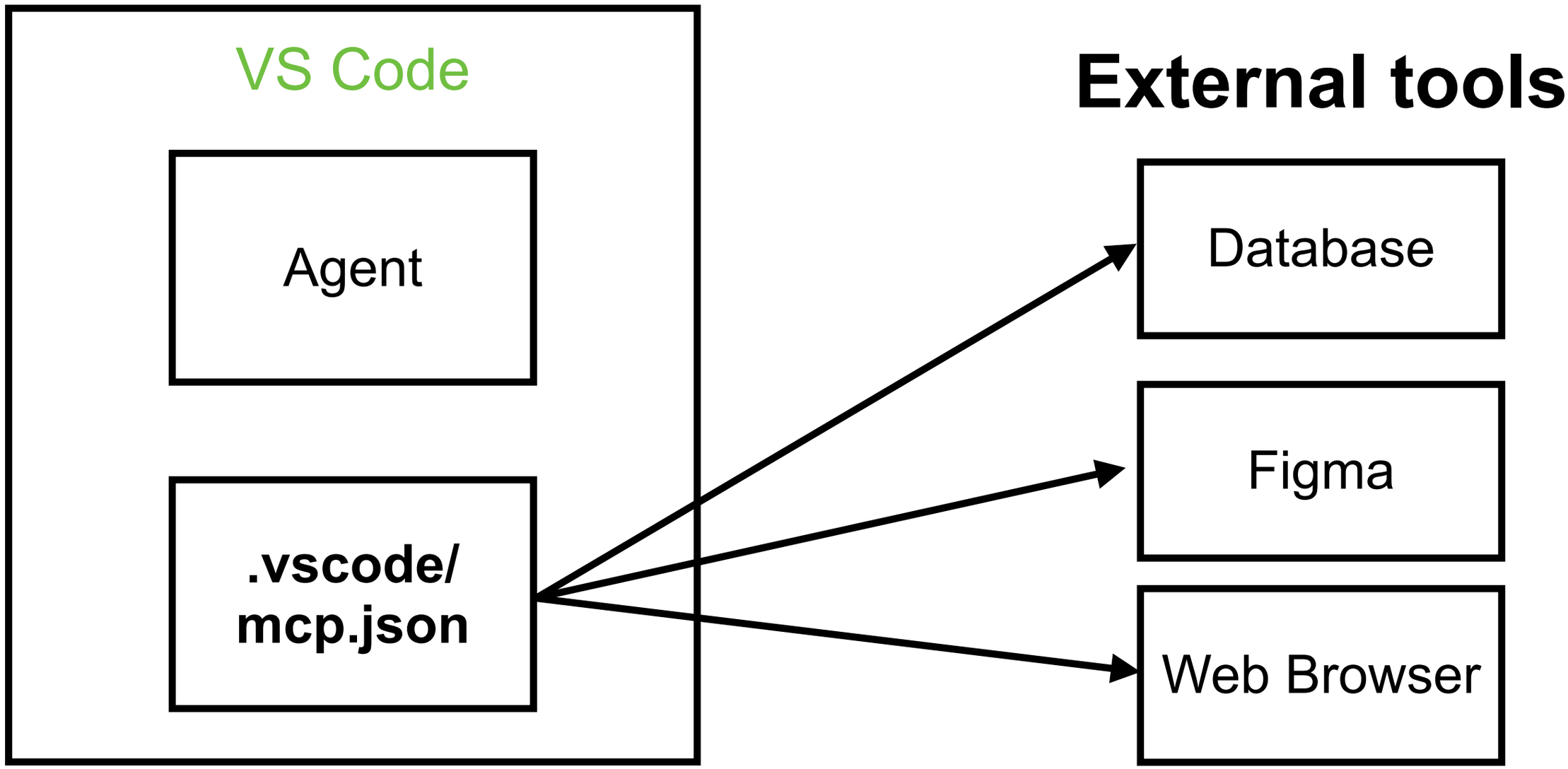
Agent

Instruction

Prompts

Skills

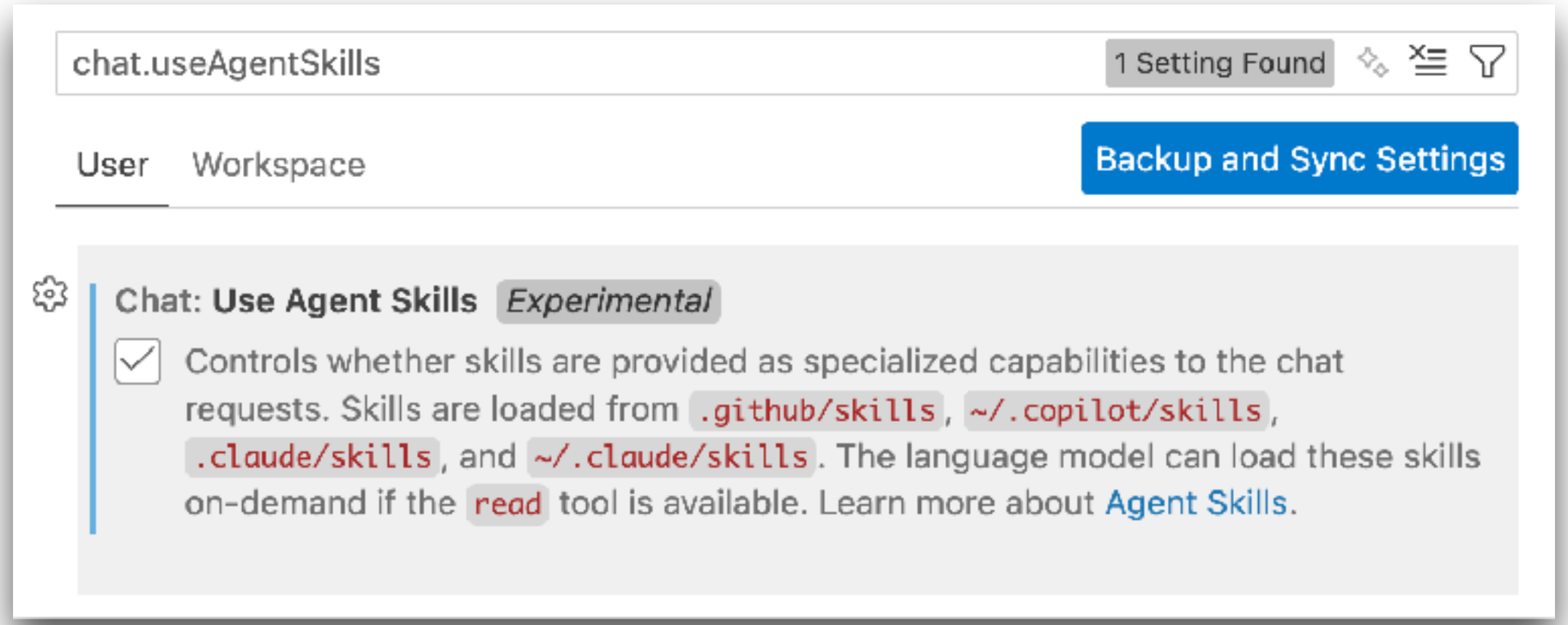
Working with MCP



https://code.visualstudio.com/docs/copilot/customization/custom-agents

Enable Agent Skills in VS Code

Setting => “**chat.useAgentSkills**”
Create skills in “**.github/skills/name/SKILL.md**”



https://code.visualstudio.com/docs/copilot/customization/agent-skills

Q/A