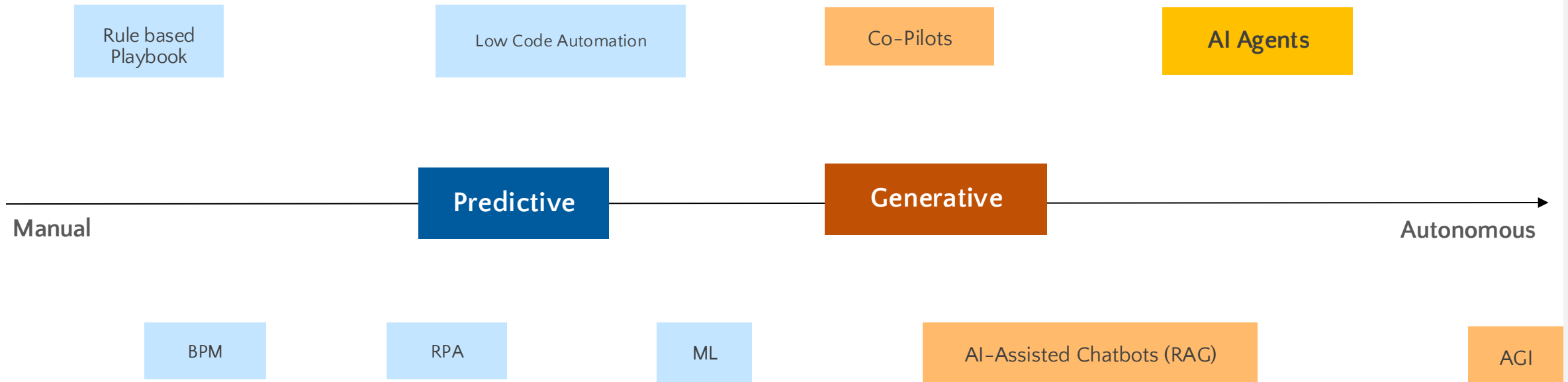# Topic of the day:

Decoding AI Agents and it's capabilities
(The Fundamentals)

The Journey of Automation

What exactly is AI Agent?

- **Technically,** An Agents is an application (software entity) or function that can essentially plan and execute tasks autonomously*.

What makes AI Agents Possible today?

- DATA + Models (Reasoning) + Memory + Tools & APIs + Infrastructure = **AI Agents**

Rule Based	AI Automation	AI Agent

Auto-reply "OOO" to all emails

Uses AI to understand keywords/Context, provides relevant response
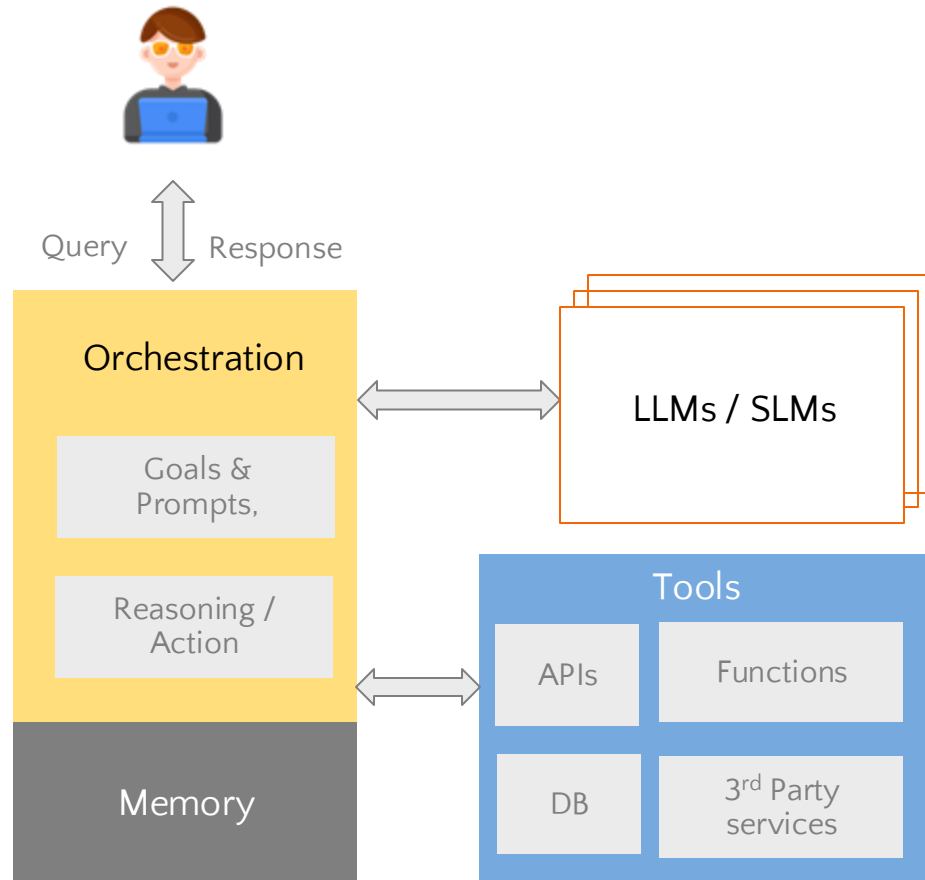
Understands the intent, plans and send personalized responses, takes action!

What Makes an AI Agent?

4 Key Components

- Orchestration
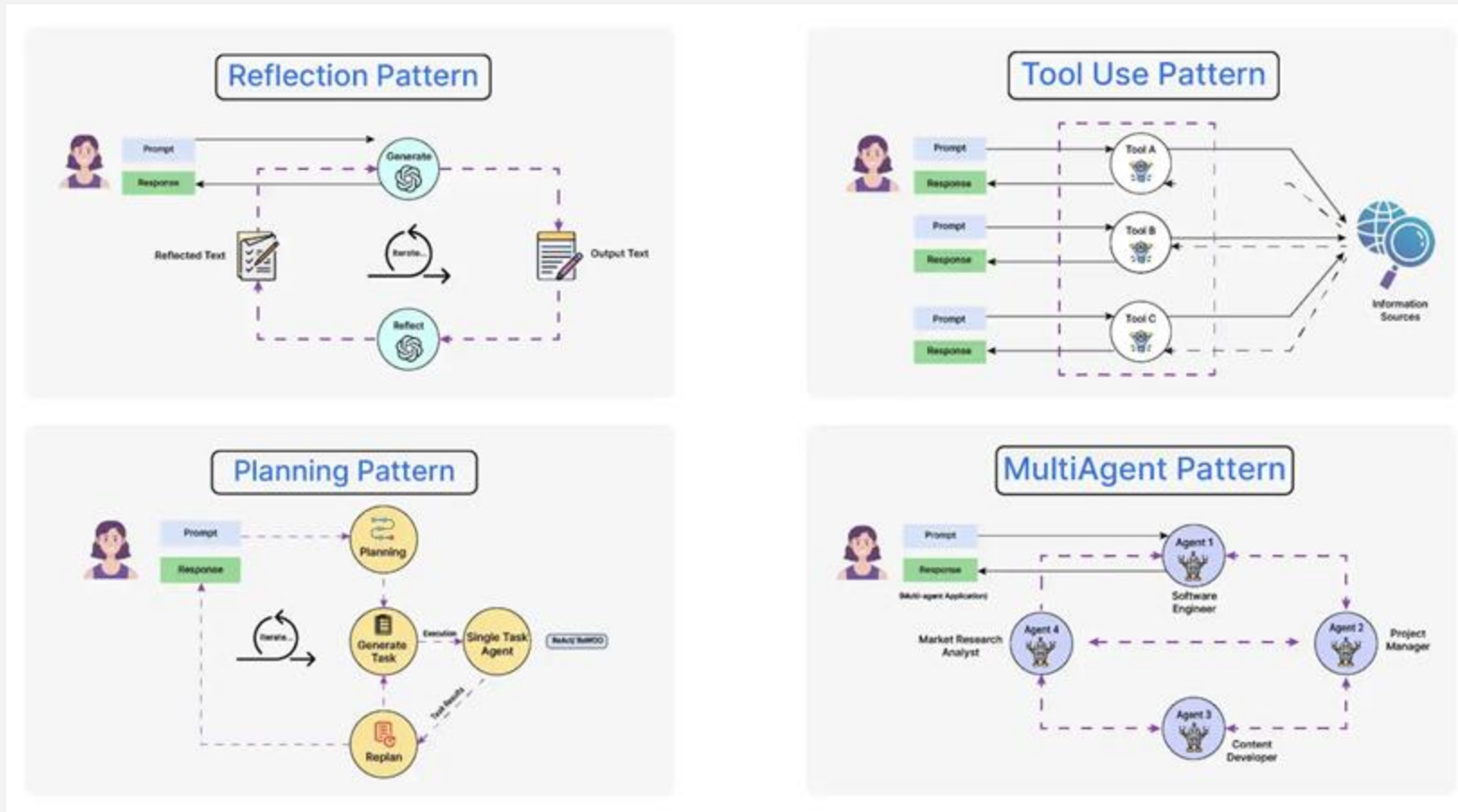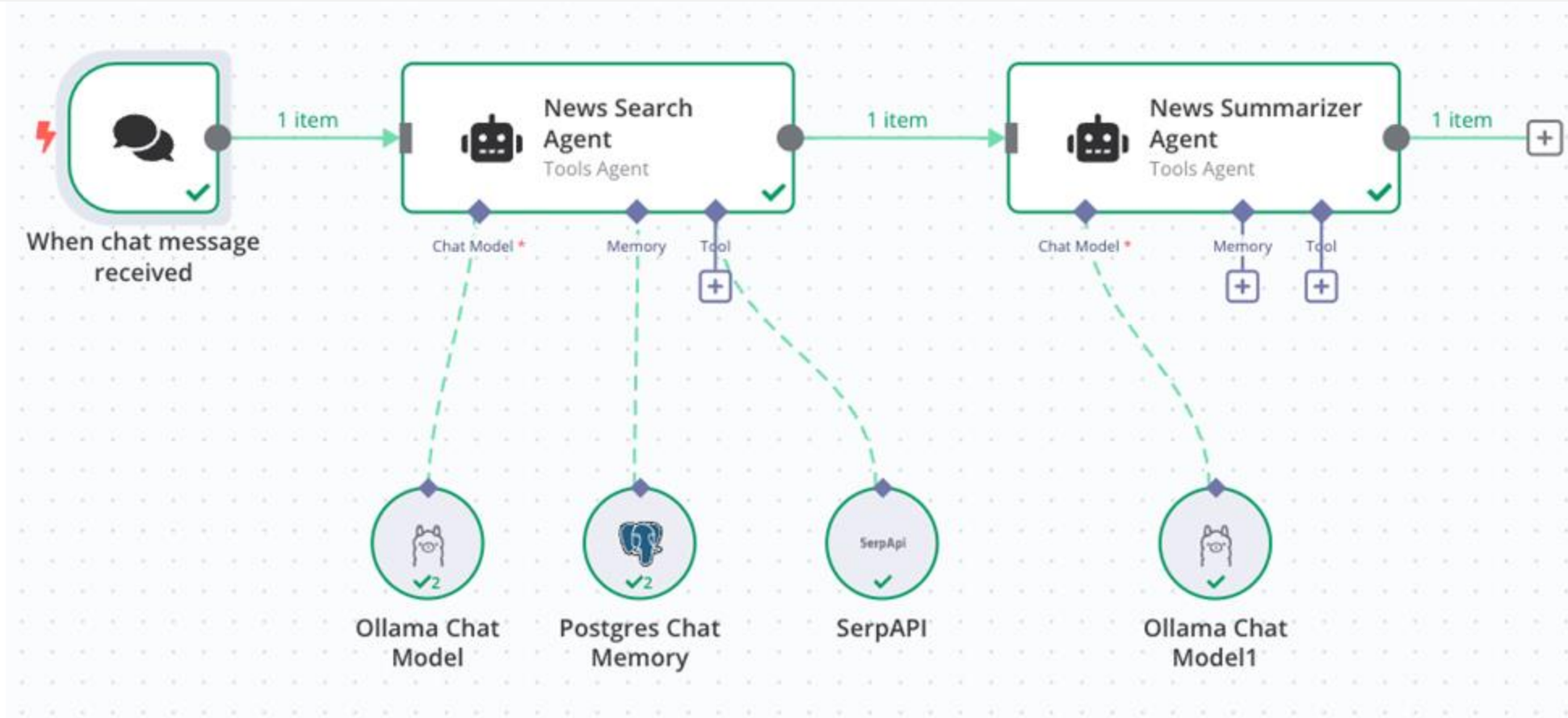- Models (LLMs)
- Tools
- Memory

AI Agent Architecture Patterns

Image credits: Google Images

AI Agent Workflow (Low-Code)

In a Pro-Code

```python
from crewai import Crew

from .agents import EmailFilterAgents
from .tasks import EmailFilterTasks


class EmailFilterCrew():
    def __init__(self):
        agents = EmailFilterAgents()
        self.filter_agent = agents.email_filter_agent()
        self.action_agent = agents.email_action_agent()
        self.writer_agent = agents.email_response_writer()


    def kickoff(self, state):
        print("### Filtering emails")
        tasks = EmailFilterTasks()
        crew = Crew(
            agents=[self.filter_agent, self.action_agent, self.writer_agent],
            tasks=[
                tasks.filter_emails_task(self.filter_agent, self._format_emails(state['emails'])),
                tasks.action_required_emails_task(self.action_agent),
                tasks.draft_responses_task(self.writer_agent)
```

Tools

```python
from textwrap import dedent
from crewai import Agent
from .tools import CreateDraftTool


class EmailFilterAgents():
    def __init__(self):
        self.gmail = GmailToolkit()

    def email_filter_agent(self):
        return Agent(
            role='Senior Email Analyst',
```
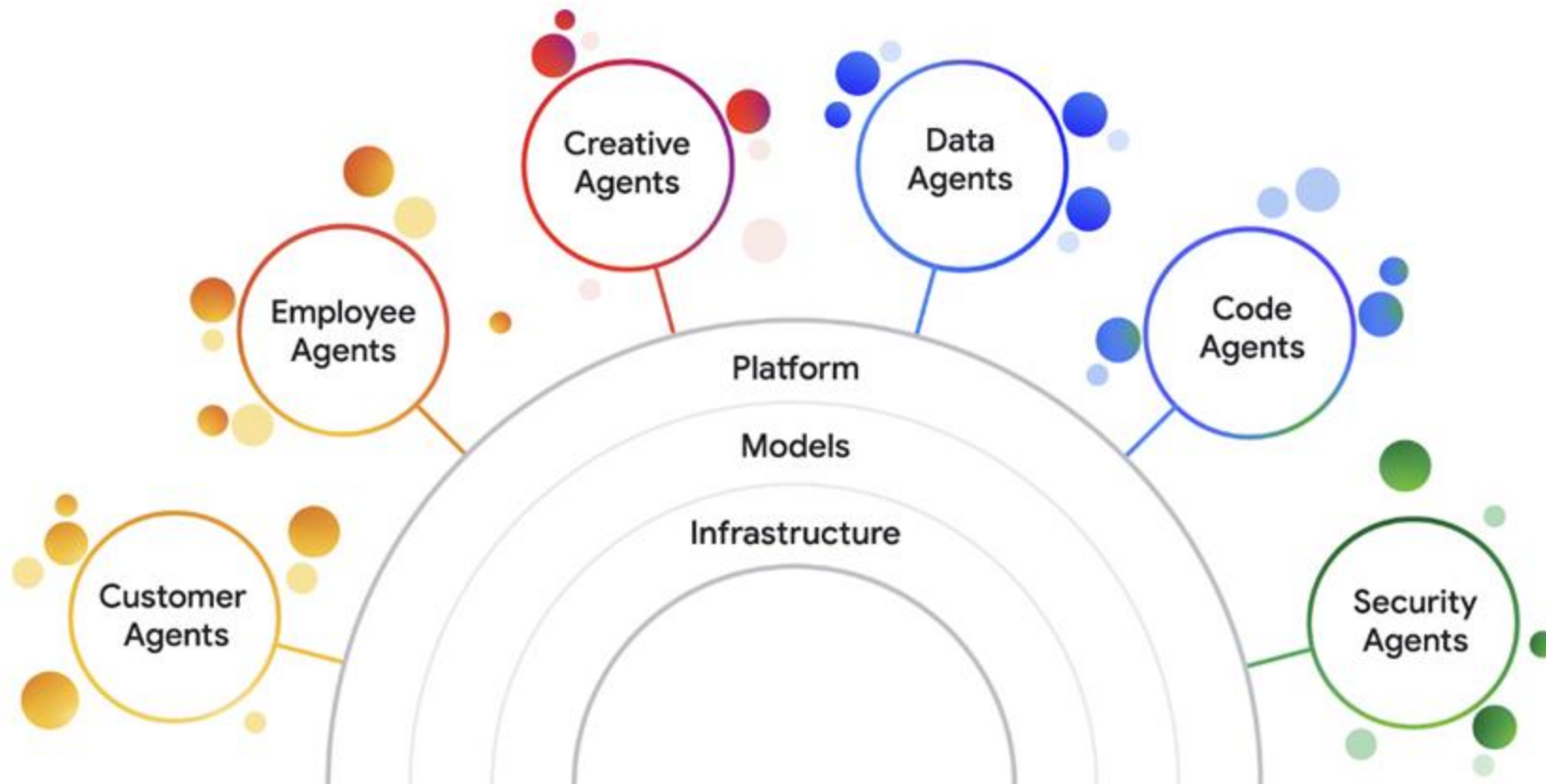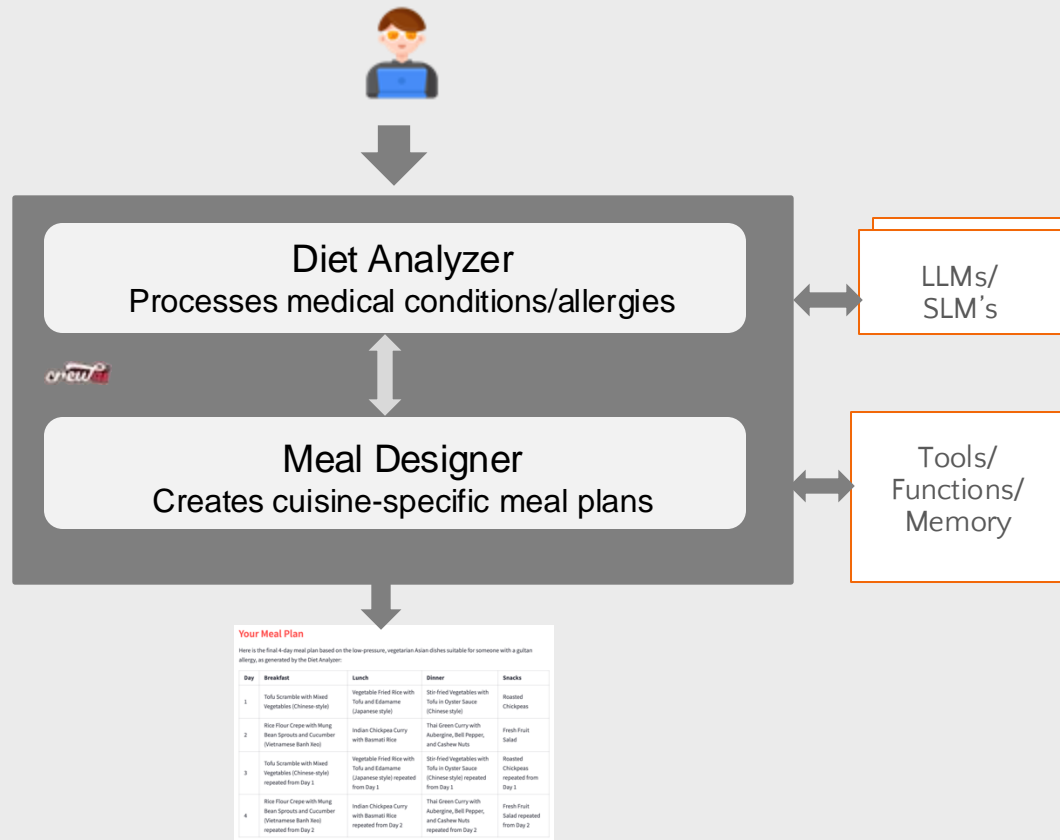
crewai

The Trade-off!

Image credits: Owner

Possibilities of AI Agent?

Image credits: Google

Quick Demo: AI Meal Planner

GOAL:

Diet Analyzer
Processes medical conditions/allergies

LLMs/
SLM's

Meal Designer
Creates cuisine-specific meal plans

Tools/
Functions/
Memory

Your Meal Plan

Here is the final 4-day meal plan based on the low-pressure, vegetarian Asian dishes suitable for someone with a guitan allergy, as generated by the Diet Analyzer:

Day	Breakfast	Lunch	Dinner	Snacks
1	Tofu Scramble with Mixed Vegetables (Chinese-style)	Vegetable Fried Rice with Tofu and Edamame (Japanese style)	Stir-fried Vegetables with Tofu in Oyster Sauce (Chinese style)	Roasted Chickpeas
2	Rice Flour Crepe with Mung Bean Sprouts and Cucumber (Vietnamese Banh Xeo)	Indian Chickpea Curry with Basmati Rice	Thai Green Curry with Aubergine, Bell Pepper, and Cashew Nuts	Fresh Fruit Salad
3	Tofu Scramble with Mixed Vegetables (Chinese-style) repeated from Day 1	Vegetable Fried Rice with Tofu and Edamame (Japanese style) repeated from Day 1	Stir-fried Vegetables with Tofu in Oyster Sauce (Chinese style) repeated from Day 1	Roasted Chickpeas repeated from Day 1
4	Rice Flour Crepe with Mung Bean Sprouts and Cucumber (Vietnamese Banh Xeo) repeated from Day 2	Indian Chickpea Curry with Basmati Rice repeated from Day 2	Thai Green Curry with Aubergine, Bell Pepper, and Cashew Nuts repeated from Day 2	Fresh Fruit Salad repeated from Day 2

Technical implementation:

Core components:
1. Streamlit: UI framework
2. CrewAI: Multi-agent orchestration
3. Ollama: Local LLM running Mistral

Agents:
1. Diet Analyzer: Processes medical conditions/allergies
2. Meal Designer: Creates cuisine-specific meal plans
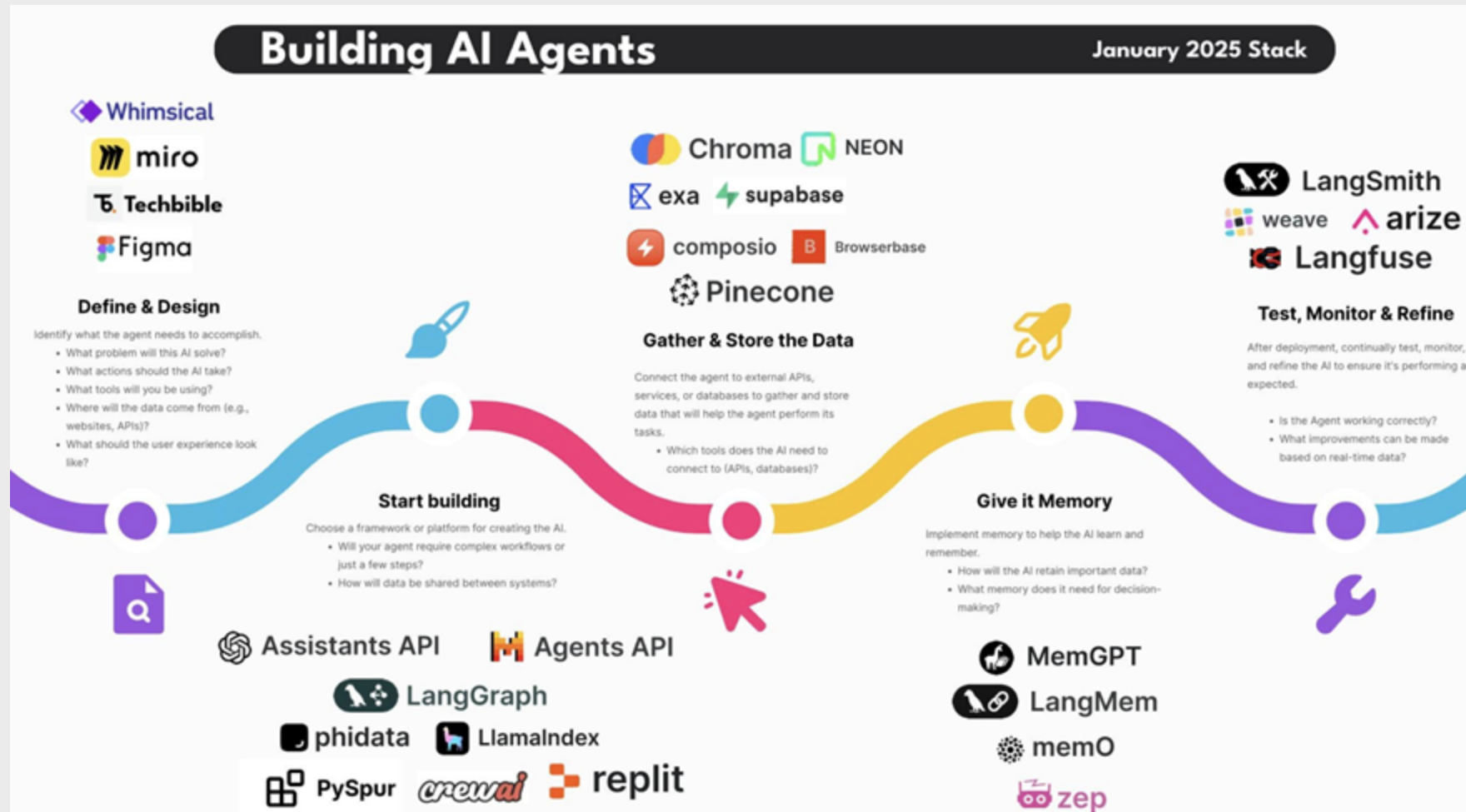
So, HOW to get your PROD Agentic Journey?

Image credits: Owner

Agentic Practice

	Challenge	Recommendation
1	**Dynamic Environments**	RL + real-time feedback loops.
2	**Autonomy vs. Control (Balance)**	Hybrid systems (rules + ML) + human override.
3	**Multi-Agent Coordination**	Distributed protocols + shared state systems.
4	**Scalability**	Lightweight models + edge/cloud orchestration.
5	**Security & Trust**	Encryption + adversarial training + audits.

Focus on **modular design**, **simulation testing**, and **continuous learning** to keep agents agile and secure.

Current Trends & News

OpenAI Releases AI Agent That Helps Book Flights, Order Food for Users

Operator

What can I help you do?

Dining & Events | Delivery | Local Services | Shopping | Travel | News

Find me a restaurant with a great happy hour for next Wed for 6 people

Find me 2 tickets for the next concert at The Sphere

Suggest a 30 minute meal with chicken and has at least 4.5 stars

OpenTable | StubHub | AllRecipes

Introducing Gemini 2.0: our new AI model for the agentic era

Inkl

'Virtual employees' could join workforce as soon as this year, OpenAI boss says

Agentic Nuggets:

1. [Market Place](#) to find the Agentic tools

2. [White paper](#) on AI Agents - Google

3. [Building effective agents](#) - Anthropic

Thank you

Join our Discord