

---

# What Are Agentic Systems?



---

# The Dream of AI Assistants

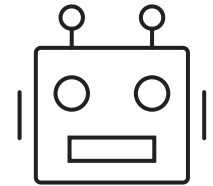
For decades, we've imagined robot servants and AI helpers making our lives easier. Is it everything we expected?

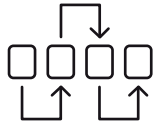


---

# Defining Agentic Systems

A software application which relies centrally on an LLM and carries out its tasks without direct human supervision



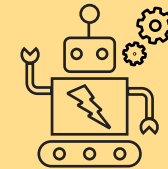


### **Workflows**

Predetermined steps, human-guided process,  
definite completion criteria

### **Autonomous agents**

Autonomous problem-solving, self-evaluation,  
AI determines approach to tasks



---

# Real-World Examples

**Workflows:** chat with documents (RAG), guided content creation

**Agents:** Cursor code generation, autonomous research assistants





---

## Use Cases of Agentic Systems



---

# The Hype vs. Reality

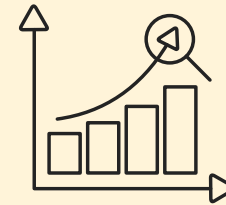
Often people want to build something sophisticated with AI when a simple well-tuned prompt will suffice



---

# The Productivity Potential

Agentic systems can dramatically speed up a variety of tasks when applied thoughtfully







---

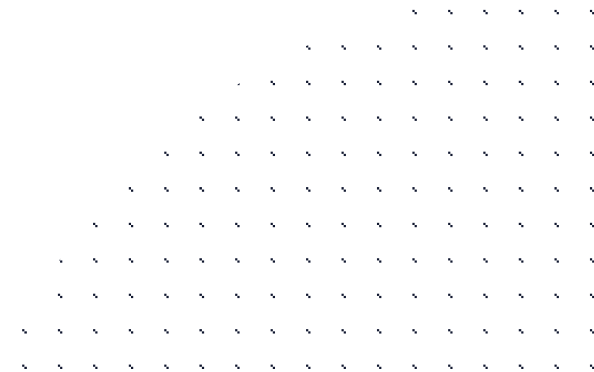
# Do You Need Agents?



Would a single, well-tuned prompt accomplish your task?



Would a newer, stronger model make your app better, or make it obsolete?



---

# Choosing Between Workflows and Agents



# 1

## Task Complexity

For well-defined tasks with predictable steps, use workflows

For open-ended problems, use autonomous agents

# 2

## Predictability vs. Flexibility

If you need consistency, use workflows

If you need adaptability for varying scenarios, use agents

# 3

## Cost/Latency Awareness

Autonomous agents typically have higher latency and cost

The improvement in outcomes must justify this

---

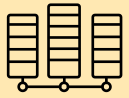
# Real-World Workflows and Agents





---

# Three Real-World Examples



Automated data analysis



In-depth research

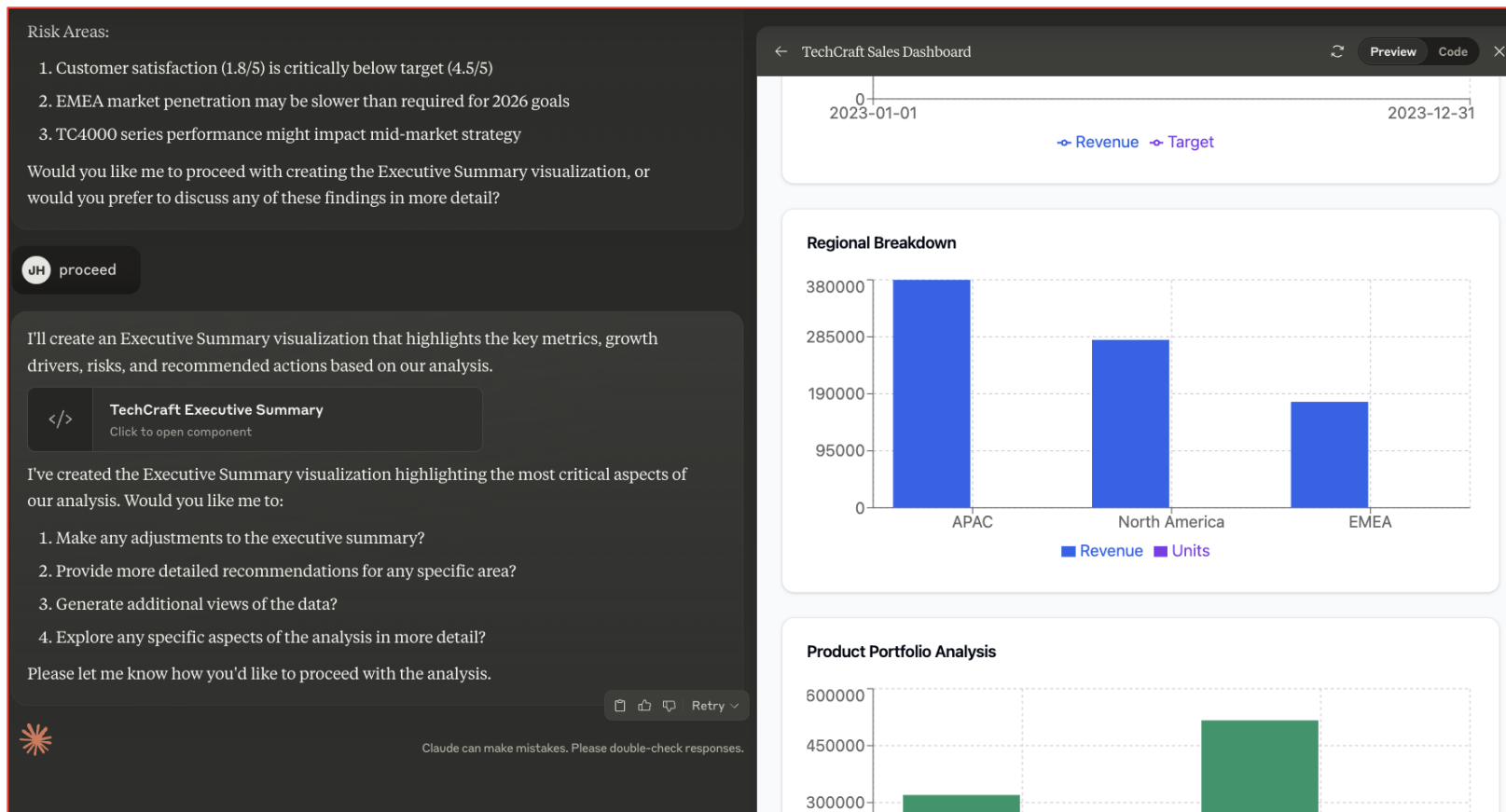


Drop-in remote engineer



# Example 1: Automated Data Analysis

A workflow that takes in data and outputs visualization and analysis



## Example 2: In-depth Research

Breaks research into sub-problems, searches and evaluates independently, and synthesizes results into a report

The screenshot displays the ChatGPT interface with a dark theme. At the top left, the version '4.5' is shown. A 'Share' button and a 'JO PRO' badge are at the top right. The main chat area contains a list of sub-problems: '- historical trends', '- geopolitics', and '- a survey of what leading thinkers are saying \*as of 2025\*'. Below this, a paragraph states: 'I'll gather insights on AI takeoff dynamics in 2025, including predictions on improvement speeds, historical technological trends, geopolitical influences, and the latest perspectives from leading thinkers. I'll provide a detailed analysis based on current research, expert commentary, and geopolitical considerations.' A progress bar labeled 'Considering timeframes' and '29 sources' is shown. At the bottom, there is a search bar with the placeholder 'Ask anything' and buttons for '+', 'Search', 'Deep research', and a menu icon. A footer note reads: 'ChatGPT can make mistakes. Check important info.'

modalities, and the impact of open source models and specialized hardware.

🔍 Searched for expert quotes on GPT-4 progress 2023

🌀 The Carnegie Endowment's piece likely discusses AI's rapid advancement. Let's see if it surpasses benchmarks sooner than expected.

📖 Read [carnegieendowment.org](https://carnegieendowment.org)

🌀 Holden Karnofsky notes AI's surprising strides in areas like complex math and science, questioning the notion of clear human-robot boundaries. Progress is swift, and practical applications are expanding.

— Read [transformernews.ai](https://transformernews.ai)

🌀 I'm curious about the shifting AI landscape by 2025. Progress isn't just from scaling models; reasoning enhancements are key. Notably, Anthropic's Claude 3.7 excelled cost-effectively.

📖 Read [astralcodexten.com](https://astralcodexten.com)

🌀 Robin Hanson envisions a gradual revolution over decades, while Yudkowsky predicts a rapid rise, spanning hours to years, not decades.

🌐 Reading...

?

# Example 3: Drop-In Remote Engineer

Plans, writes, and tests code autonomously, working like a remote engineer

The screenshot displays the Manus AI interface, which is designed to assist with tasks like creating a customer form and dashboard for B2B Gen AI Consulting Firms. The interface is divided into two main sections: the main workspace on the left and a terminal window on the right.

**Main Workspace:**

- Header:** Manus logo, "Customer Form for B2B Gen AI Consulting Firms", and a "Log in" button.
- Task Description:** A text box stating: "We are a tech consulting firm with in - depth research on technologies in the Gen AI field. Please create a potential customer form for us. The target companies are B2B American companies in the development stage before Series B that need AI technology empowerment. List at least 15 companies, clearly stating their contact information, company business introductions, addresses and other specific details. Make a dashboard."
- Manus Assistant:** A section titled "Manus" with a message: "I'll help you create a potential customer form and dashboard for B2B American companies in the pre-Series B development stage that need AI technology empowerment. I'll research and compile a list of at least 15 companies with their contact information, business introductions, addresses, and other specific details. Let me get started on this right away."
- Knowledge & Data:** A section showing "Knowledge recalled(1)", "Suggested new knowledge", and "Connected to datasource(2)".
- Task Progress:** A section titled "Research pre-Series B AI technology companies" with a checklist of steps:
  - Starting to research pre-Series B American B2B companies that need AI technology empowerment.
  - Executing command `mkdir -p ai_companies_research && cd ai_companies_research && touch todo.md`
  - Researching pre-Series B American B2B companies that need AI technology empowerment.
  - Creating file `ai_companies_research/todo.md`
  - Researching pre-Series B American B2B companies that need AI technology empowerment.
  - Searching `pre-Series B American B2B AI companies startups`
  - Researching pre-Series B American B2B AI companies from search results.
  - Browsing `https://explodingtopics.com/blog/ai-startups`
  - Browsing information about AI startups from Exploding Topics to identify potential pre-Series B American B2B companies.
  - Scrolling down
- Session Status:** A message at the bottom says "Manus session replay completed." with a "Watch again" button.

**Manus's Computer (Terminal):**

- Header:** "Manus is using Terminal" and "Terminating process dashboard\_server".
- Terminal Output:**

```
ubuntu@sandbox:~$ cd /home/ubuntu && cd /home/ubuntu/ai_companies_research/dashboar
d && python3 -m http.server 8000
Serving HTTP on 0.0.0.0 port 8000 (http://0.0.0.0:8000/) ...
Session terminated, killing shell...
```
- Progress Bar:** A blue progress bar at the bottom of the terminal window.
- Footer:** A message "Provide public access URL to user" and a "10 / 10" indicator.



---

# Agentic Techniques



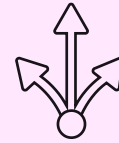
Chaining



JSON Mode



Orchestration



Evaluative Routing

---

# The Augmented LLM

Working with these patterns is a function-calling, tool-using AI API—the ‘augmented LLM’. It commonly contains memory, retrieval, and a suite of tools.

---

# Designing Agentic Systems



---

# Agent Architectures

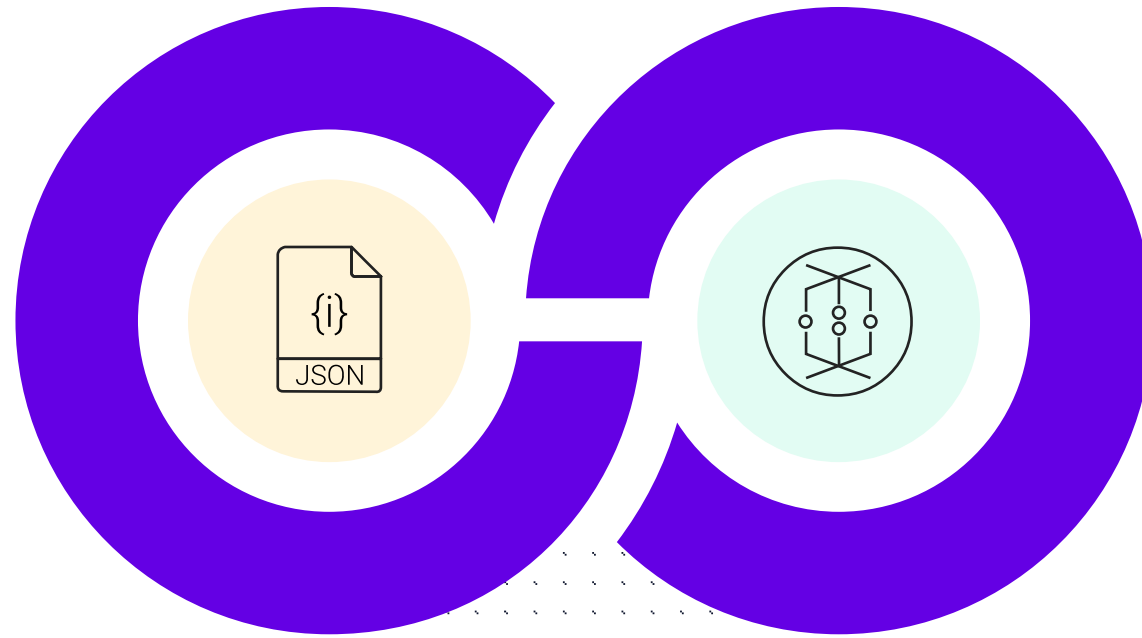
Combining multiple patterns in sound ways allows you to sensibly scale up agentic systems



---

# JSON Mode + Orchestration Chains

Structure outputs as  
JSON arrays of tasks



Process multiple  
subtasks, execute  
multiple workflows in  
parallel, then fuse  
together and repeat

---

# Orchestration + Evaluation



Agent gathers  
information for a variety  
of subtasks

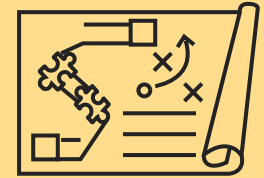
For each subtask's  
answer, evaluative  
routing recursively  
improves the answer  
until done



---

# Designing Your Own Systems

Start simple and layer in complexity as needed. Begin with workflows and gradually increase autonomy where it provides the most ROI.





---

# The Future?

Agentic behavior is baked into reasoning models' training (o3). Agentic advances in frontier labs *and* secondary apps. Think of yourself as promoted to manager!