

Role Playing

Focus

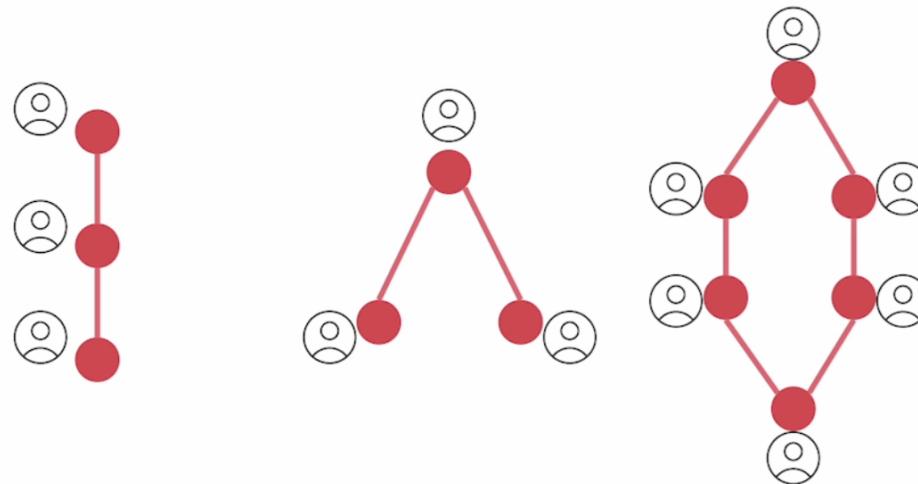
Tools

Cooperation

Guardrails

Memory

Multi-Agent Collaboration

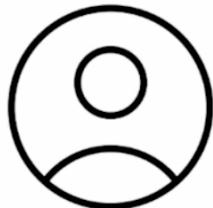


What we will cover in this course

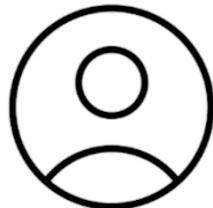
- Overview
 - Research & write a technical article
- Multi Agents core concepts
 - Customer support AI Agents
- Using Tools at Scale
 - Customer outreach campaign
- Tasks and Processes
 - Event planning
- Agentic Collaboration
 - Financial analysis
- Build a complete Crew
 - Tailor-made resumes
- Next Steps

What will we build in this course?

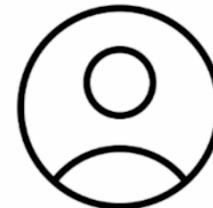
Agents



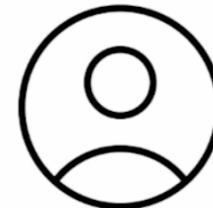
Tech Job
Researcher



Personal Profiler
for Engineers



Resume Strategist
for Engineers



Engineering
Interview Preparer

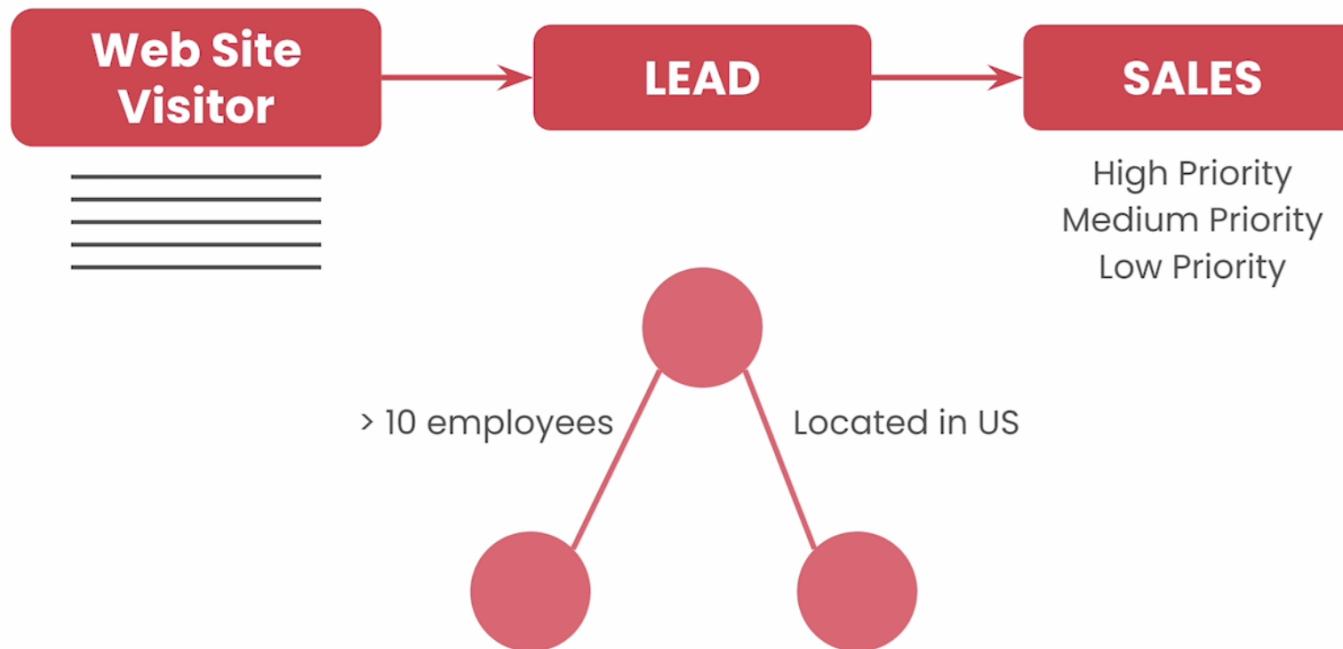
- Search the internet
- Read websites
- Read resume
- Perform RAG (Retrieval Augmented Generation) on resume

What is Agentic Automation?

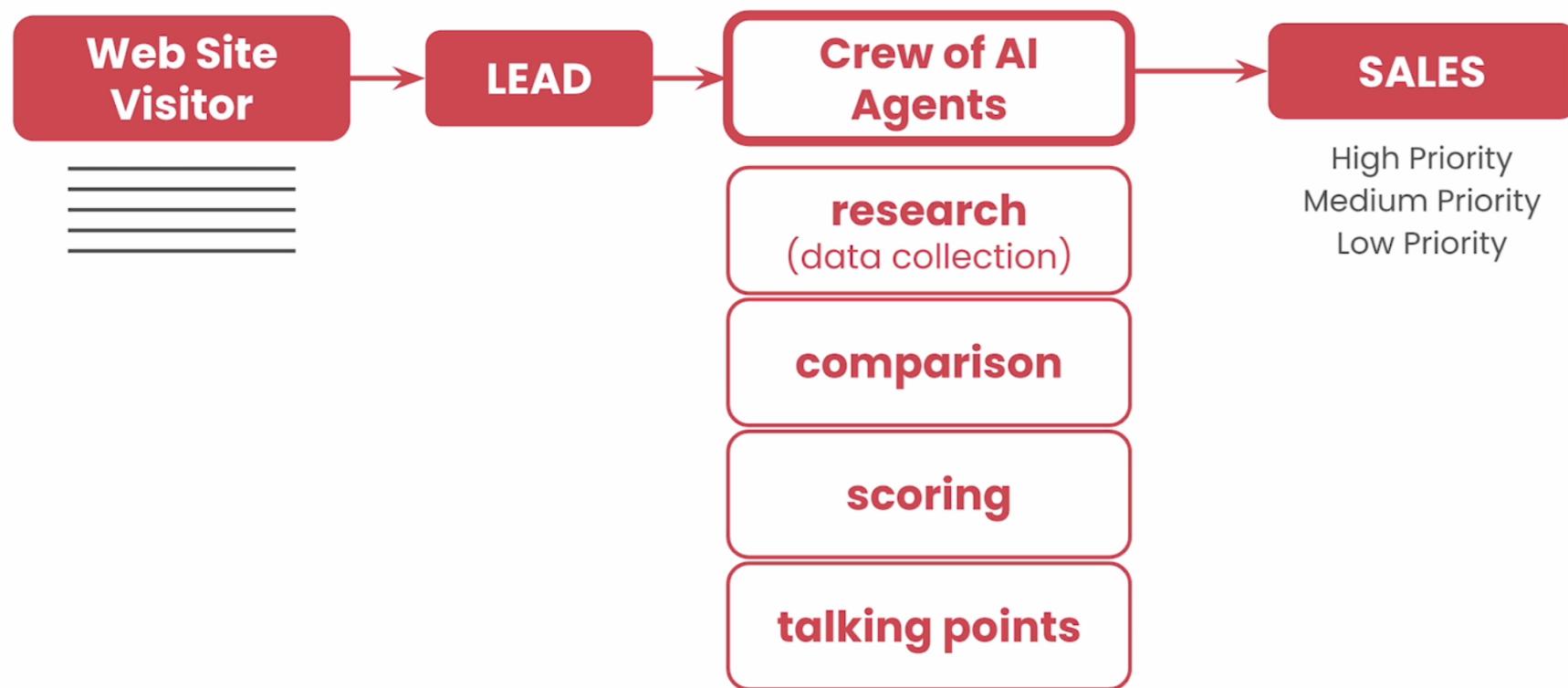
Fuzzy inputs, transformations, outputs

	Traditional Software Development	AI Software Development
Inputs	<ul style="list-style-type: none">- text (string) with defined set ("happy", "calm")- numeric (int, float)	Fuzzy inputs: Open-ended text <ul style="list-style-type: none">- Tabular data- markdown- Text- math operation
Transformations	<ul style="list-style-type: none">- Math calculation (+ - ÷ ×)- f"Hello {first_name}, how are you?"- if, elif, else- for/while loops	Fuzzy transformations <ul style="list-style-type: none">- Extract list of key words- Rewrite as a paragraph- Answer a question- Brainstorm new ideas- Perform logic/math reasoning
Outputs	<ul style="list-style-type: none">- text (string) with defined set ("Positive", "Neutral")- numeric (int, float),	Fuzzy outputs: text <ul style="list-style-type: none">- Paragraph- Number(s)- JSON- Markdown
Notes	<ul style="list-style-type: none">- Can be replicated	<ul style="list-style-type: none">- Probabilistic: can be different every time

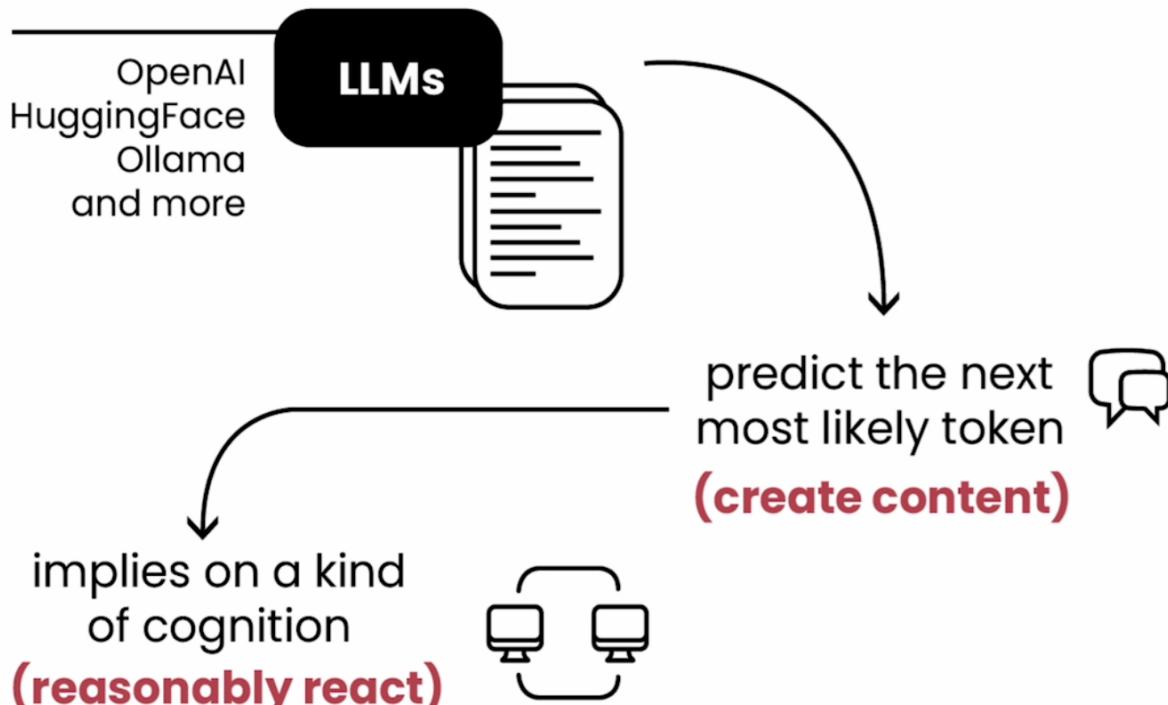
Data Collection and Analysis



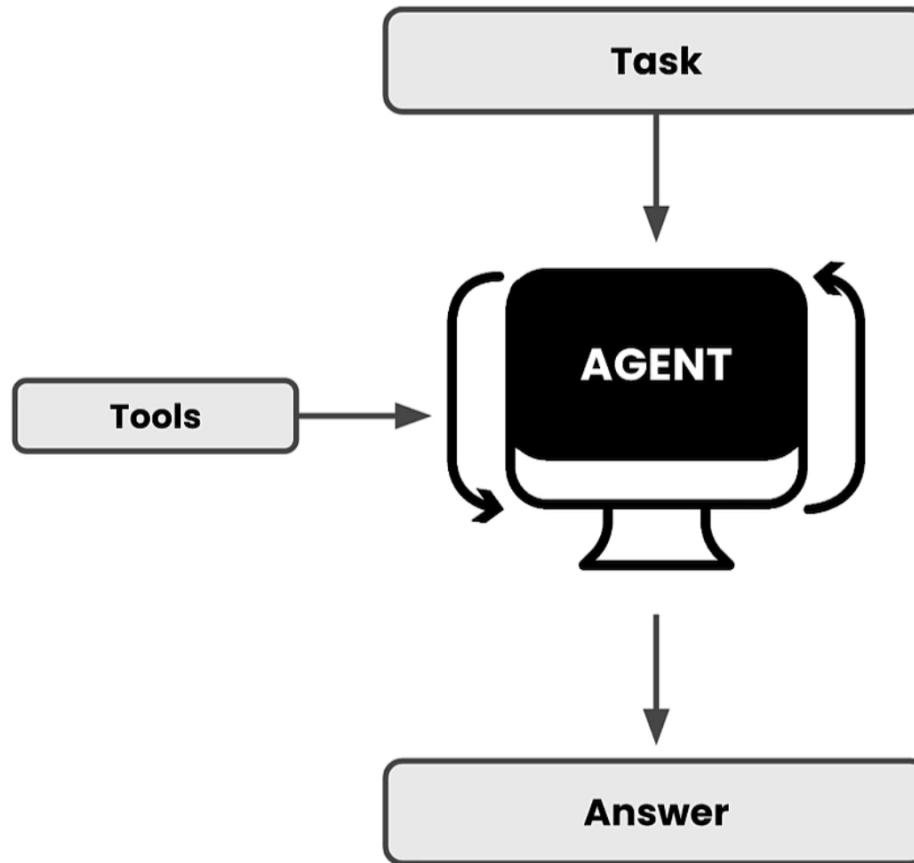
Data Collection and Analysis



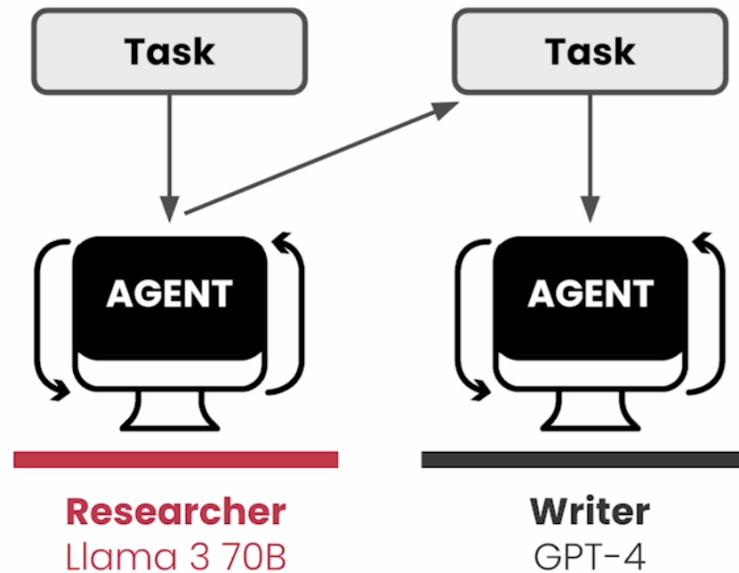
What are AI Agents?

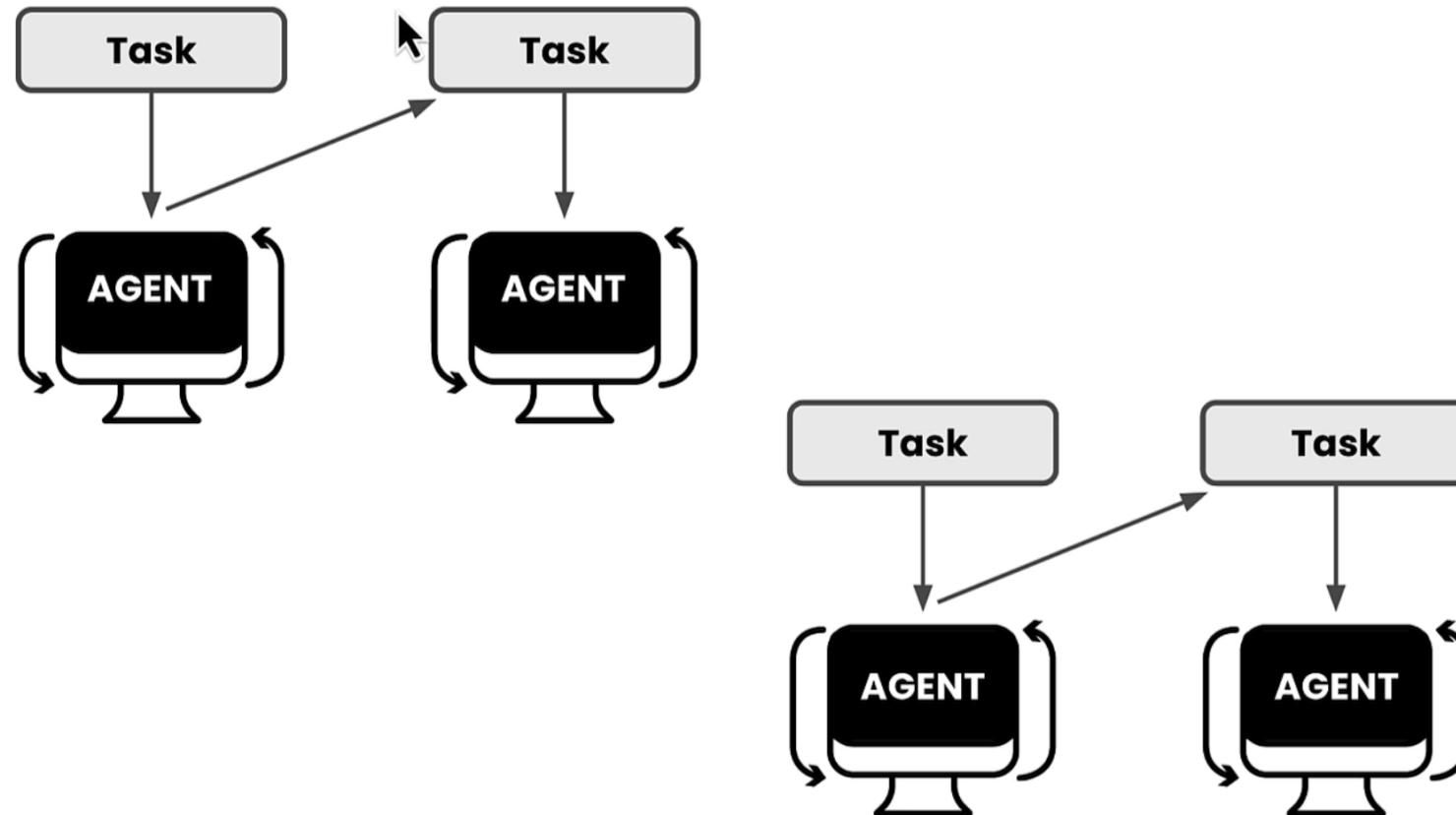


An agent is born 🐥



Multi-Agent Systems







What is crewAI?

crewai.com

Framework & Platform

- Breaks all these concepts into simple structures
- Provides a pattern to put these systems together
- Provides tools / skills ready to be used by agents
- Gives you a model to build custom tools for agents
- Offers a platform for bringing these agents into production

Initial Building Blocks

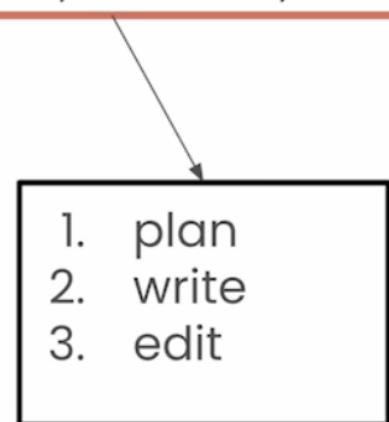
Agents

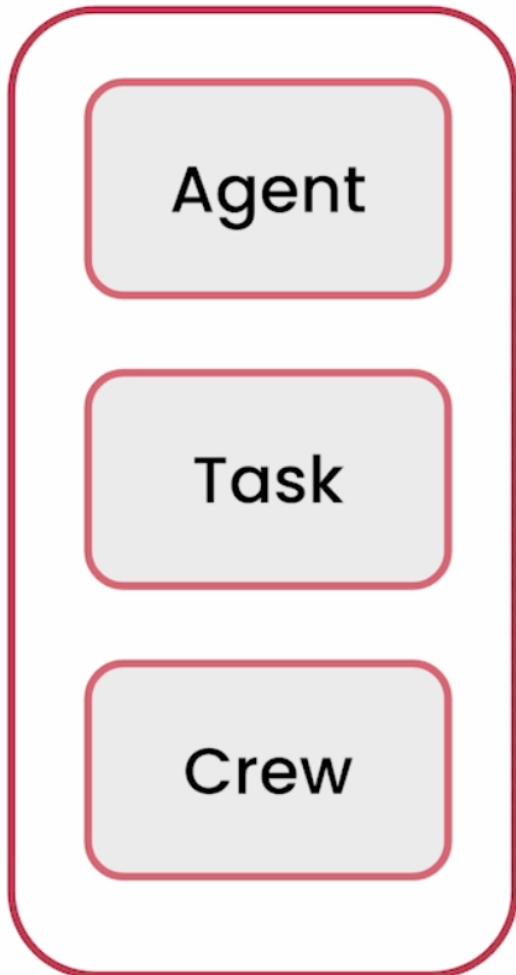
Tasks

Crews

Tasks are Sequential by Default

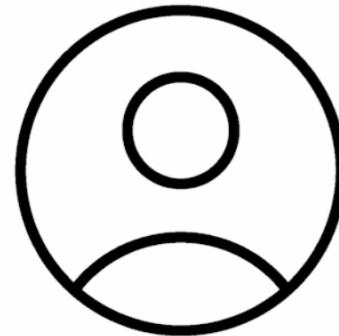
```
crew = Crew(  
    agents=[planner, writer, editor],  
    tasks=[plan, write, edit],  
    verbose=2  
)
```

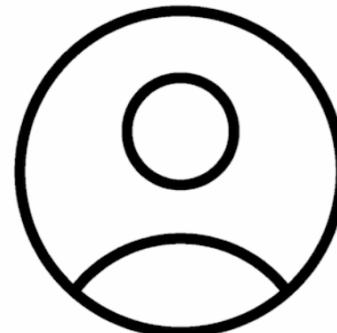




- Agents perform better when role-playing
- You should focus on goals and expectations
- One Agent can do multiple tasks
- Tasks and Agents should be granular
- Tasks can be executed in different ways
- It's pretty easy to create multi-agents with crewAI

What makes a great Agent?





Role Playing

Focus

Tools

Cooperation

Guardrails

Memory



You

give me an analysis on tesla stock

- Roles
- Goals
- Backstory

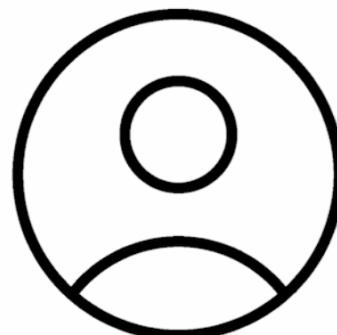
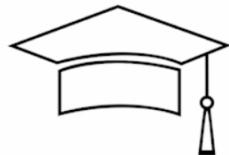


You

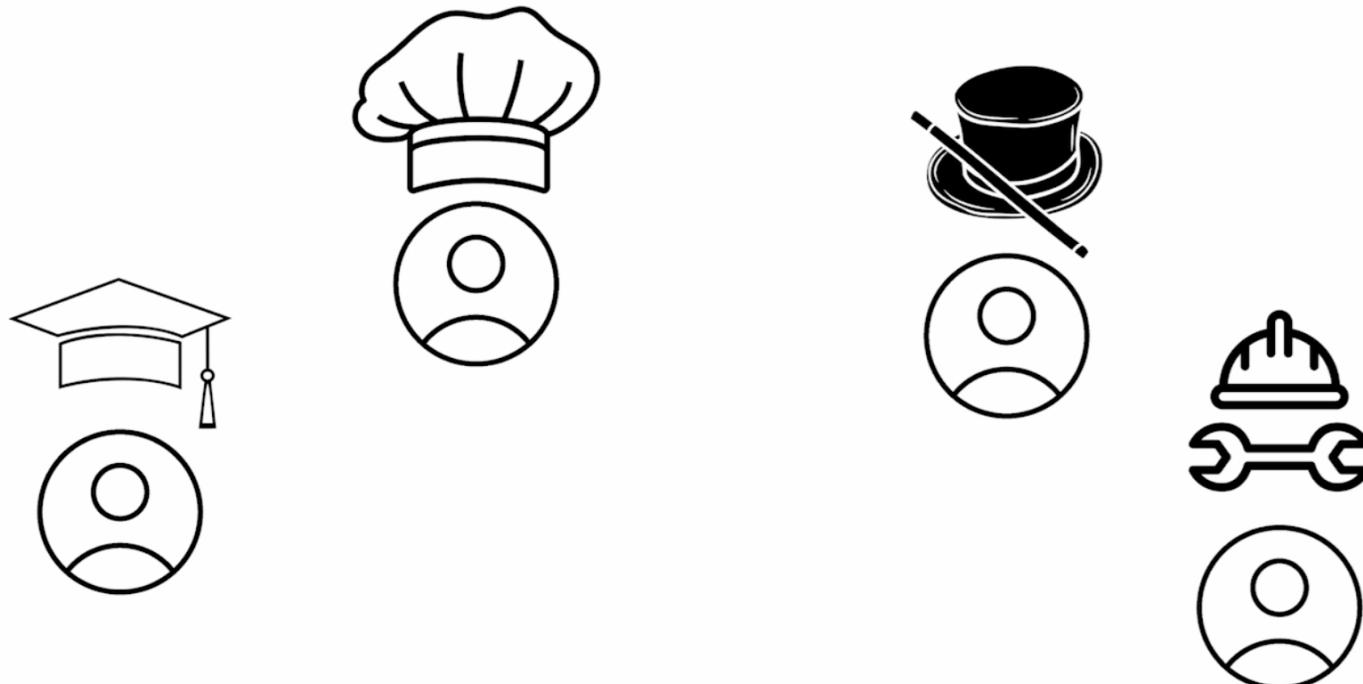
you are a FINRA approved financial analyst.

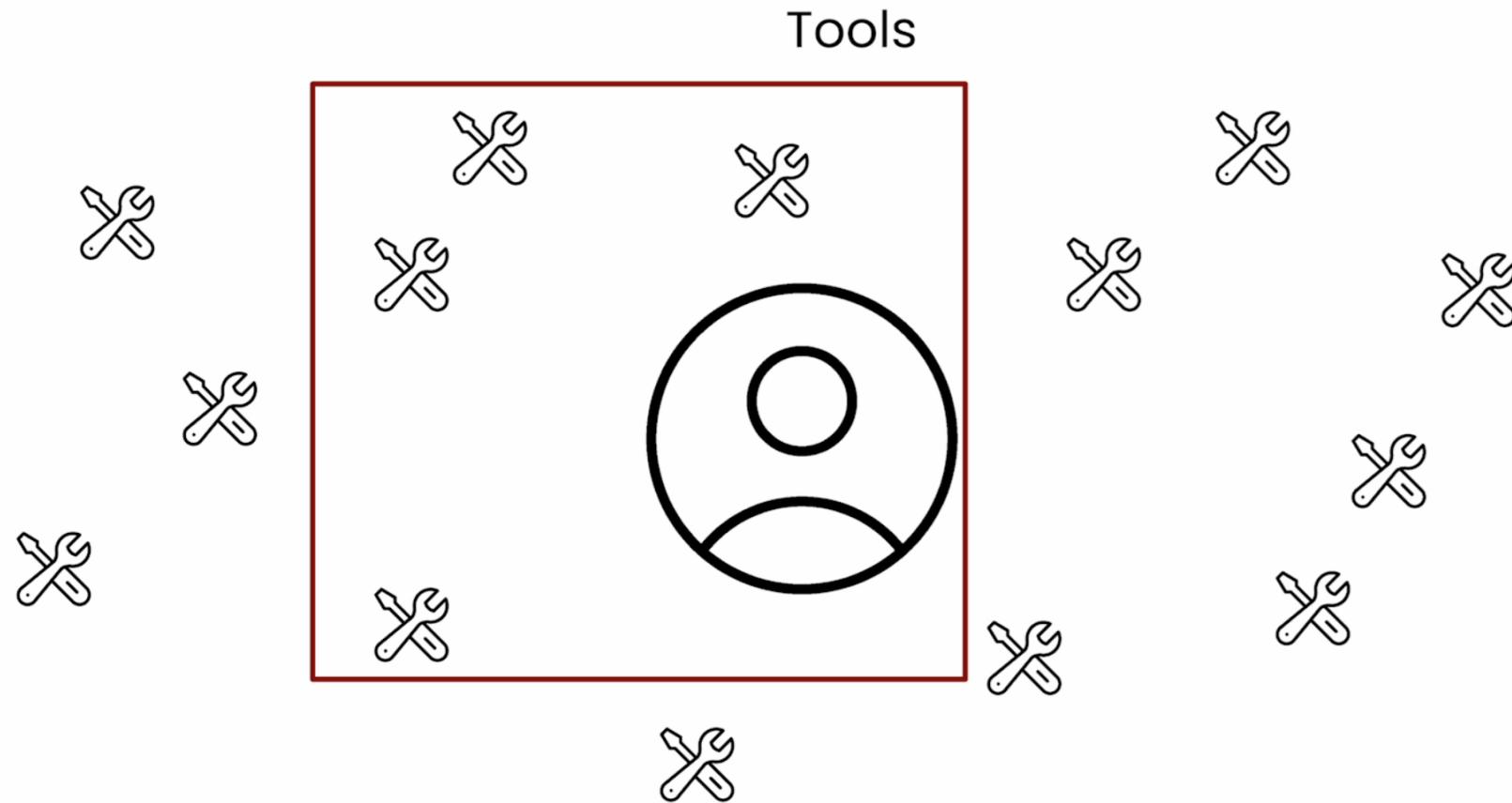
give me an analysis on tesla stock

Focus

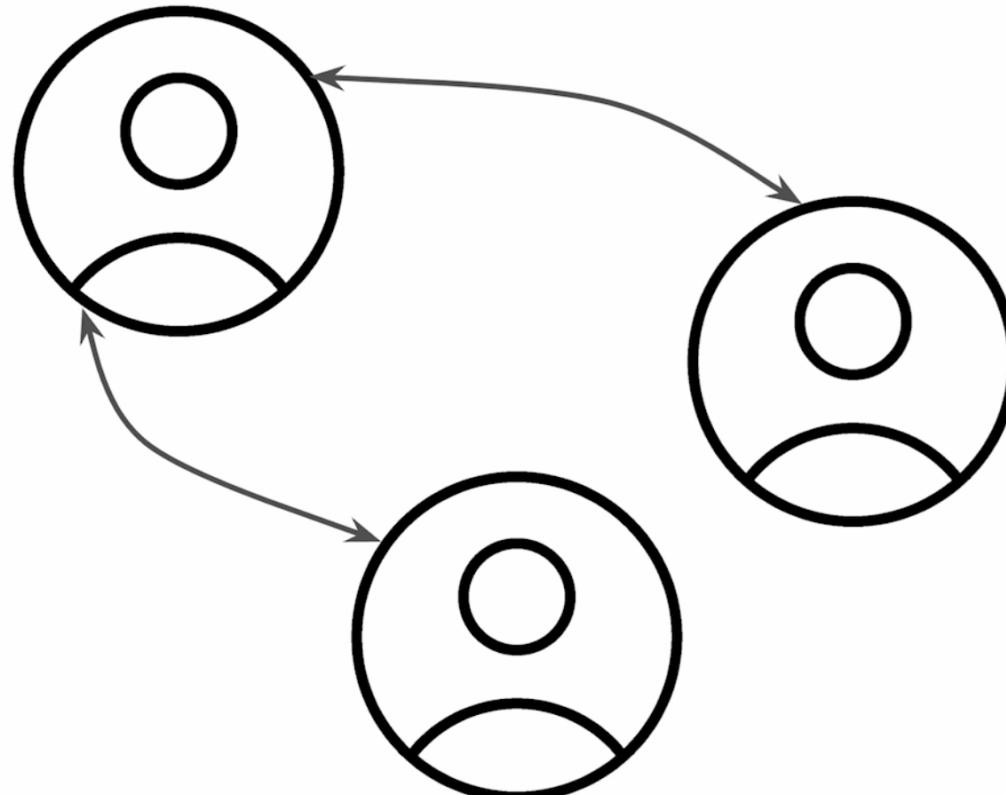


Focus



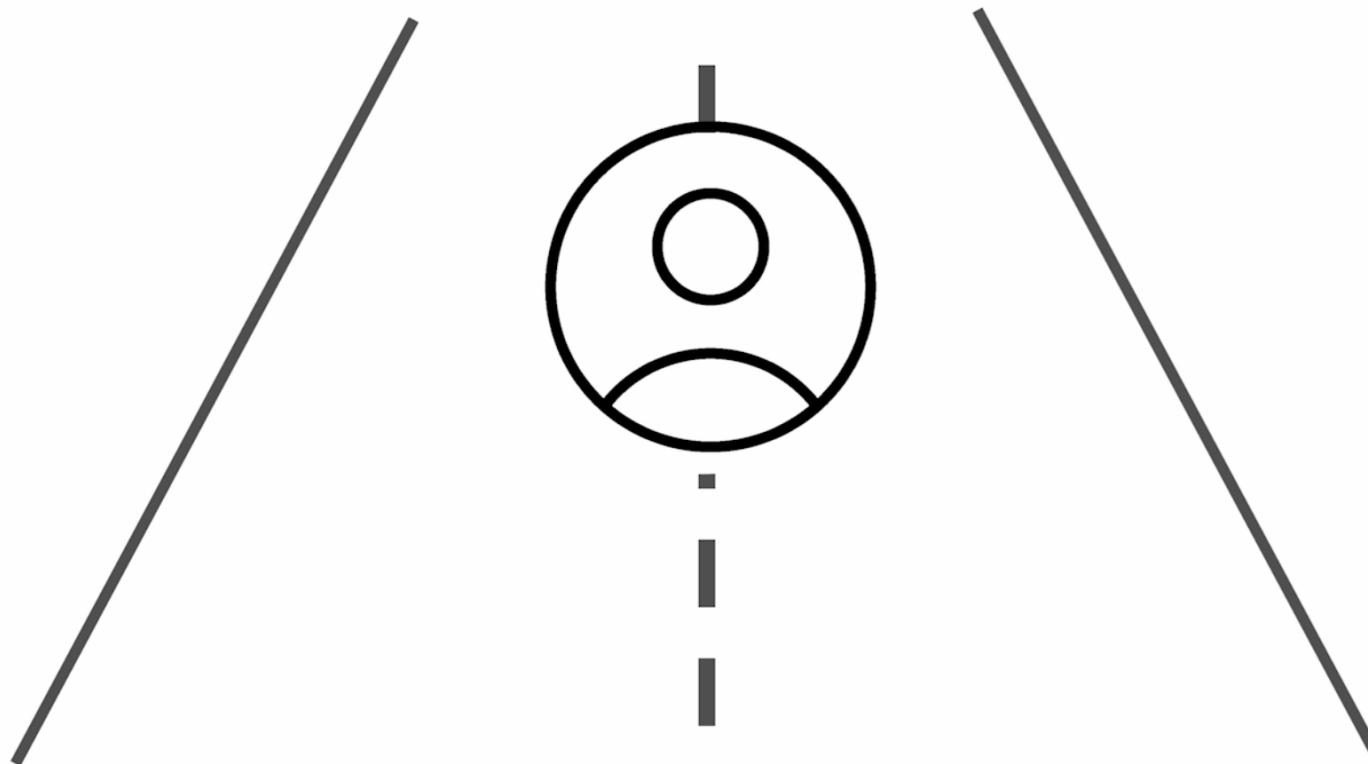


Collaboration

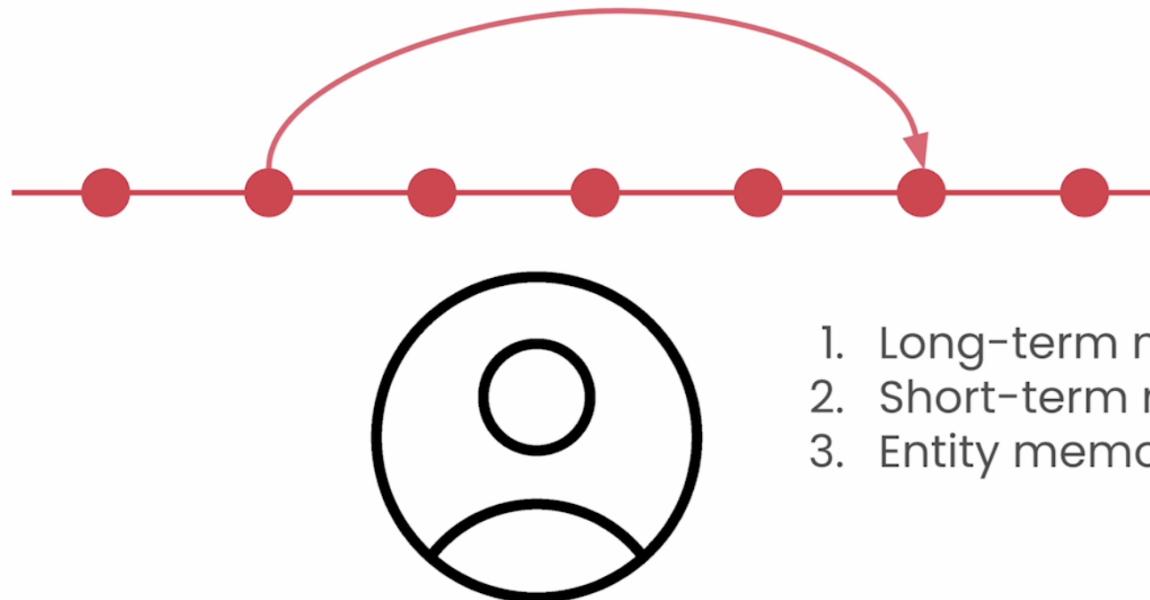


- Take feedback
- Delegate tasks

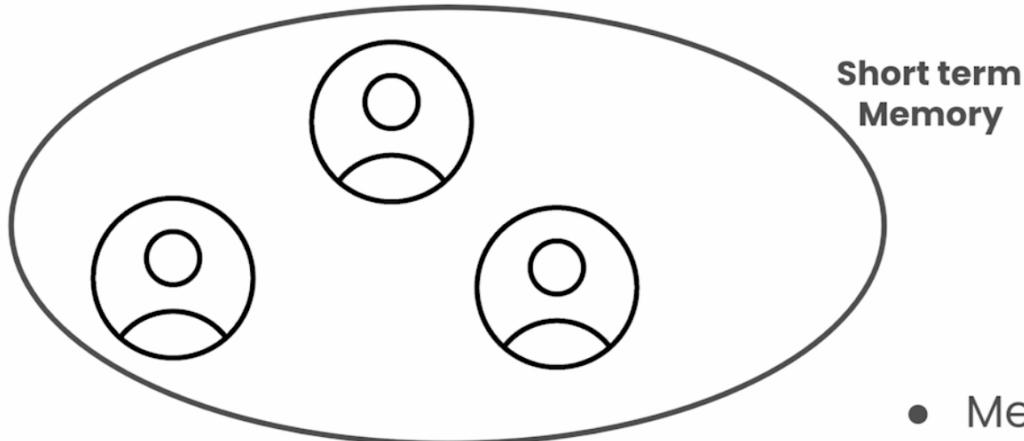
Guardrails



Memory

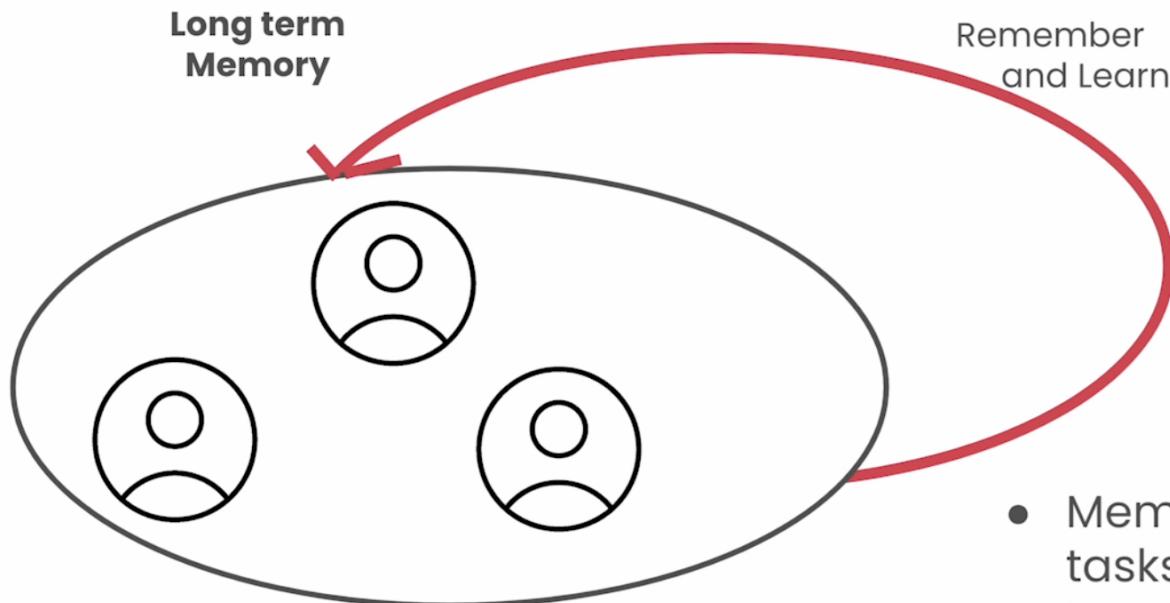


1. Long-term memory
2. Short-term memory
3. Entity memory



Short term
Memory

- Memory during execution of a task.
- Share knowledge, activities, and learnings with other agents.
- Share intermediate information even before providing "task completion" output.



- Memory stored after execution of current tasks.
- Long term memory can be used in any future tasks.
- Leads to "self-improving" agents.

Entity Memory

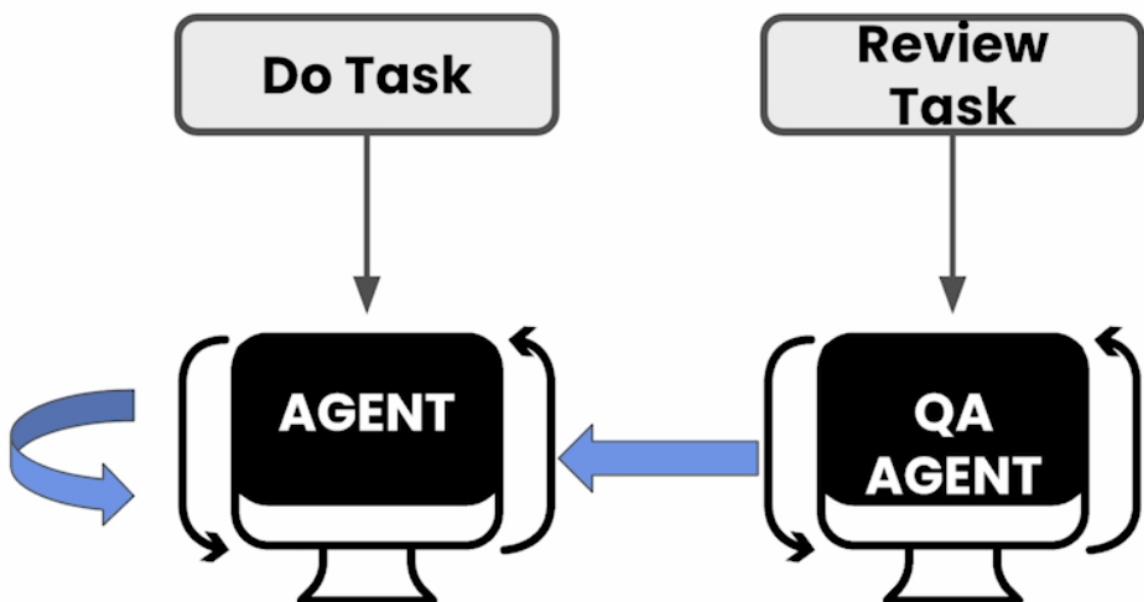
Pretend news article (by ChatGPT)

Renewable energy corporations such as Tesla, led by CEO Elon Musk, and Orsted, based in Denmark, are at the forefront of the transition to sustainable energy. Meanwhile, tech giants like Google, under the leadership of Sundar Pichai, and Microsoft, with CEO Satya Nadella at the helm, are investing heavily in renewable energy projects and carbon offset programs to achieve carbon neutrality. Notably, countries like Germany, with its ambitious Energiewende policy, and China, the world's largest emitter of greenhouse gases, are implementing aggressive strategies to reduce emissions and accelerate the adoption of renewable energy. Additionally, startups like Beyond Meat, founded by Ethan Brown, and Impossible Foods, led by CEO Pat Brown, are disrupting the food industry with plant-based alternatives, significantly reducing the environmental impact of food production.

Entities

- persons,
- organizations,
- locations

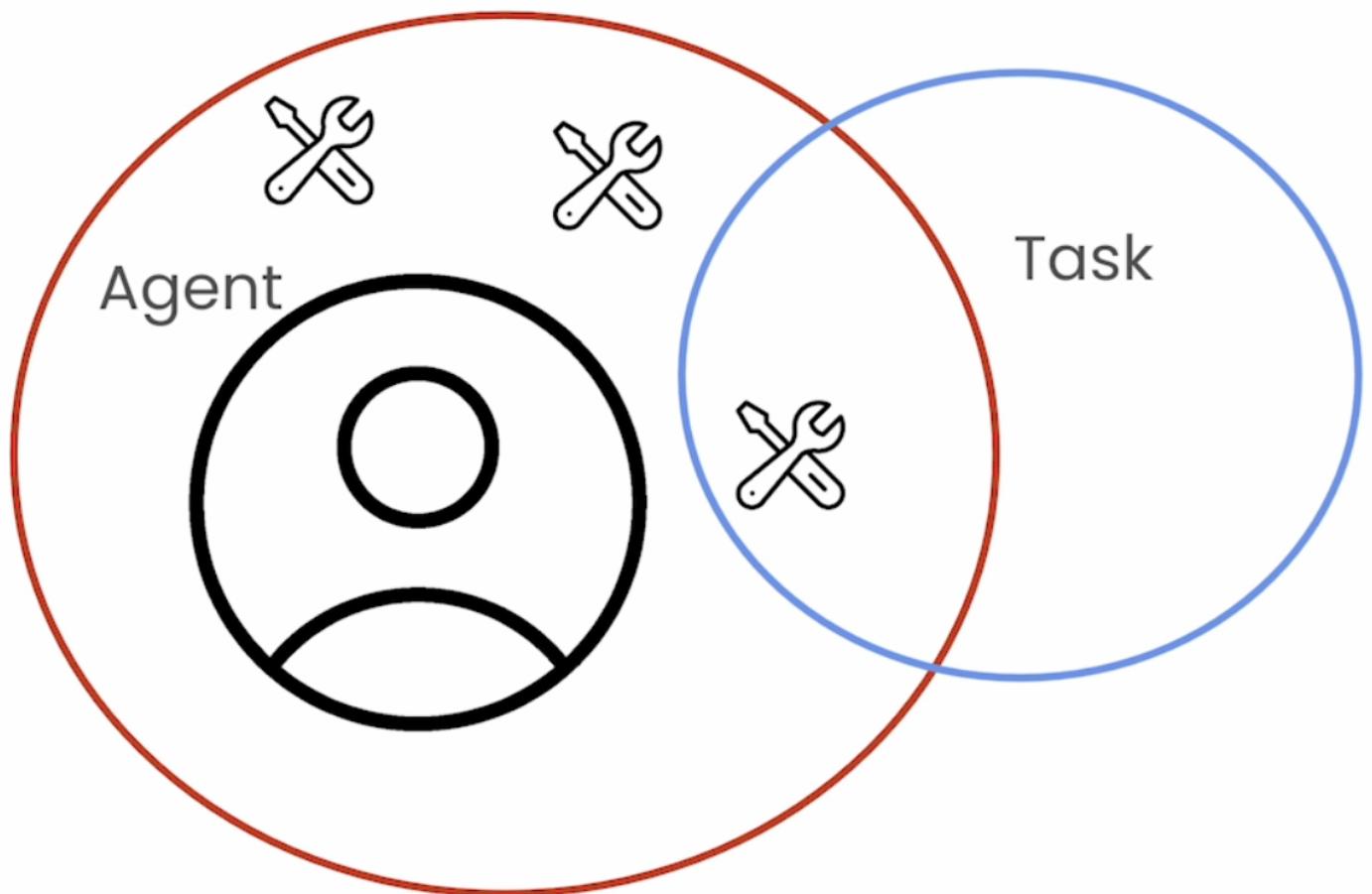
Allow Delegation



Not allowed to
delegate to
other agents
(does its own
work)

Can do its own
work and
delegate back
to other agent

Assigning Tools





What is the Goal

What is the Process

What kind of people would I need to hire to get this done?

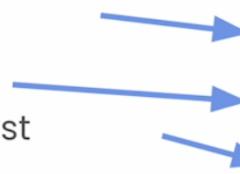


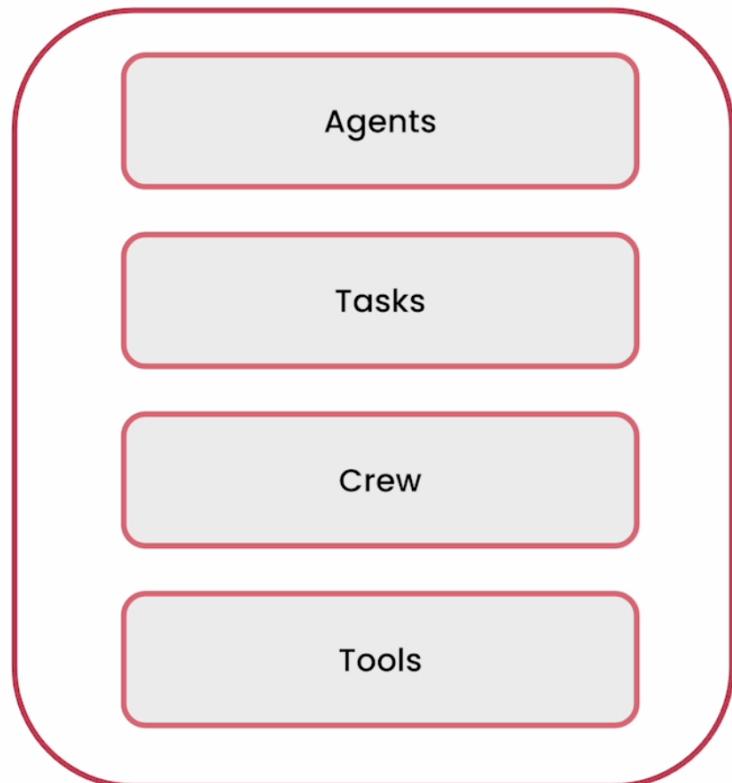
- **Okay**

- Researcher
- Writer
- Financial Analyst

- **Better**

- HR Research Specialist
- Senior copywriter
- FINRA Approved Analyst





- Agents "self improve" using memory
- Guardrails prevents agents from going into "rabbit holes" (unproductive, repetitive loops)
- Agents always attempt to get to an answer (avoid iterating indefinitely)
- Focus
 - narrowly defined task
 - specific agent roles and objectives
 - limited set of tools assigned to one agent

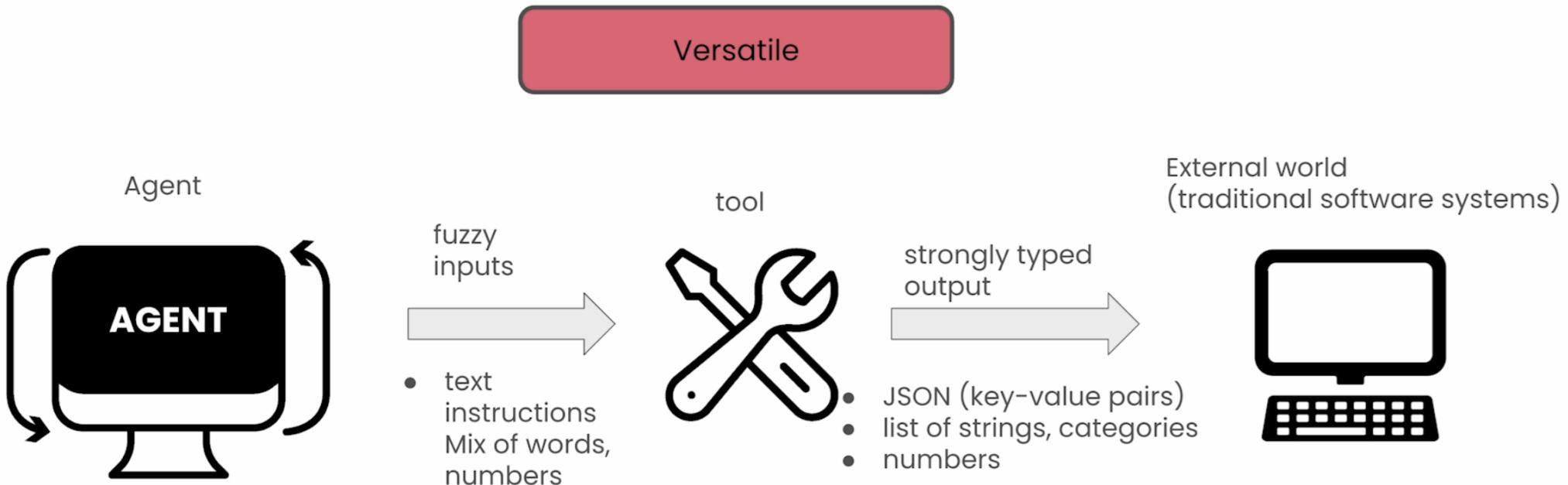
What makes a great Tool?

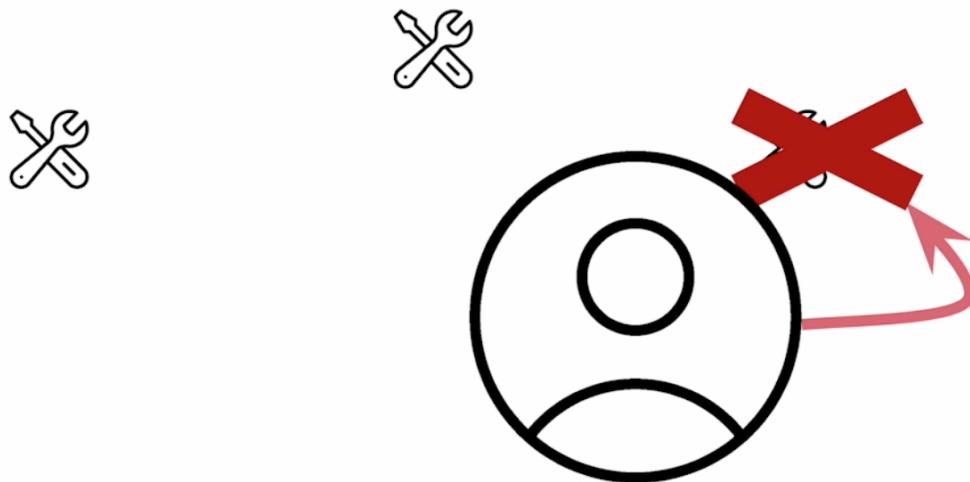


Versatile

Fault-tolerant

Caching



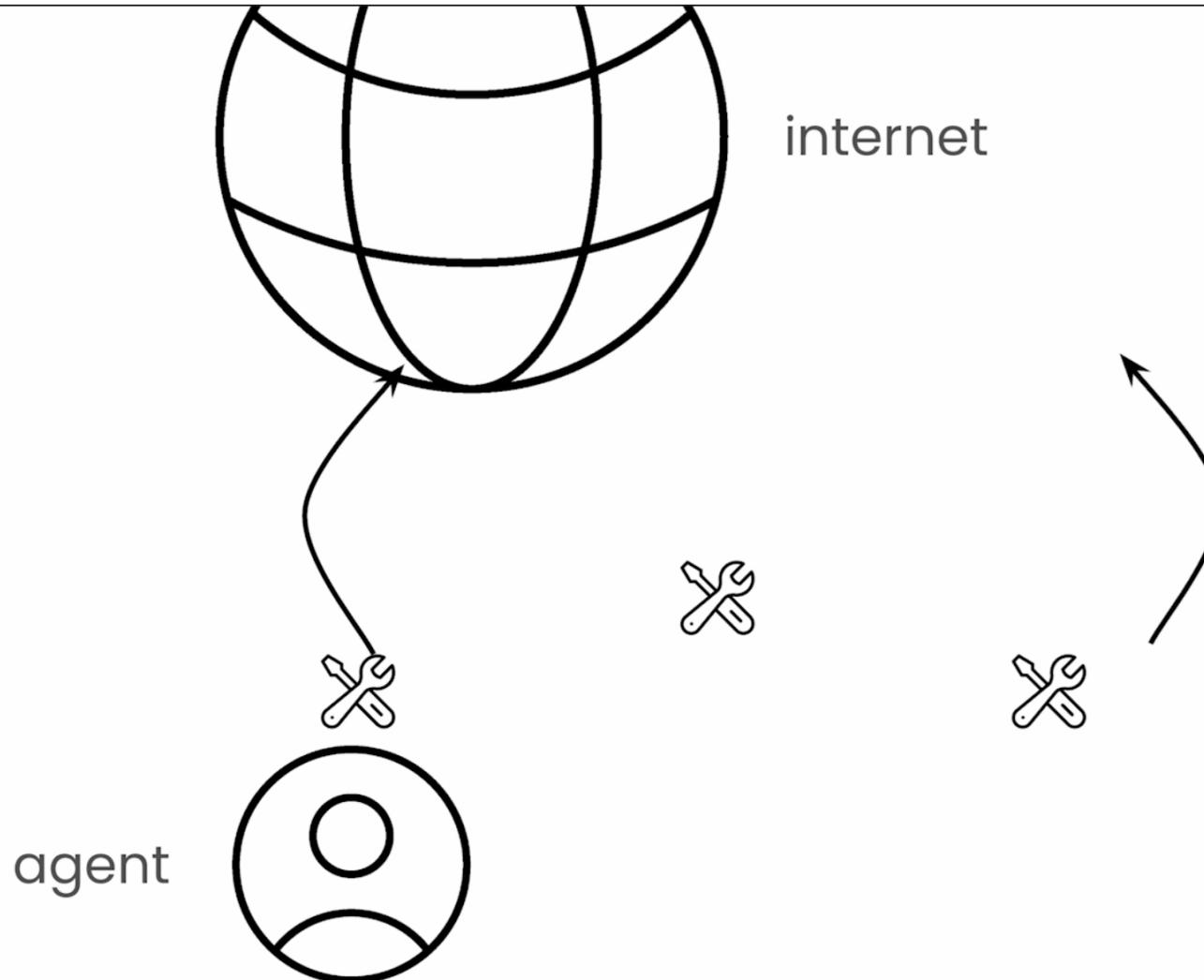


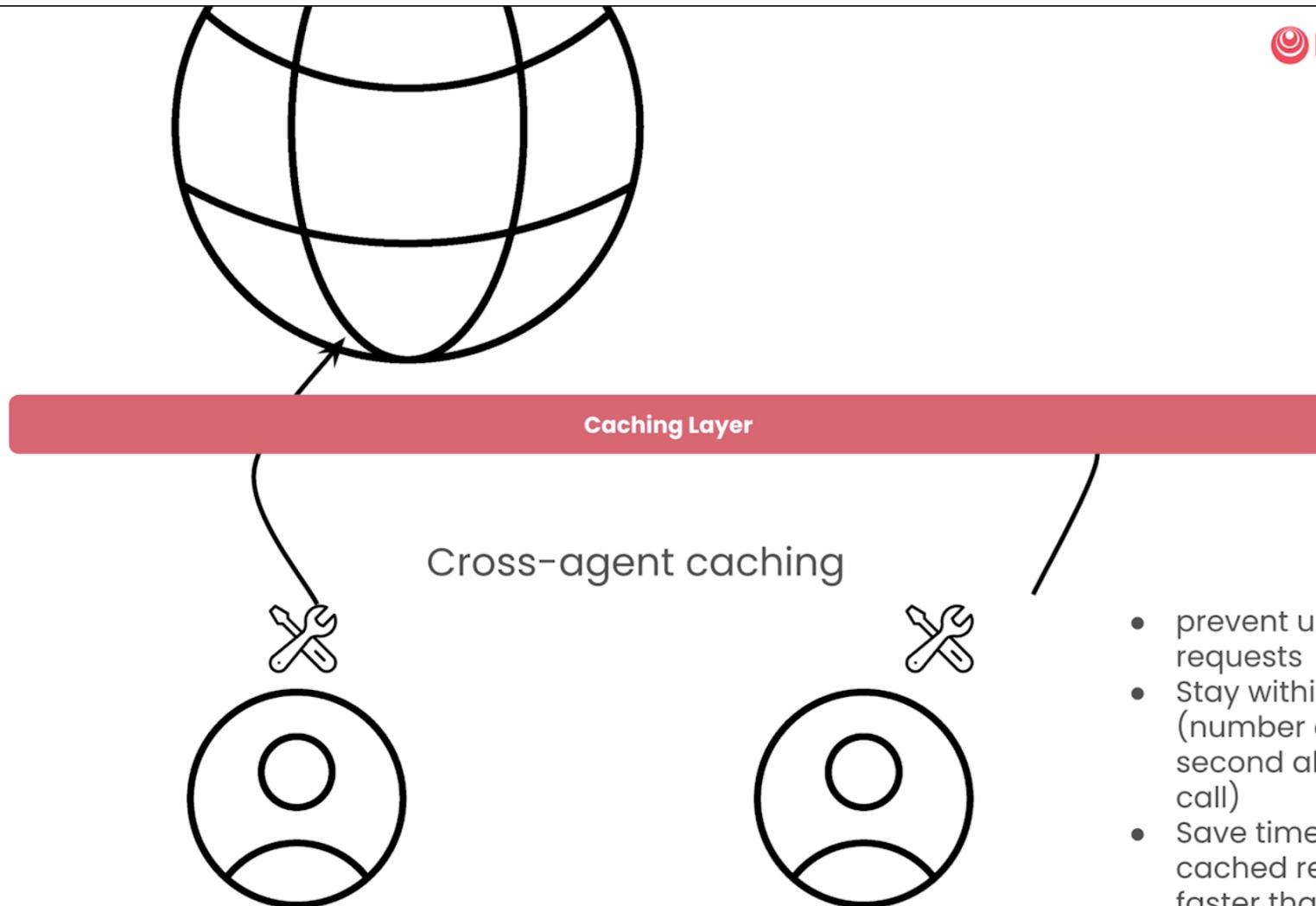
What happens when an exception/error occurs?

Option 1: stop execution

Option 2: Fail gracefully (and try again)

- send error message back to agent
- Ask agent to retry given the error message





Examples of tools

- Search the internet
- Scrape a website
- Connect to a database
- Call an API
- Send notifications

and many more

crewAI
Home
Core Concepts >
How to Guides >
Tools Docs >
Google Serper Search
Scrape Website
Directory Read
File Read
Selenium Scraper
Directory RAG Search
PDF RAG Search
TXT RAG Search
CSV RAG Search
XML RAG Search
JSON RAG Search
Docx Rag Search
MDX RAG Search
PG RAG Search
Website RAG Search
Github RAG Search
Code Docs RAG Search
Youtube Video RAG Search
Youtube Channel RAG Search
Examples >
Telemetry



crewAI Documentation

Cutting-edge framework for orchestrating role-playing, autonomous AI agents. empowers agents to work together seamlessly, tackling complex tasks.

Core Concepts

- Agents
- Tasks
- Tools
- Processes
- Crews
- Memory

How-To Guides

- Getting Started
- Create Custom Tools
- Using Sequential Process
- Using Hierarchical Process
- Connecting to LLMs
- Customizing Agents
- Human Input on Execution
- Agent Observability using AgentOps



Exception Handling

- Option 1: Framework stops execution
(you can choose how to handle the exceptions, such as restart execution.)
- Option 2: Framework continues execution
(CrewAI is designed this way)



What is the Goal

What is the Process

What kind of individuals would I need to hire to get this done?



Which processes and tasks do I expect the individuals on my team to do?

Task

Task

Task

Task

Task



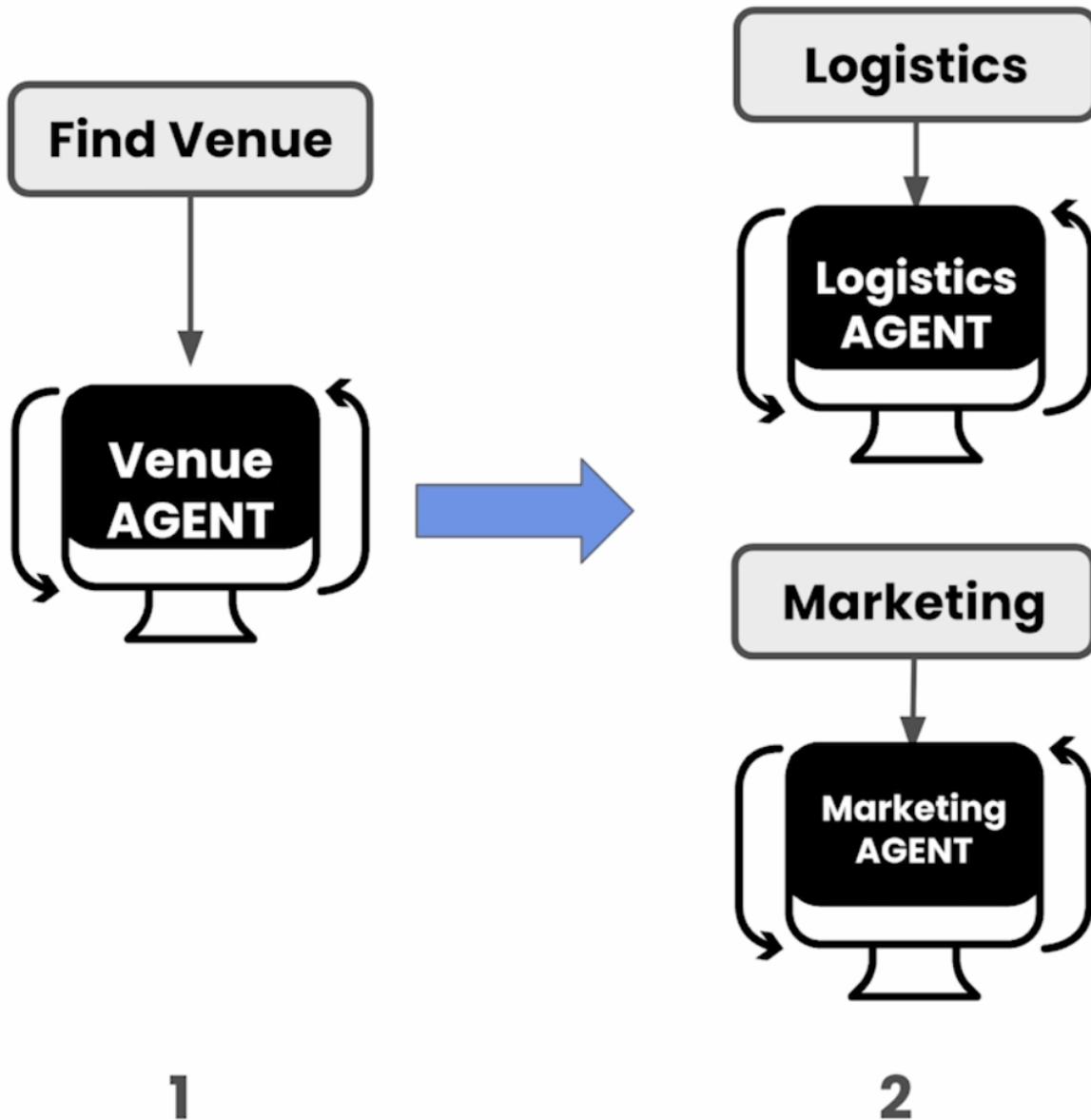


Which processes and tasks do I expect the individuals on my team to do?

Task

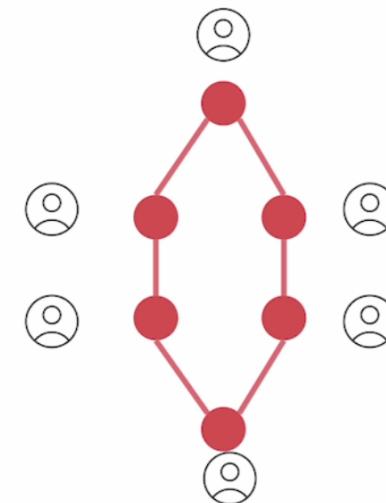
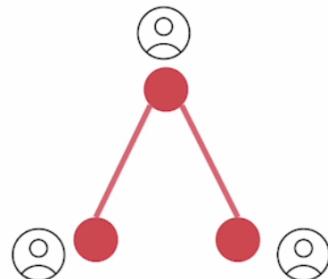
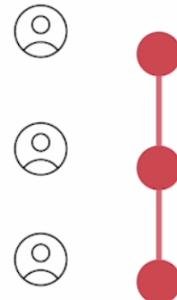
- Clear description of the task
- Set a clear and concise expectation
- Set context
- Set a callback
- Override Agent tools with specific task tools
- Force human input before end of task
- Execute asynchronously
- Output as Pydantic
- Output as JSON
- Output as file
- Run in parallel

Asynchronous Execution

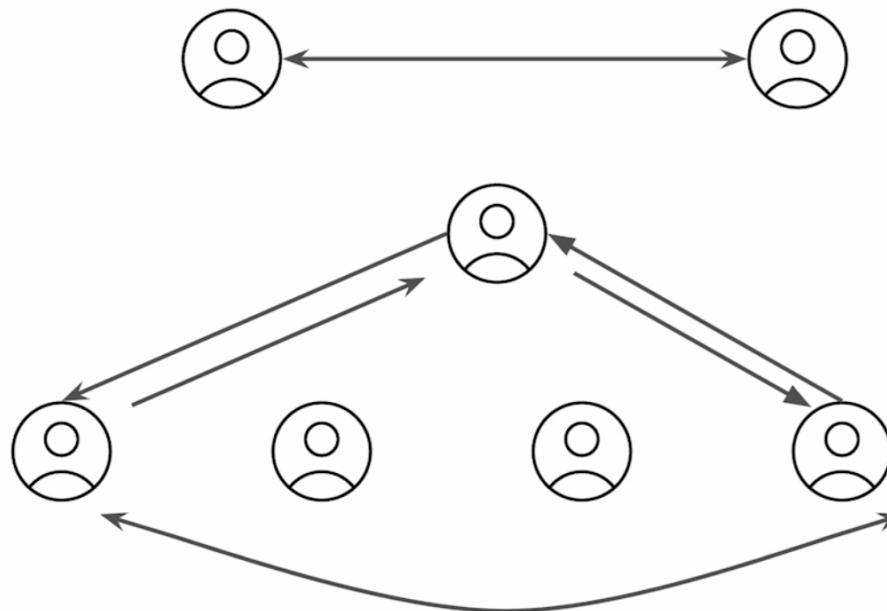


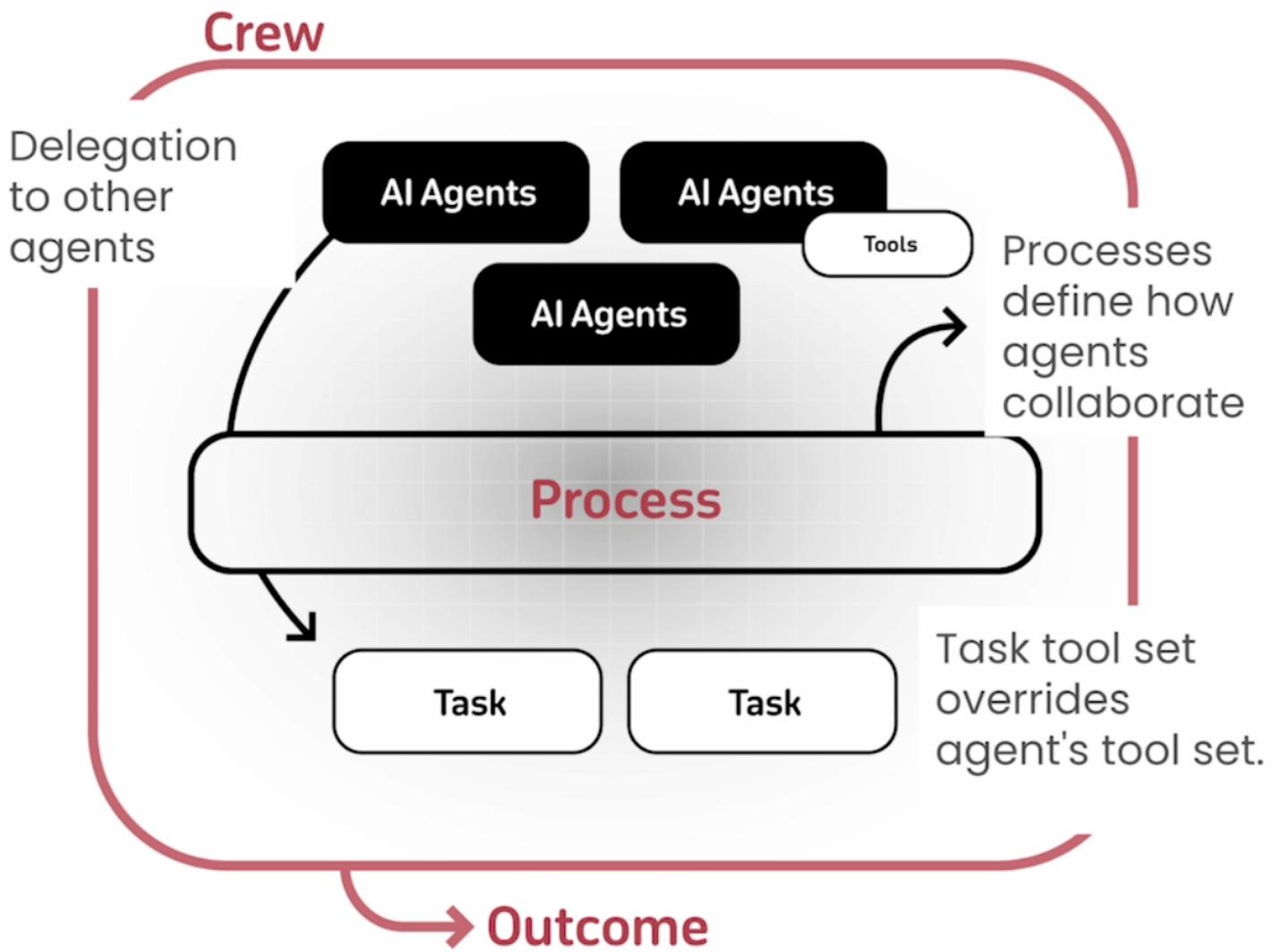
How do Multi Agents Collaborate?

Processes



Collaboration





Job Application Crew

your first multi-agent system

What is the Goal?

Maximize your chances of getting an interview for a given job posting

What is the Process?

- Learn about the job requirements
- Cross that with your skill set and experiences
- Reshape resume to highlight relevant areas
- Rewrite resume with appropriate language
- Set talking points for your initial interview



crewAI Documentation

Cutting-edge framework for orchestrating role-playing, autonomous AI agents. By fostering collaborative intelligence, CrewAI empowers agents to work together seamlessly, tackling complex tasks.

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- Tools
- Processes
- Crews
- Memory

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- Customizing Agents
- Human Input on Execution
- Agent Monitoring with AgentOps

Examples

- Prepare for meetings
- Trip Planner Crew
- Create Instagram Post
- Stock Analysis
- Game Generator
- Drafting emails with LangGraph
- Landing Page Generator