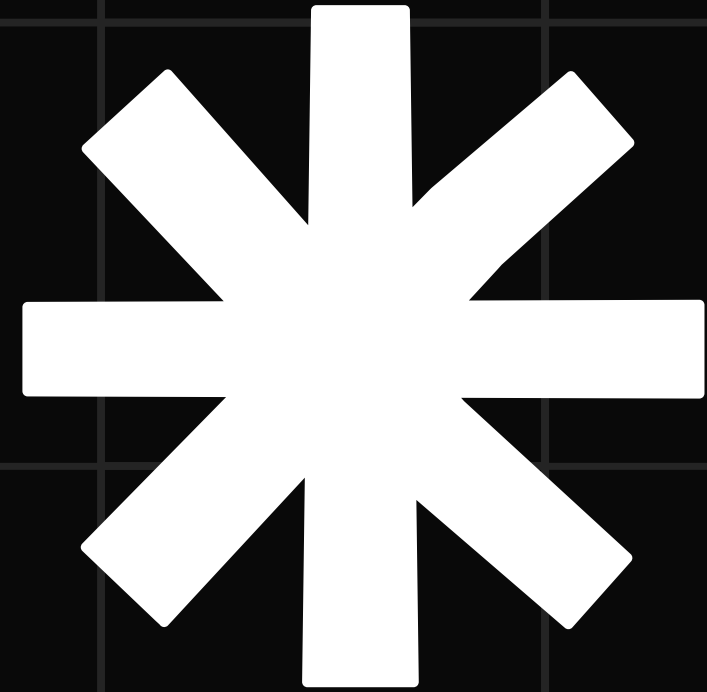


What is....



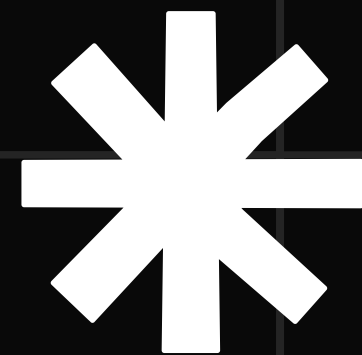
AI Agent ?

Presented by Simeon



The notion of an Artificial Intelligence (AI) agent refers to a system capable of perceiving its environment and taking actions autonomously to accomplish objectives.

Stuart Russell and Peter Norvig:
“An agent is a persistent computational system, capable of acting autonomously to achieve its objectives or goals, when situated in an environment.”



N8N Automation platform

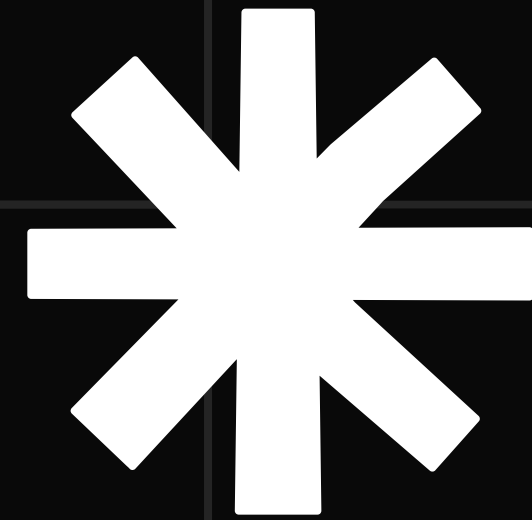
N8N was born as a tool to automate tasks but has evolved into a hybrid platform for automation with super agent powers.

Benefits of N8N

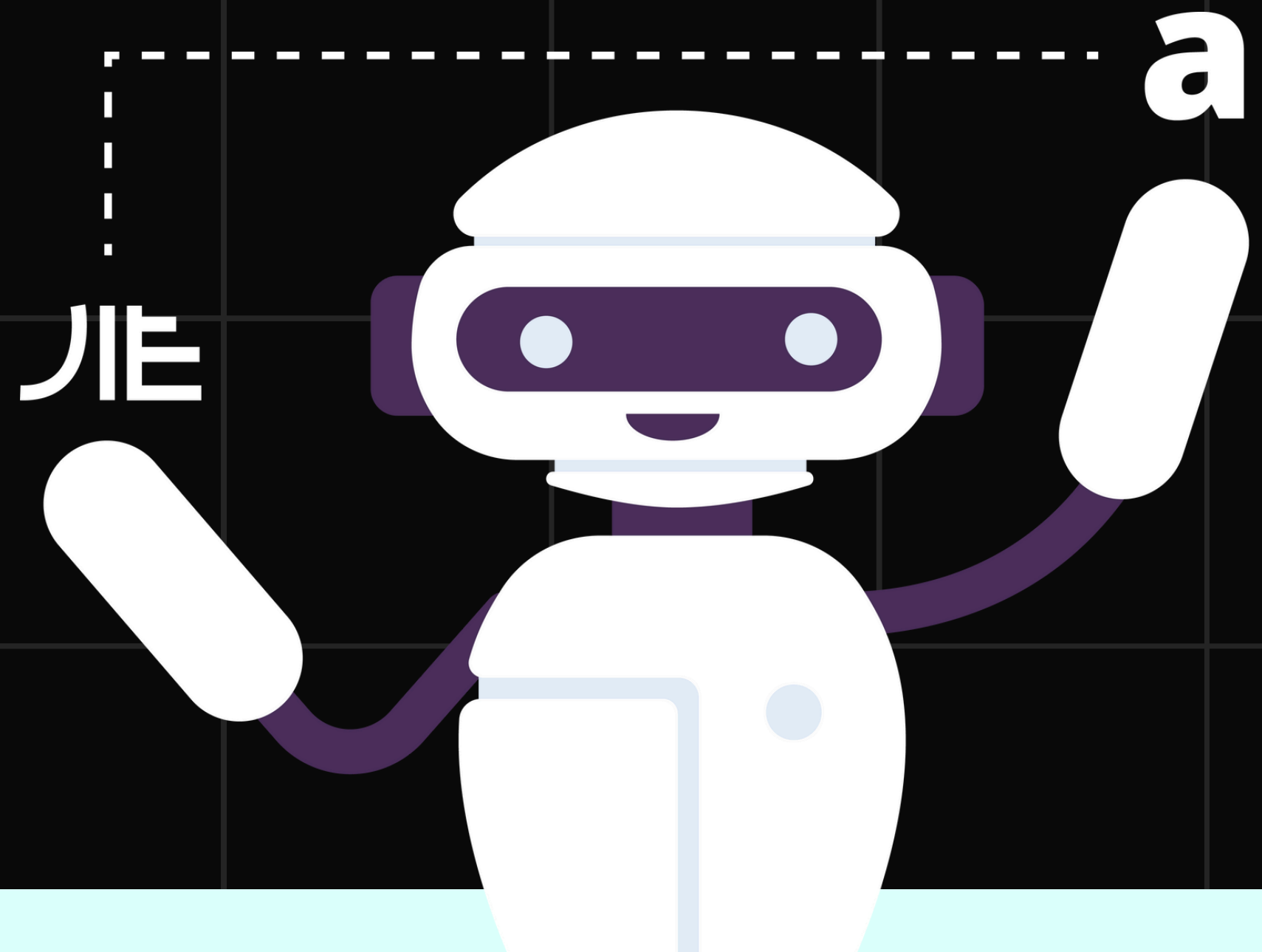
The benefit of agents in N8N is that we can create technically simple but very useful agents.

N8N Limitations

N8N always needs an action that starts the flow, which is why the concept of autonomous agents does not quite fit the bill.

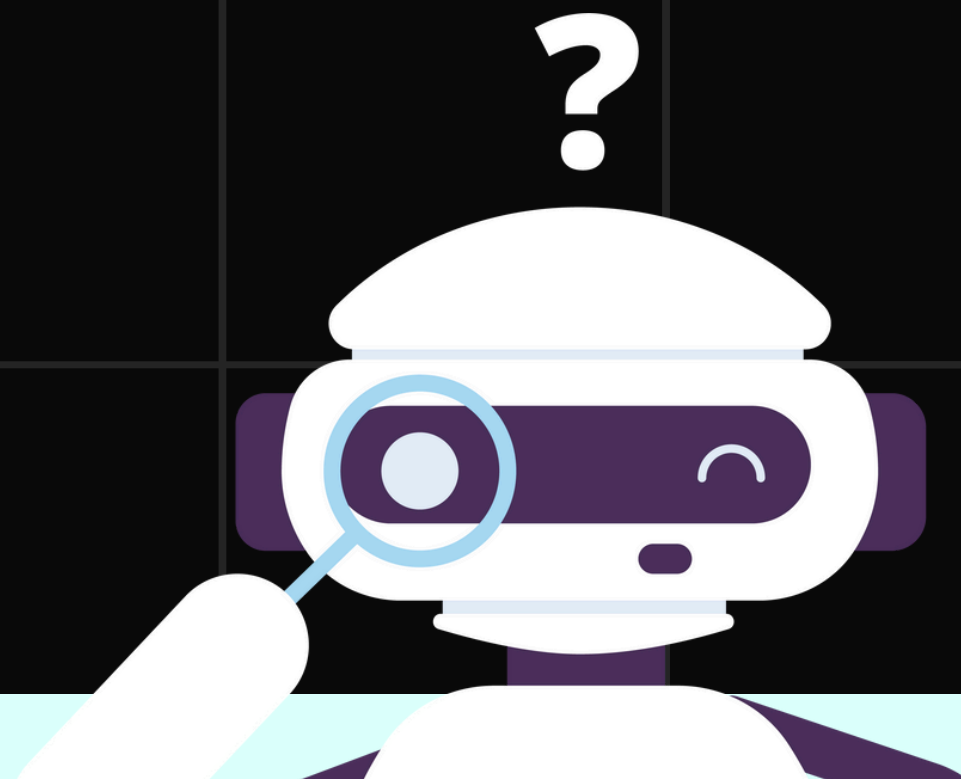


AI Agent on N8N?



Types of AI?

Reactive agent



Reactive agent

AI designed and trained for a specific task, such as image recognition or language translation.

Example: FAQ Bot that answers single questions.

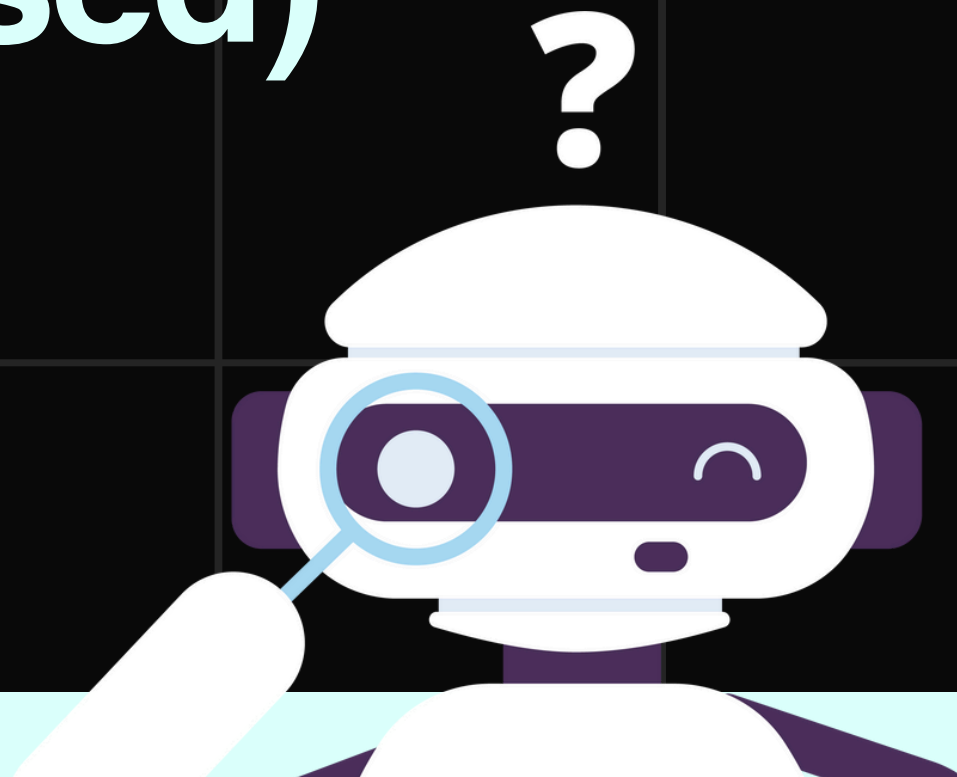
✓ N8n can do it alone + LLM API (OpenAI, Claude)

Solution type: Intelligent automation (NOT a real agent).

💡 Although it has "input → output," it doesn't maintain state, doesn't plan, or decide for itself when to speak or not. It only responds when you call it.

Types of AI?

Deliberative (model-based) agents:



Deliberative agents:

They have an internal model of the world and can plan ahead
datacamp.com

Example: Recommend routes based on traffic, weather, and historical data.

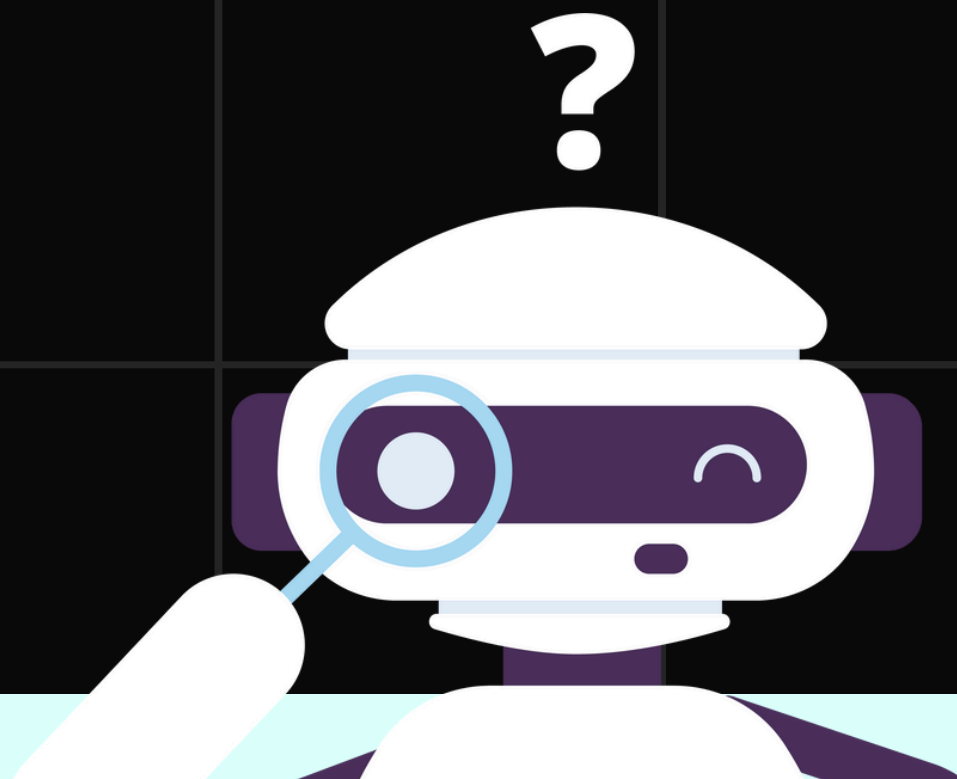
- ◆ N8n can do this if you design the entire logic.
 - Call external APIs.
 - Use databases to maintain context memory.
 - Use LLM for point-to-point reasoning.

Solution type: Start as a small simulated Agent.

💡 There's an internal world model here, but you still program the reasoning logic (e.g., IF rules, calculations, calls).

Types of AI?

Goal-based agents:



Goal-based agents:

They are deliberative agents specialized in pursuing specific goals.

Example: A sales bot that decides the next steps to close the deal for the user.

◆ N8n can do this partially, but it starts to get very complicated.

- If the reasoning is complex, you need:
- Fine-tuning
- Context memory (Pinecone, Redis)

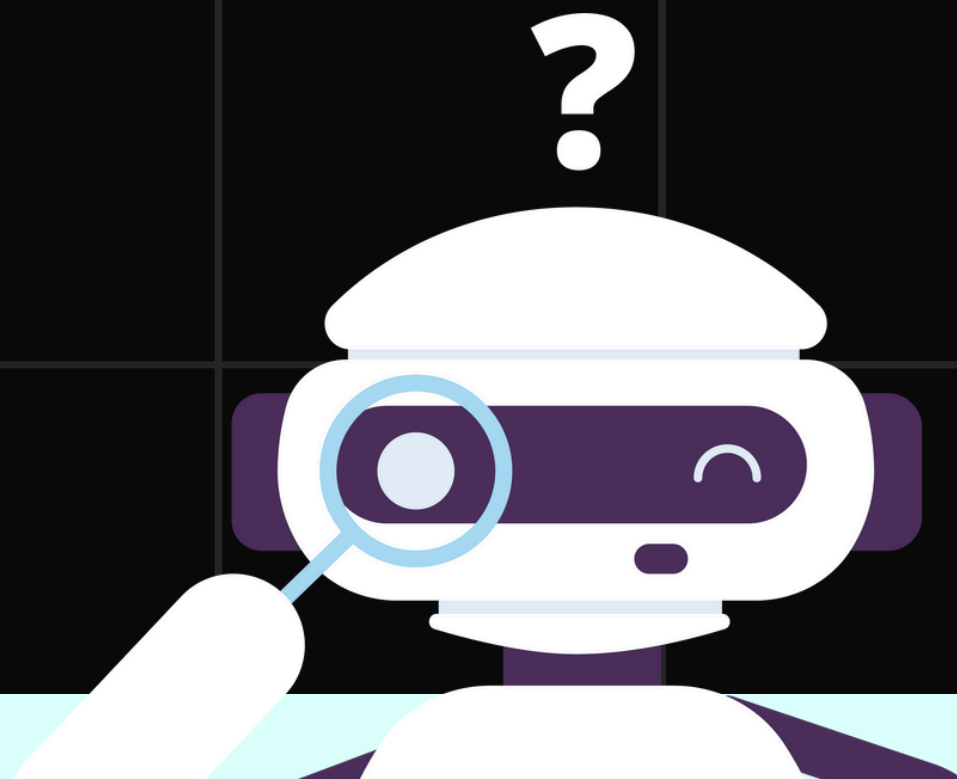
Decision-making (langchain or agent framework)

Solution type: Simplified AI Agent.

💡 Here you start to need to "simulate" goals and internal planning, something that N8n doesn't handle natively.

Types of AI?

Utility-based agents:



Utility-based agents:

They go a step further than goal-based agents, considering not only whether the goal is achieved but how satisfactorily it is achieved.

Example: Dynamic price adjustment maximizes satisfaction.

✗ N8n CAN'T do it alone, but we could achieve rapprochement with a hybrid approach (agent automation)

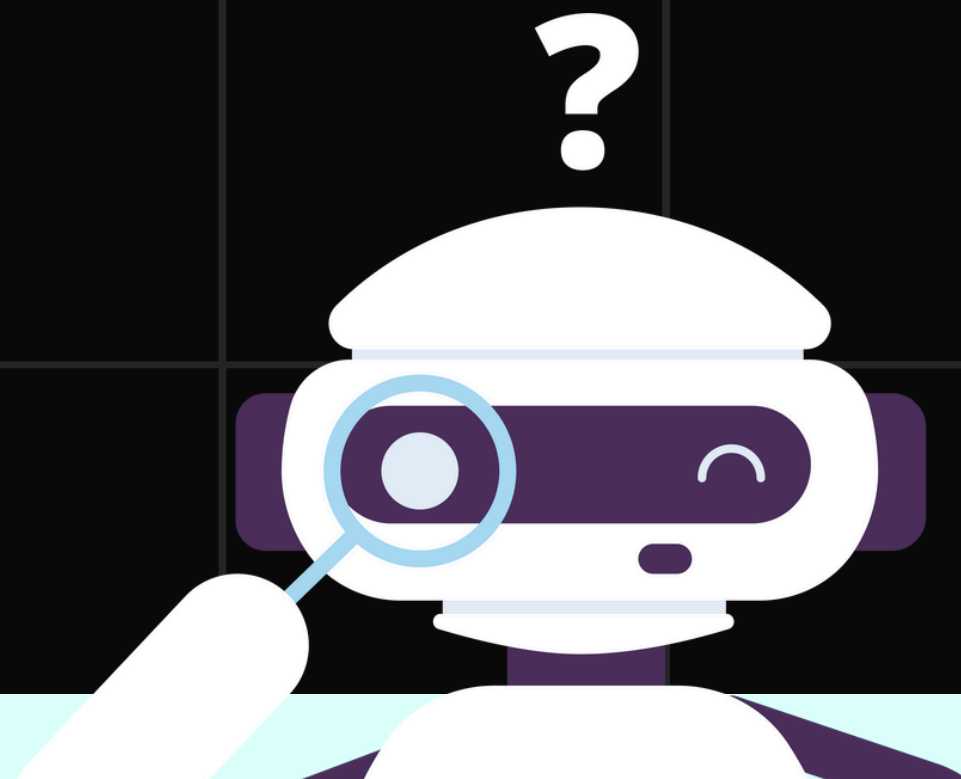
Requires:

- Trained ML models.
 - Decision models.
 - Probably Sagemaker, Vertex AI, etc.
 - LLM for analytics.
- Solution type: Real AI Agent.

💡 Here we're talking about real-time multi-objective maximization. N8n can only orchestrate the data flow, but not the agent core.

Types of AI?

Learning agents:



Learning agents:

These are agents capable of improving their performance with experience.

Example: An agent that learns to improve its responses.

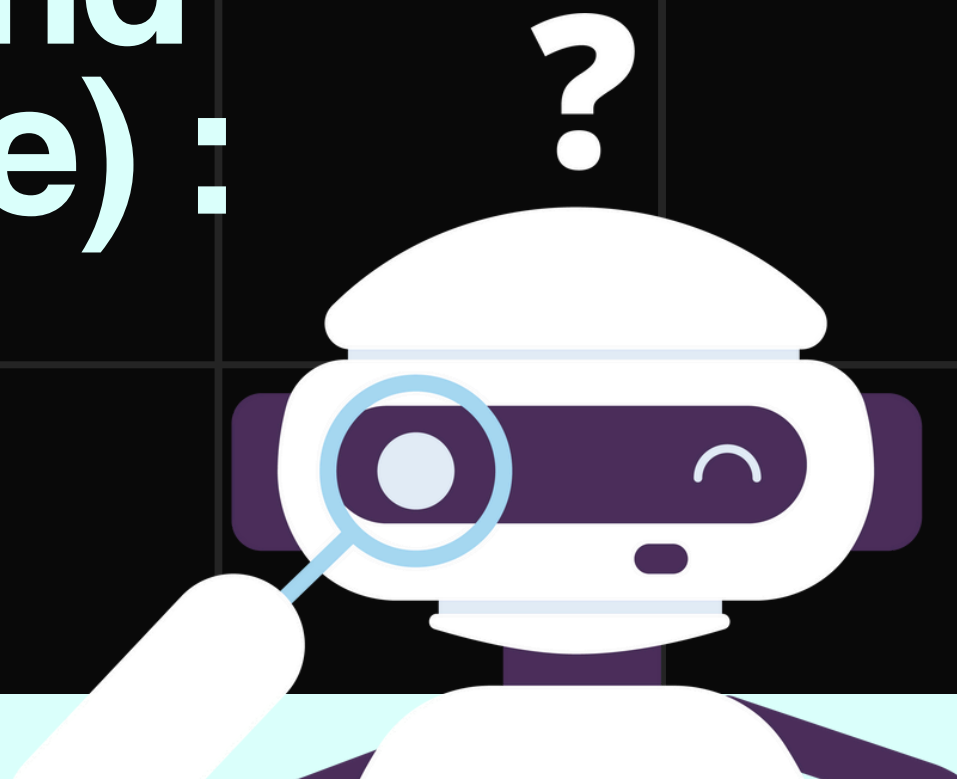
✗ N8n CAN'T do it alone.

- You need:
 - Model training
 - Historical dataset storage
 - Recurring training pipelines.
- Solution type: Pure learning AI agent.

💡 N8n only orchestrates the pipeline; it doesn't do the learning.

Types of AI?

Hybrid agents
(reactive and
deliberative) :



Hybrid agents:

They combine elements of reactive and deliberative (and potentially learning) agents to leverage their strengths.

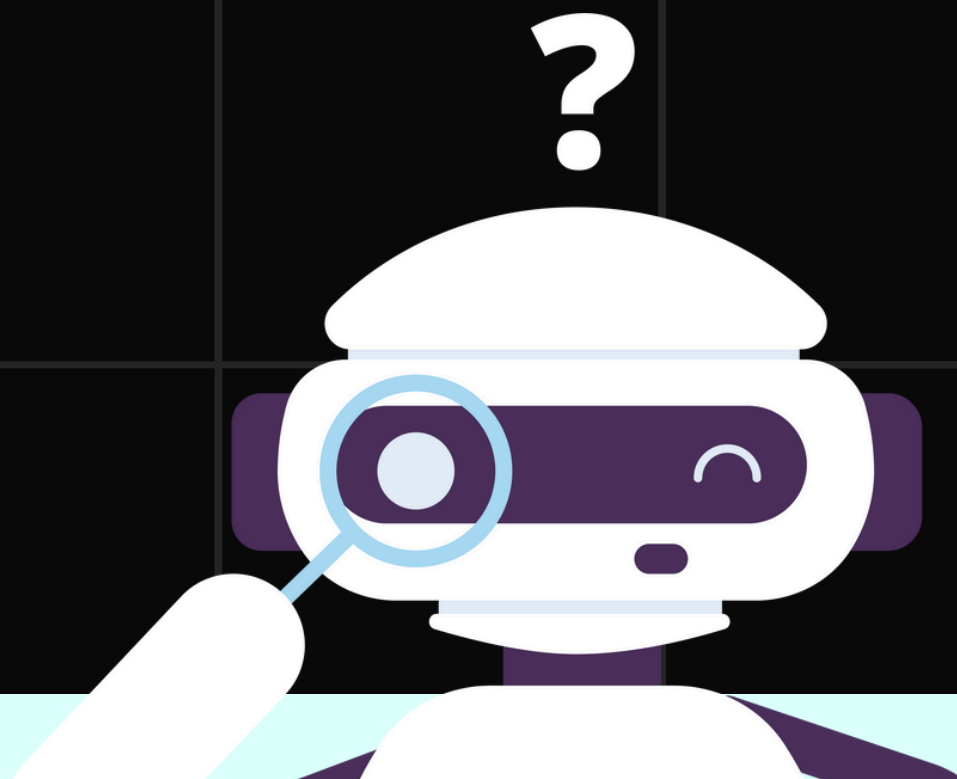
Example: Autonomous car (reaction + planning).

- ◆ N8n can do this partially, but it starts to get very complicated.
- You need:
 - Multiple layers of simultaneous reasoning.
 - Time-critical decision making.
 - Autonomous control engines.
- Solution type: Complex hybrid AI Agent.

💡 N8n falls far short here. You could only simulate the high-level logic, but never control the actual execution cycle.

Types of AI?

Multi-agent systems:



Multi-agent systems:

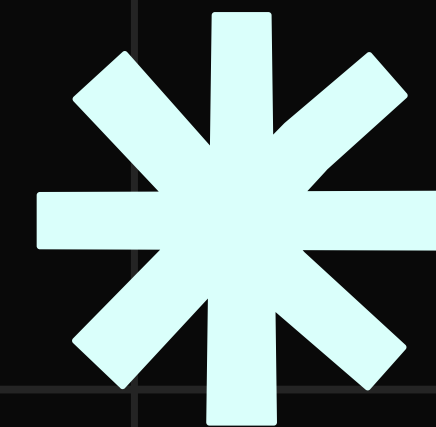
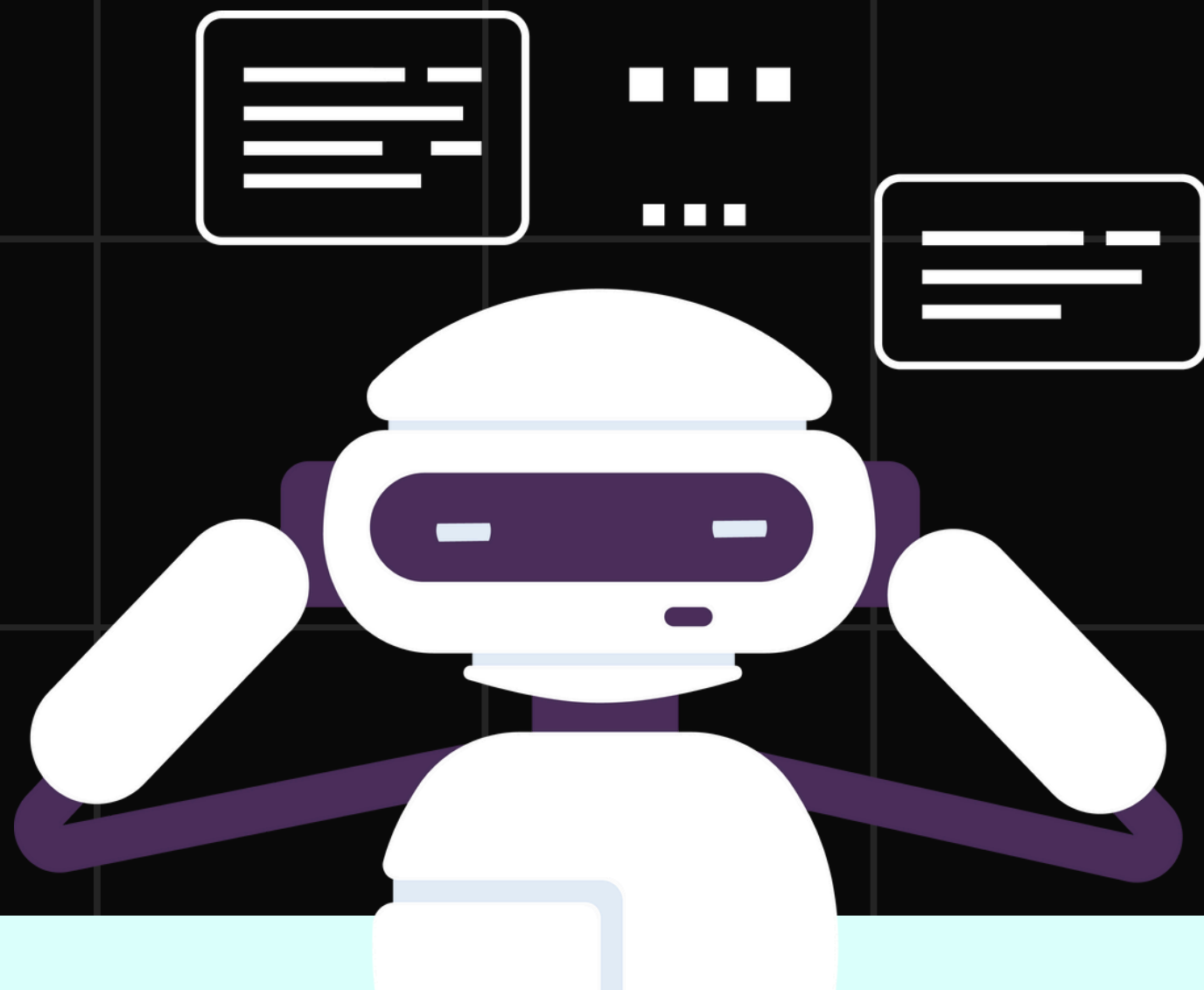
Instead of a single agent, there are environments with multiple interacting agents. A multi-agent system (MAS) consists of several AI agents collaborating (or competing) in a shared environment to achieve goals.

Example: Distributed multi-agent logistics.

- **✗ N8n is only the system orchestrator, not the agents.**
- **You need:**
 - Independent autonomous agents.
 - Distributed communication (Kafka, PubSub, etc.)
 - Shared state coordination.
- **Solution type: Multi-actor AI Agent.**

💡 **N8n is used to visualize and coordinate general states, but not to execute the autonomous logic of each agent.**

AI Agent Components



Environment

It is the medium in which the agent operates, from which it receives perceptions and to which it sends actions.

Action (actuators):

It is the ability to intervene in the environment and produce changes in it

Memory:

Component responsible for storing information relevant to the agent. Memory can be short-term or long-term (learned knowledge, historical data).

Planning:

A key subcomponent of reasoning in deliberative agents. Planning breaks down complex objectives into manageable subtasks.

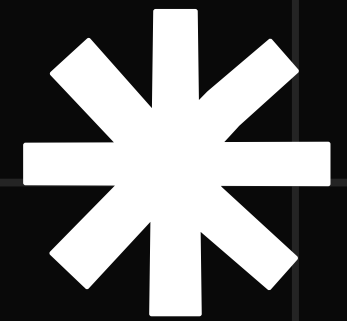
Reasoning (decision making)

It is the agent's "brain", where it processes perceptions, maintains an internal state and decides what actions to take.

Perception (sensors)

Module that captures information from the agent's environment

Agent Mindset



What is the "AI Agent mindset"?

Adopting this mindset means designing systems that not only follow predefined instructions, but can also adapt and evolve over time. It's a transition from rigid automation to adaptive intelligence.

What can an Agent do?

- **Perceive** their environment through data input.
- **Reason** based on information received to make informed decisions.
- **Act** accordingly to achieve specific goals.
- **Learn** from experience and adapt to new situations

