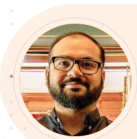


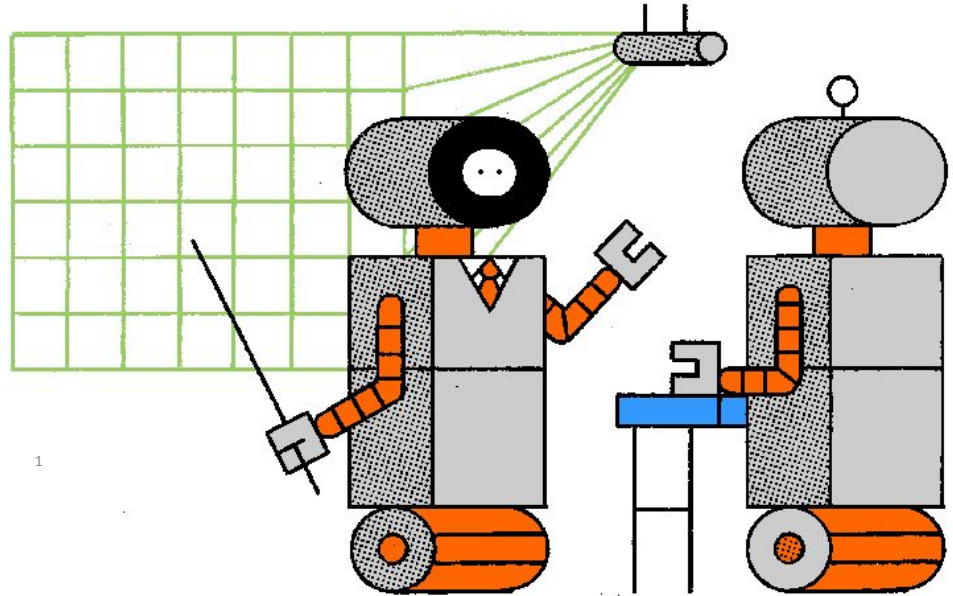
# Let's build Full Stack Agents

*(a.k.a Automated Workflows with website)*

## Module 3

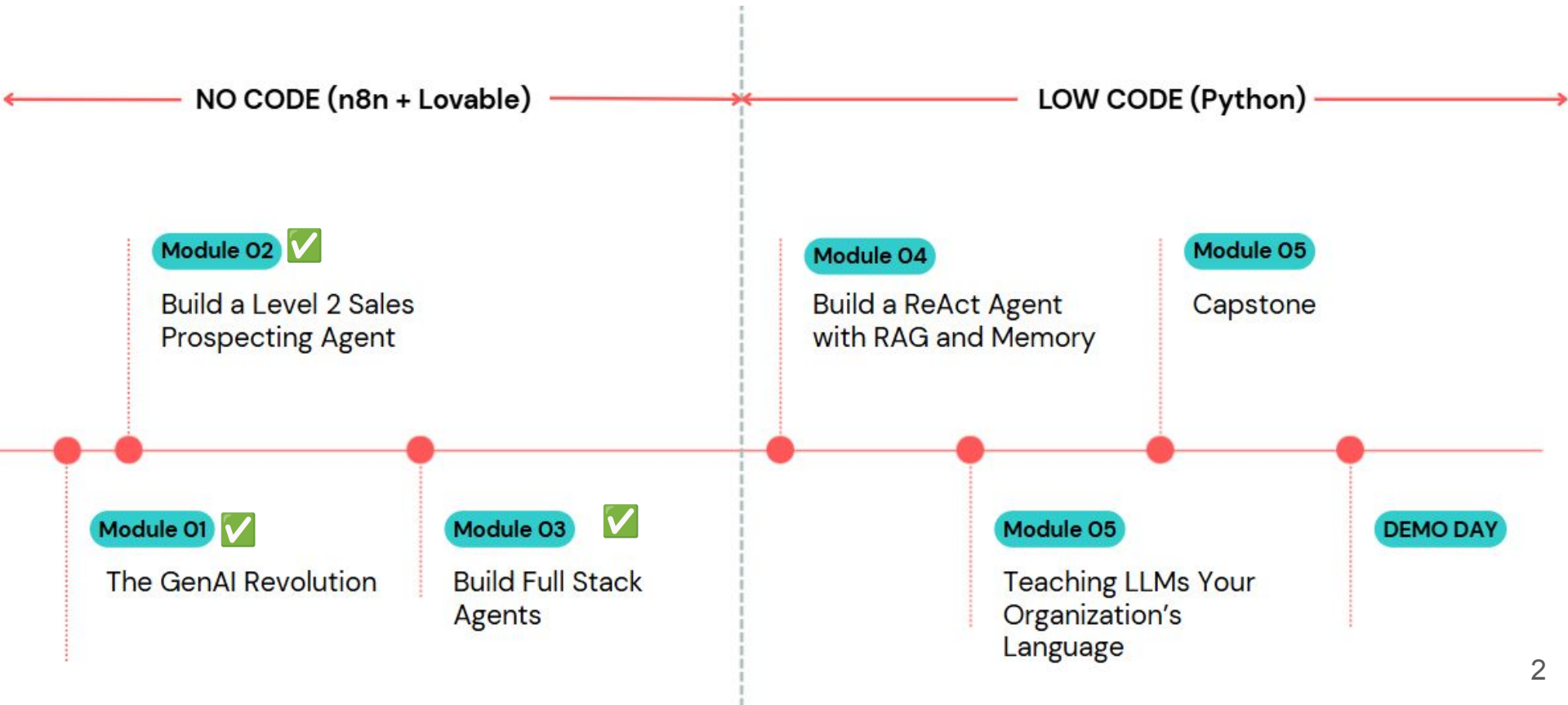


Hamza Farooq  
Founder & CEO



# Course OverLook

Building Gen AI Agents for Enterprise: Beyond the Hype









# Recap from Module 02

- **Prompt Engineering: Role, Format, Style**
  - Learn how to craft prompt stacks that guide behavior and enable better agent control.
- **Context Engineering: Chunking, Windowing, Input Design**
  - Understand how to inject relevant information into agents effectively using input design techniques.
- **Evaluating Agent Behavior in Real Time** (in [lessons](#))
  - Explore how to test and monitor agent performance using qualitative and quantitative signals

# Recap from Module 02

- **Tools Deep Dive: n8n and No-Code Workflows**
  - Get familiar with n8n as the core orchestration platform for chaining together inputs, logic, and APIs.
- **Sales Prospecting Agent Architecture**
  - Use a concrete use case to scaffold understanding of how real-world vertical agents are structured.
- **Build and Test Your Agent in n8n**
  - Assemble your first working prototype that demonstrates autonomous workflow execution.

# Expected Outcomes for Capstone Project

-  Design and develop an AI agent using course concepts
-  Work with tools like n8n, LangGraph, or custom stacks to connect memory, APIs
-  Define a use case, build key features, and deploy your solution
-  Brainstorm, build, and present together — just like in real AI teams
-  Share your solution through a 3–5 min demo and a short write-up
-  Pick meaningful problems and apply agentic thinking to tackle them creatively

# Did submit your idea for capstone project?

List your team and projects [here](#) if you have not done it already...



# Learning Outcomes for Module 03

- Integrating Front End Interfaces with n8n
- Model Context Protocol (MCP) in n8n
- Structuring Agent Logic and User Interactions
- Designing End-to-End Agent Workflows



**00: Reasoning Model Update (Kimi is here)**



# Recent Updates: New Model in the town

## Kimi K2: The Most Powerful Open-Source Agentic Model Yet?

Alibaba-backed startup Moonshot released last Friday night (**July 11, 2025**)

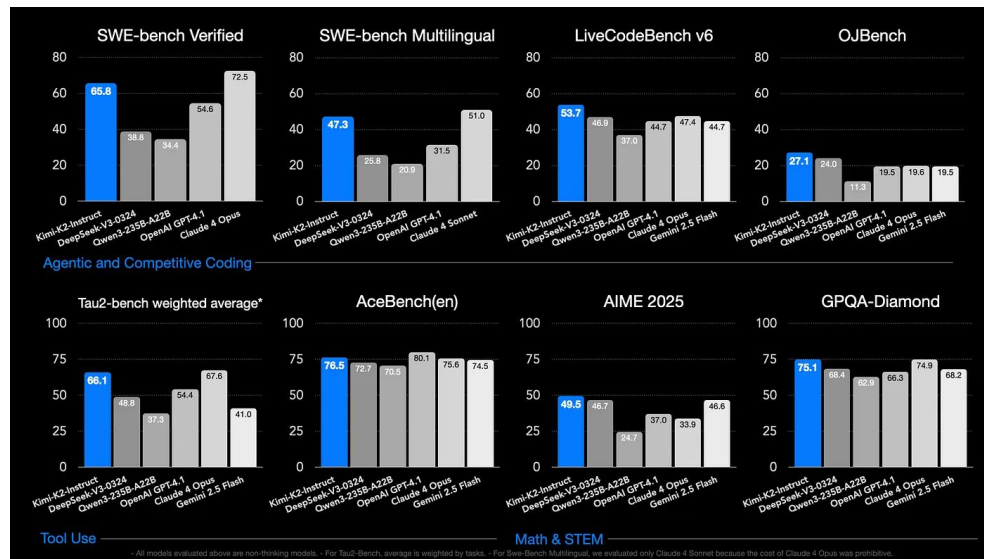
Kimi K2 model as a low-cost, open source large language model, with a focus on coding, agent workflows, tool use, and next-gen reasoning.



## What Is Kimi K2?

Kimi K2 is a large language model developed by Moonshot AI with a focus on **agentic capabilities**, not just text generation.

- Mixture-of-Experts architecture
- 1 trillion total parameters, 32 billion active per inference
- Released in two variants:
  - **Kimi-K2-Base**: For fine-tuning
  - **Kimi-K2-Instruct**: Instruction-following for general use



# moonshotai/Kimi-K2



**Daniel Vila Suero** • 1st  
Building data tools @ Hugging Face  
10h •

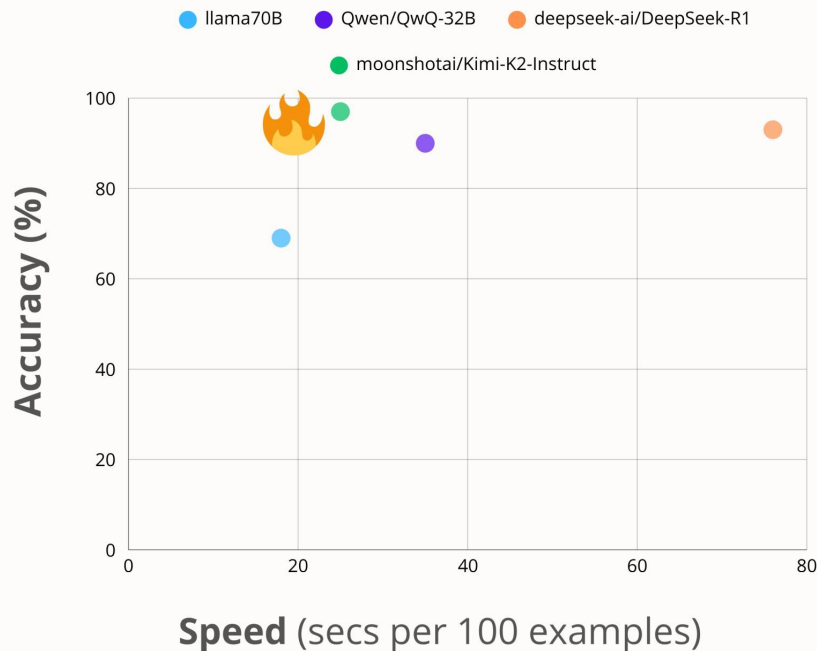
I just tested Kimi-K2 with a benchmark I use for new models, and the results are 🔥🔥🔥🔥

The task: zero-shot binary classification of jailbreak prompts.

- > Best score across the board (97% accuracy vs 93% of Deepseek R1)
- > The second-fastest inference speed, thanks to [Groq](#) via Hugging Face, is 3x faster than R1.

And the best thing? You can run similar experiments with no code and no install, thanks to Inference Providers and [Hugging Face](#) AISheets:



## Kimi K2 for zero-shot classification



# moonshotai/Kimi-K2 on Groq

**Groq** has just deployed  
**Moonshot AI's Kimi K2**  
few days ago.

The screenshot shows the Groq Cloud interface for the **Kimi K2 Instruct** model. At the top, there's a navigation bar with 'Documentation', 'Docs' (selected), and 'API Reference'. A search bar contains 'Kimi K2 - GroqDocs'. Below this, the model name 'Kimi K2 Instruct' is displayed with a 'Preview' button. The model ID 'moonshotai/kimi-k2-instruct' is shown. A 'Try it in Playground' button is present. The interface is divided into four sections: 'TOKEN SPEED' showing '~250 TPS', 'INPUT' with a 'Text' dropdown, 'OUTPUT' with a 'Text' dropdown, and 'CAPABILITIES' showing 'Tool Use, JSON Mode'.

 **Speed Insights** 

Tokens		
26	1,024	1,050
Input tokens	Output tokens	Tokens
Inference Time		
0.00	1.81	1.82
Input seconds	Output seconds	Seconds

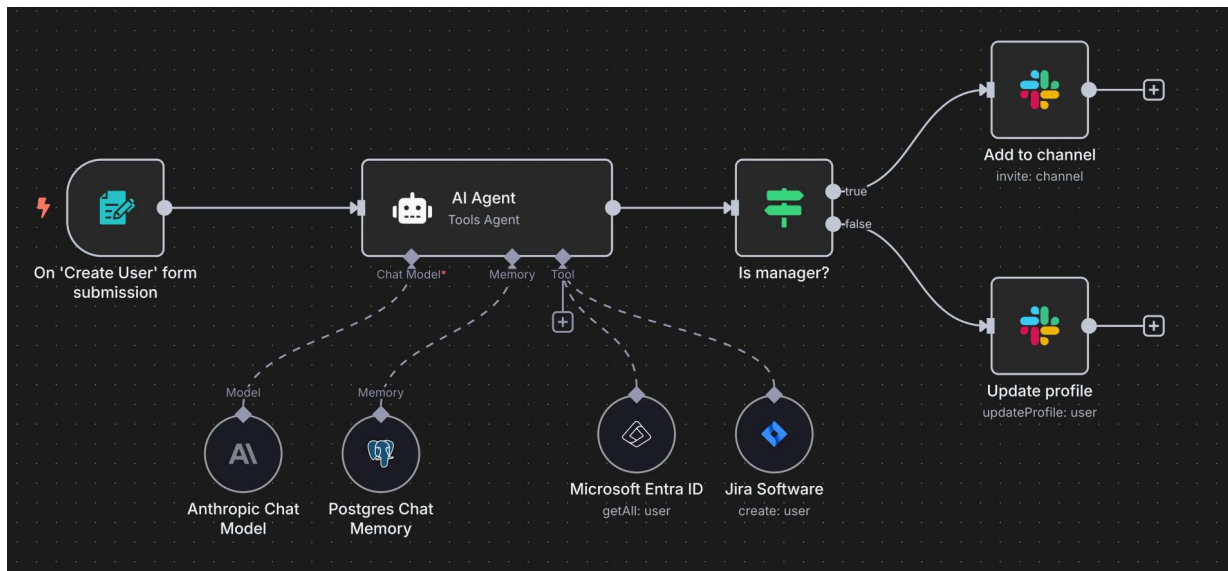
Tokens / second		
21,930	564	578
Input	Output	Total

Round trip: 2.38 s    Model: moonshotai/kimi-k...

# 01: Integrating Front End Interfaces with n8n

# Recap: What is n8n?

A workflow automation tool that lets you build automated processes without writing a ton of code. Think of a digital assistant that glues your apps together, handling tasks like data syncing, alerts, and even multi-step business processes automatically.



# Recap: Types of Nodes



Trigger Nodes



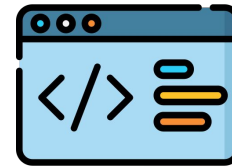
Action Nodes



Utility Nodes

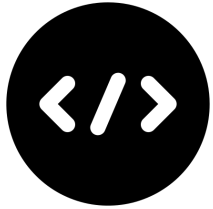


AI Nodes



Code Nodes

# Types of Nodes (Advanced)



Output Parser Node



Webhook Node



HTTP API Node



# Structured Output Parser Node

This node is used within your n8n workflow to transform unstructured or semi-structured text (especially from LLM responses) into organized, machine-readable data.

## How it helps:

- Prepare AI Output for Systems
- Extract Key Info
- Normalize Data

### Edit Input Schema

```
1  {
2    "type": "object",
3    "properties": {
4      "selected_feed_url": {
5        "type": "string",
6        "description": "The most relevant RSS feed URL based on ICP analysis"
7      },
8      "reasoning": {
9        "type": "string",
10       "description": "Brief explanation of why this feed was selected"
11      },
12      "target_roles": {
13        "type": "array",
14        "items": {
15          "type": "string"
16        },
17       "description": "List of job roles most likely to be found in this feed that match the ICP"
18      },
19      "confidence_level": {
20        "type": "string",
21        "enum": ["High", "Medium", "Low"],
22        "description": "Confidence level in the feed selection"
23      }
24    },
25    "required": [
26      "selected_feed_url",
27      "reasoning",
28      "target_roles",
29      "confidence_level"
30    ]
31  }
```

# Webhook Node

A specialized Trigger Node that acts as a "listener," providing a unique URL for other services to send data to.

## Key Use Cases:

- Event-Driven Automation
- Real-time Data Intake
- Integrating Custom Services: Connect n8n with any service capable of sending webhook notifications.

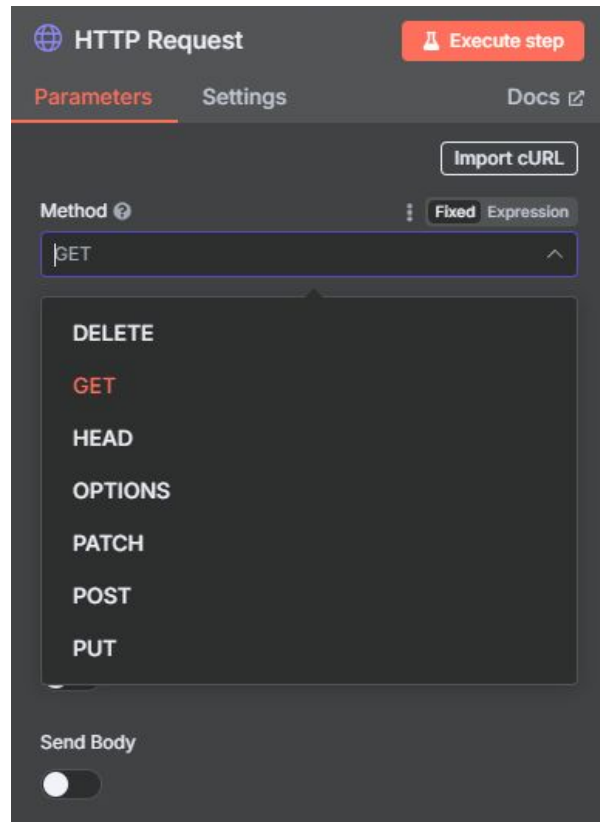
The screenshot shows the configuration interface for the Webhook Node in n8n. At the top, there's a 'Webhook' title and a red button that says 'Listen for test event'. Below this are three tabs: 'Parameters' (which is active), 'Settings', and 'Docs'. Under the 'Parameters' tab, there's a section titled 'Webhook URLs' with two buttons: 'Test URL' and 'Production URL'. The 'Test URL' button is selected, and it shows a 'GET' method and a long URL: 'https://rajwani.app.n8n.cloud/webhook-test/82e95efe-5fd6-44d9-9d61-7d16ab15c307'. Below this, there are several dropdown menus: 'HTTP Method' (set to GET), 'Path' (set to the same long URL), 'Authentication' (set to None), 'Respond' (set to Immediately), and 'Options' (set to No properties). At the bottom of the 'Options' section, there's an 'Add option' button.

# HTTP API Node

This versatile node lets your n8n workflow send and receive data from virtually any web-based API. It's your bridge to the entire internet.

## Key Request Types:

- **GET:** Retrieve information (e.g., fetch product details).
- **POST:** Send new data (e.g., create a new user account).
- **PUT/PATCH:** Update existing information (e.g., modify an order status).
- **DELETE:** Remove data (e.g., delete an old record).



# Integrate n8n workflow with Lovable application

Powered by Traversaal.ai

airbnb EXPERIMENTAL

## Airbnb Search

### Describe your perfect stay

Try an example ▾

Where would you like to stay?

e.g., "Oceanfront villa in Santorini with infinity pool and sunset views for 4 guests from 21st July to 23rd July 2025"

Your Name

Email Address

**Search**

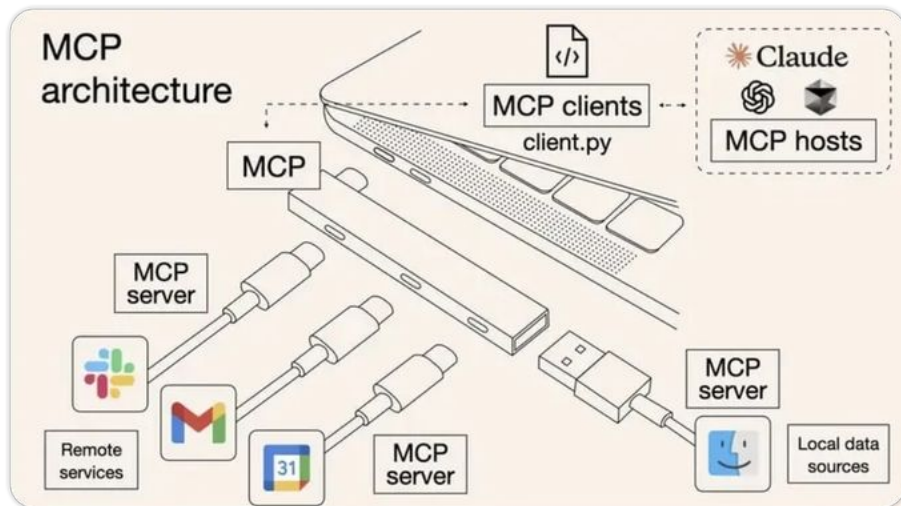
Your personalized Airbnb listings will be sent to your email within minutes.

## 02: Model Context Protocol (MCP)

# Model Context Protocol (MCP)

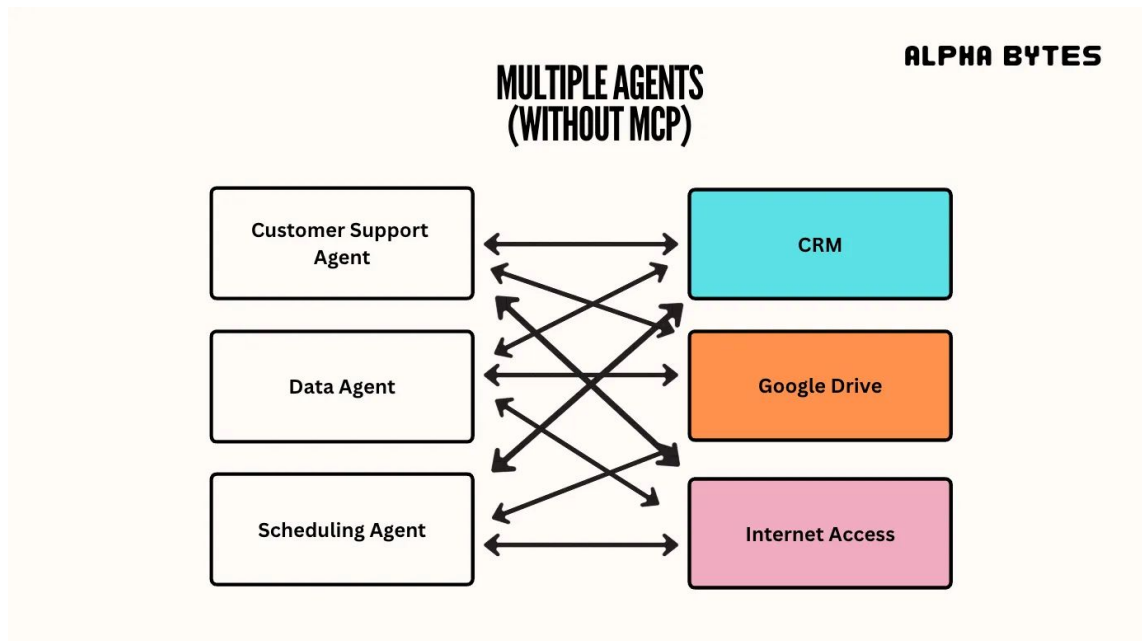
*The USB-C for AI*

- MCP is a set of rules that helps different AI models and systems communicate with each other in a standard way.
- Middleware that connects agents to external tools
- Think of it like a USB-C that lets multiple devices to connect to your system 💡



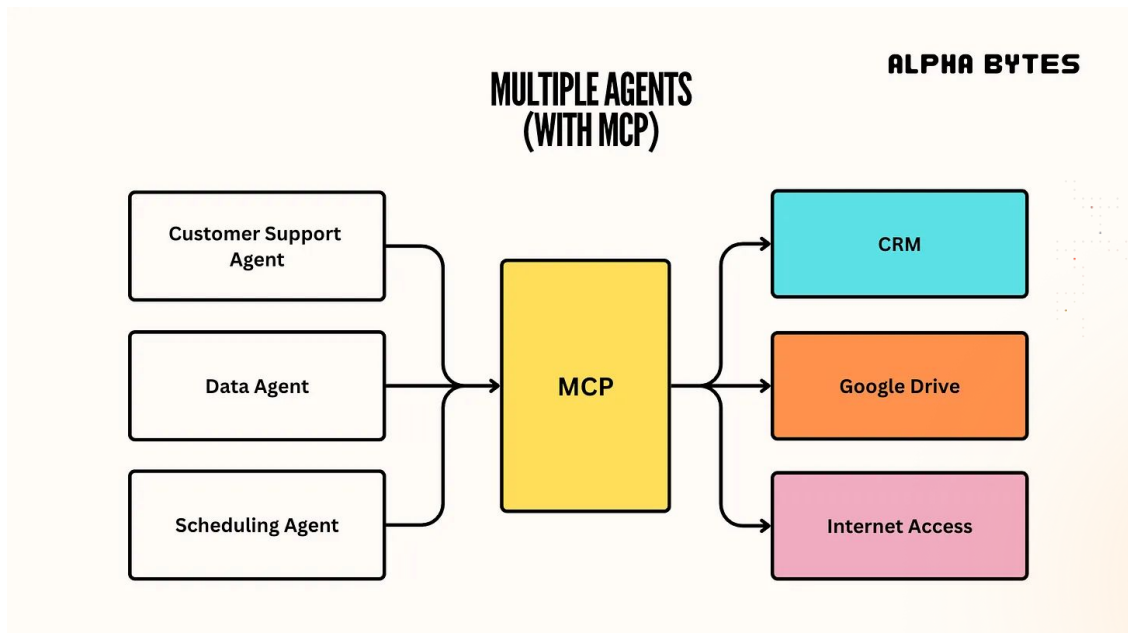
# How Agents used tools before MCP

- **The Old Way:** Connecting AI to tools meant building a unique, custom "bridge" for every single link.
- **The Problem:** This created a tangled, expensive mess as AI systems grew (e.g., 3 AI helpers x 3 tools = 9 custom connections!).



# How Agents used tools after MCP

- With MCP, AI agents and tools learn one standard "language."
- **The Result:** This means simple, unified connections, dramatically cutting complexity and cost (e.g., 3 AI helpers + 3 tools = just 6 easy setups!).





# Significance of MCP

- **Boosts Efficiency:** Faster connections and easier swapping of AI models or tools.
- **Fuels Innovation:** Enables quick building of new, complex AI solutions.
- **Future Standard:** Aims to be as fundamental for AI as Wi-Fi is for our devices.

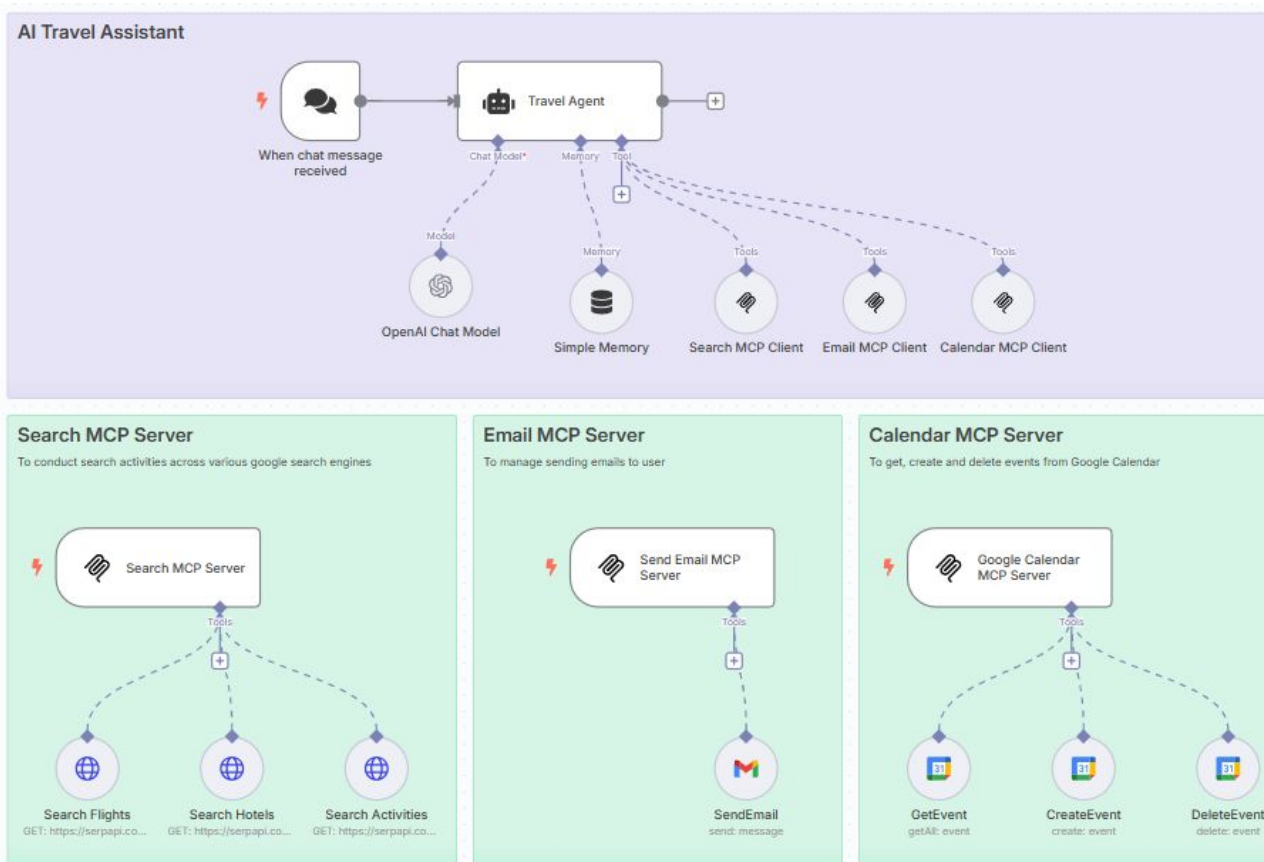


# MCP in n8n

- n8n's diverse node types make it ideal for implementing the Model Context Protocol (MCP). MCP architecture consists of two types of nodes:
- **MCP Client:**
  - Part of workflow that initiates a request, acting as the "requestor" in an MCP communication.
  - n8n workflow can initiate requests from an AI Agent (e.g., via AI/LLM Nodes) to external tools.
- **MCP Server:**
  - Part of workflow that receives and responds to incoming MCP requests, acting as "responder."
  - n8n workflow can also receive MCP requests (e.g., via a Webhook Node) and perform actions for external AI Agents.



# MCP in n8n: Travel Agent Example

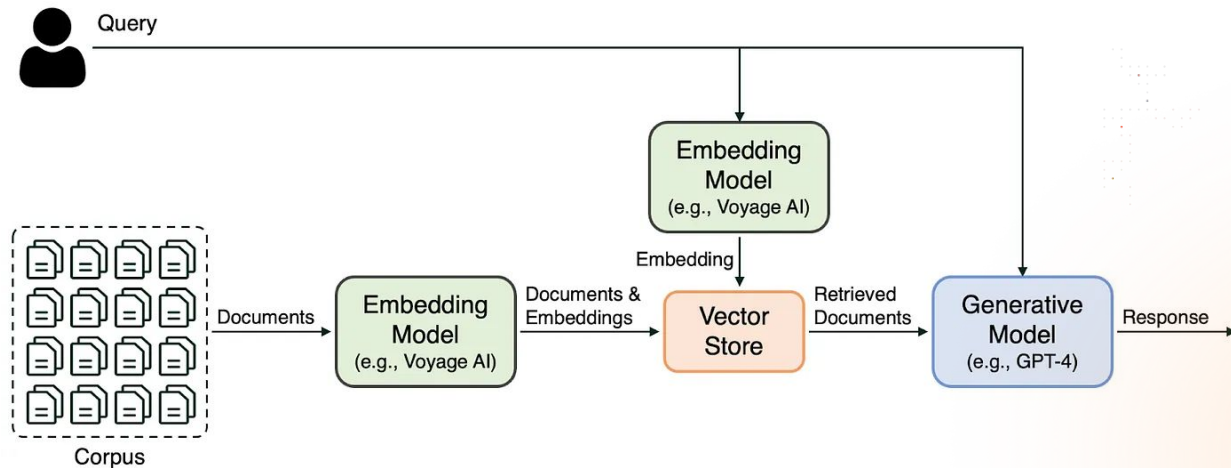


# 03: Retrieval Augmented Generation (RAG)

# Enterprise Knowledge Management or RAG

Enterprise Knowledge Management (EKM) is the systematic process by which organizations capture, store, manage, and share their collective knowledge.

In short, something what we have been calling as **Retrieval Augmented Generation (RAG)**



**RAG** can ingest,  
understand, and respond  
to questions about your  
data confidently with  
**sources**



How does our current revenue growth compare to our main competitors this quarter, and what are the key factors driving our performance?

SEARCH

As of this quarter, our revenue growth is at 7%, which is slightly above the industry average of 6.5%. We are performing particularly well compared to our main competitors: Competitor A (5% growth) and Competitor B (6% growth). The key factors driving our performance include increased market penetration in Asia, the successful launch of our new product line, and improved operational efficiencies.

Would you like a detailed breakdown by region or product, or need further analysis on any specific competitor?

#### Internet Search

From Top Sources



Top Microsoft Competitors & Alternatives 2024

Source:gartner.com



Microsoft Corporation Profit Rises In Q3, Beats estimates

Source: Business Insider

#### Documents

Google Drive Results



Quarterly\_results\_Q1.csv  
finance/2024/

OPEN DOC



Annual\_10k.pdf  
finance/docs/

OPEN DOC



Finance\_goals\_2024.docx  
finance/board\_meeting/

OPEN DOC



pitch\_deck.pptx  
investors/

OPEN DOC

#### Slack

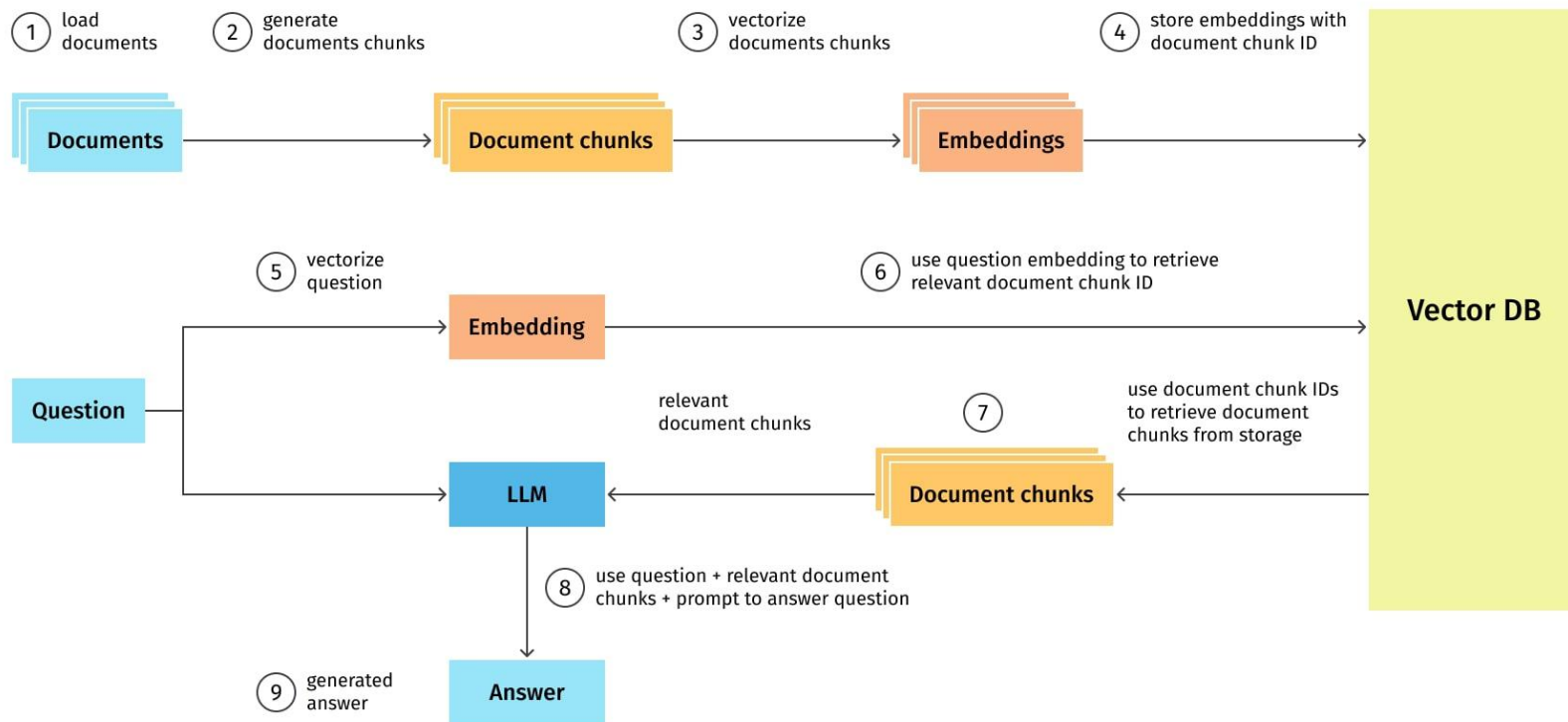
Lex: Q1 seems to be green but we need to be prepared for Q2

OPEN CONVERSATION

Mark: Can you guys summarise outbound sales report tomorrow in front of directors?

OPEN CONVERSATION

# RAG Architecture



# 04: Full Stack Search Agent





# Build Your first Agent

**Use n8n to build an agent**





# Thank you!



**Hamza Farooq**

hamza@traversaal.ai

