RAG: 檢索增強生成簡介

Retrieval Augmented Generation

11/17/2024

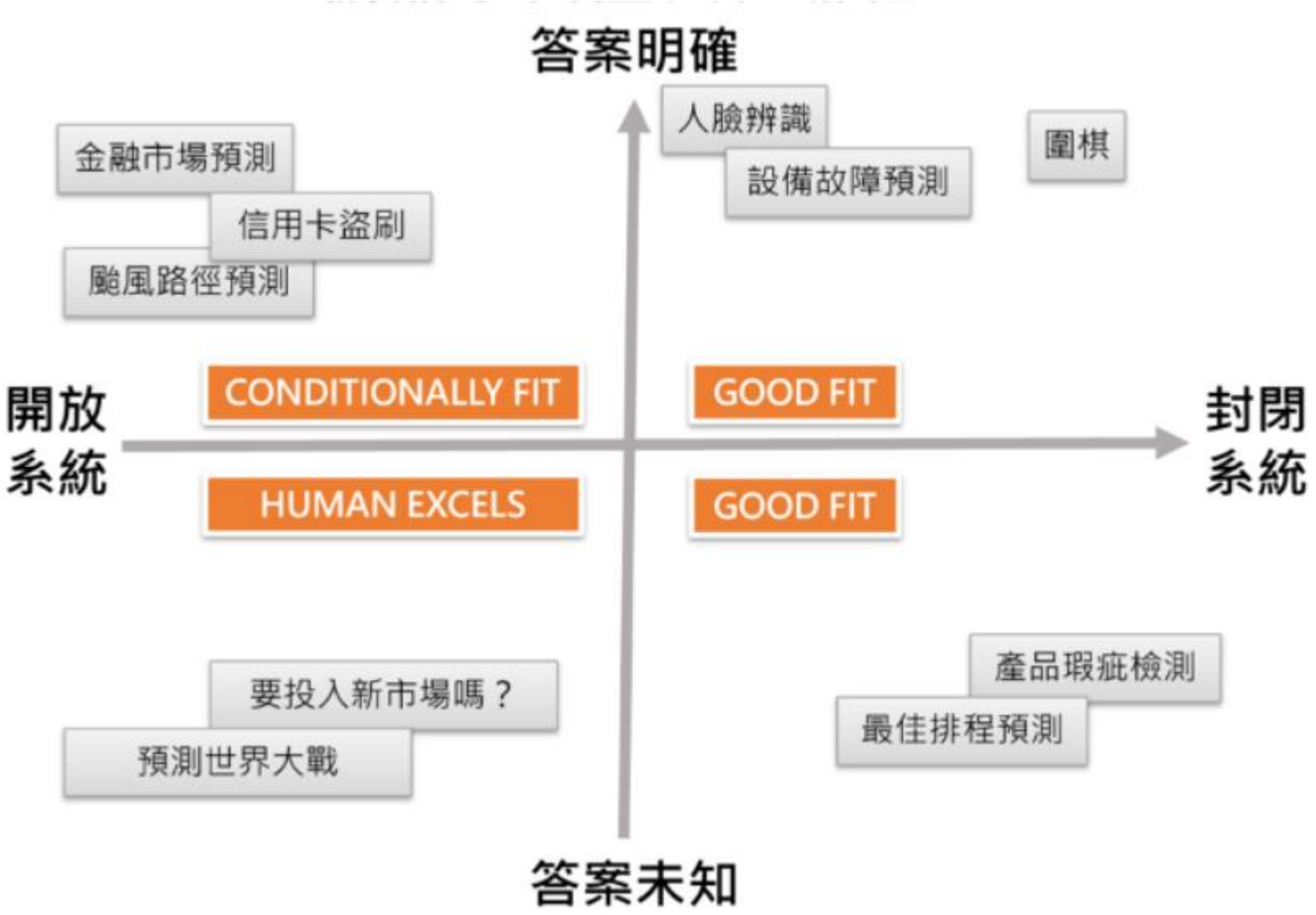
Louisa Coffee

我認為，通用型人工智慧（AGI）還需要30到50年才有可能實現，這段距離非常遙遠，希望我們最終能抵達那一天。

AI科學家吳恩達（Andrew Ng）
2023-09-25

人工智慧應該很聰明

但是目前人工智慧還在學習中

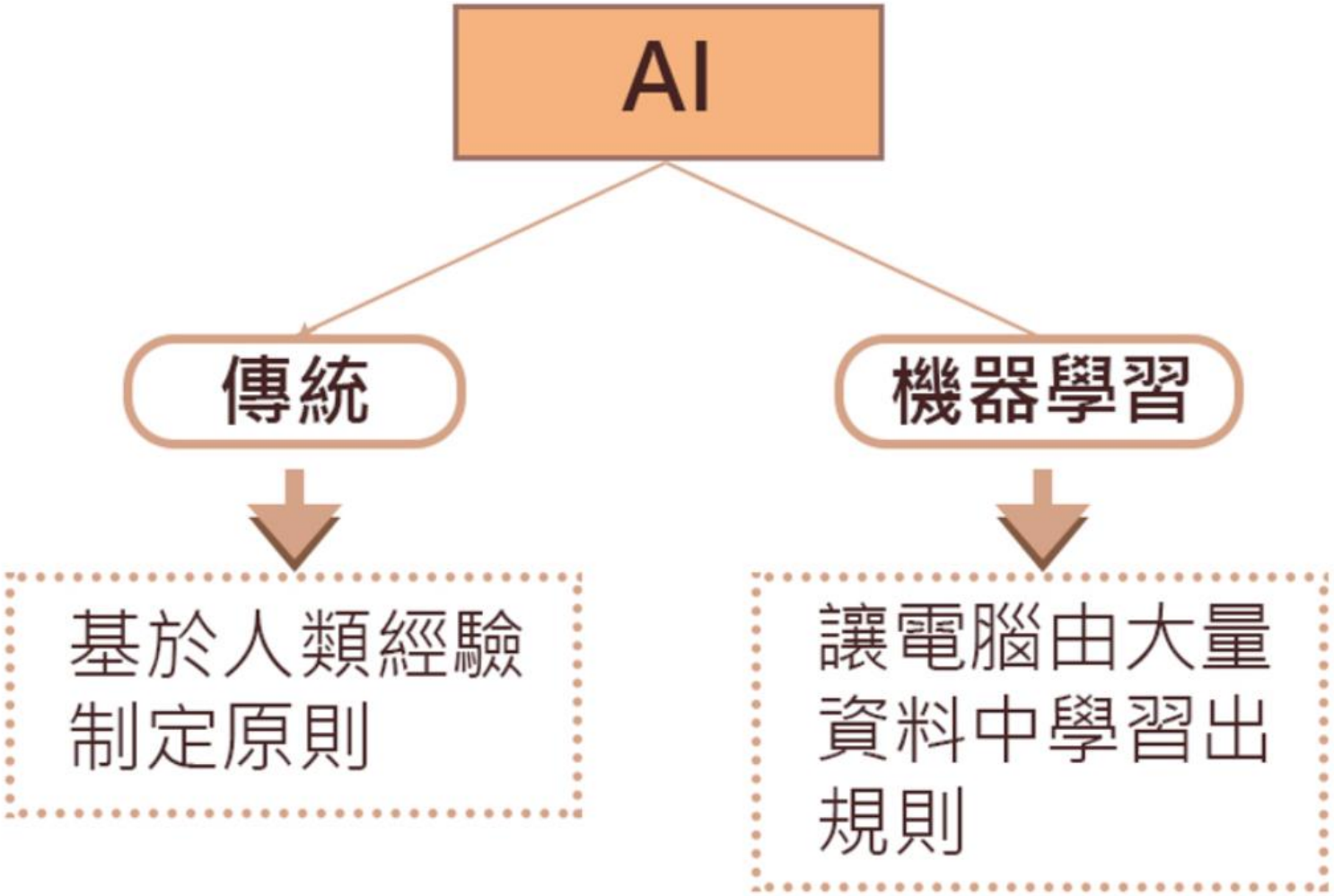


生成式 AI： LLM + RAG

- **AWS** Bedrock Anthropic Claude 3
- **Microsoft** Azure OpenAI ChatGPT
- **Google** Gemini

https://www.kaggle.com/models/

LLM:大型語言模型
Large Language Model



Top LLM Providers

#1 OpenAI

#2 Azure OpenAI

#3 ANTHROP\C

#4 Hugging Face

#5 Vertex AI

#6 fireworks.ai

#7 ollama

#8 Amazon Bedrock

Amazon Bedrock

快速簡易的使用基礎模型來建立、擴展生成式 AI 應用

透過單一 API 選擇領先的 FM
Choice of leading FMs via single API

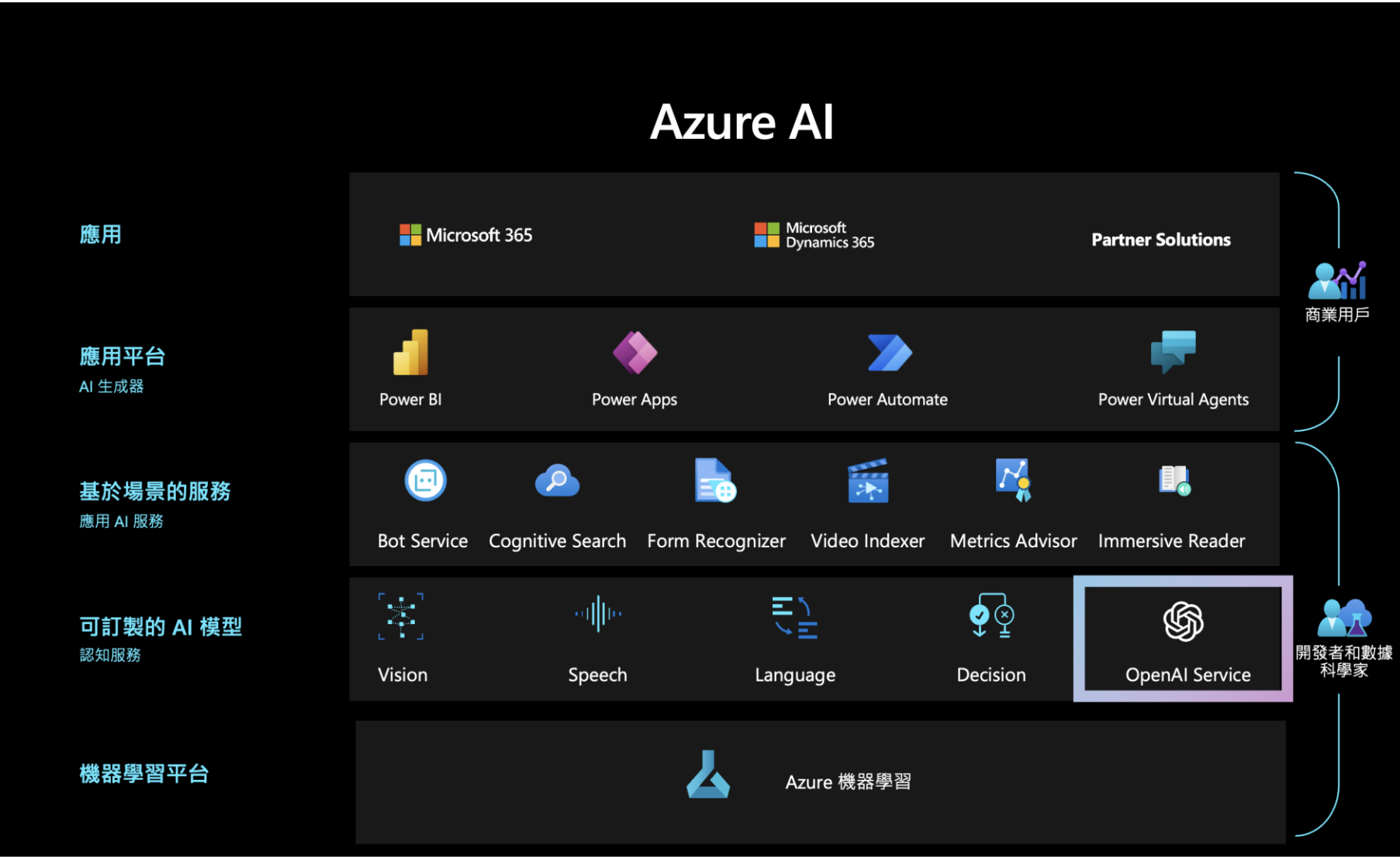
客製化基礎模型
Model customization

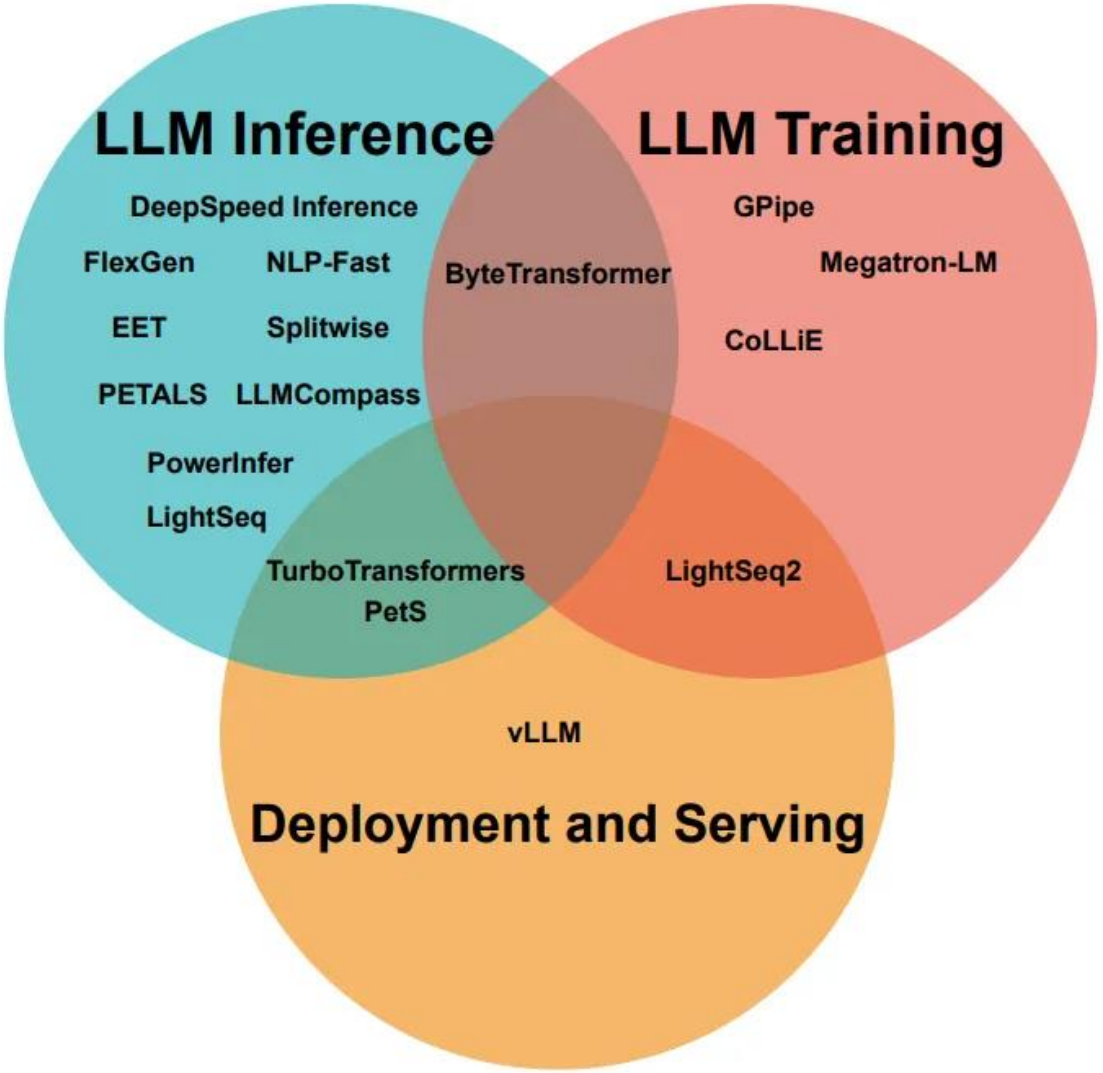
快速實現RAG檢索增強生成架構
Retrieval Augmented Generation (RAG)

以Agent執行多步驟複雜任務
Agents that execute multistep tasks

資安、隱私與安全保護
Security, privacy, and safety

Azure AI


應用
Microsoft 365
Microsoft Dynamics 365
Partner Solutions
商業用戶
應用平台
AI 生成器
Power BI
Power Apps
Power Automate
Power Virtual Agents
基於場景的服務
應用 AI 服務
Bot Service
Cognitive Search
Form Recognizer
Video Indexer
Metrics Advisor
Immersive Reader
可訂製的 AI 模型
認知服務
Vision
Speech
Language
Decision
OpenAI Service
開發者和數據科學家
機器學習平台
Azure 機器學習

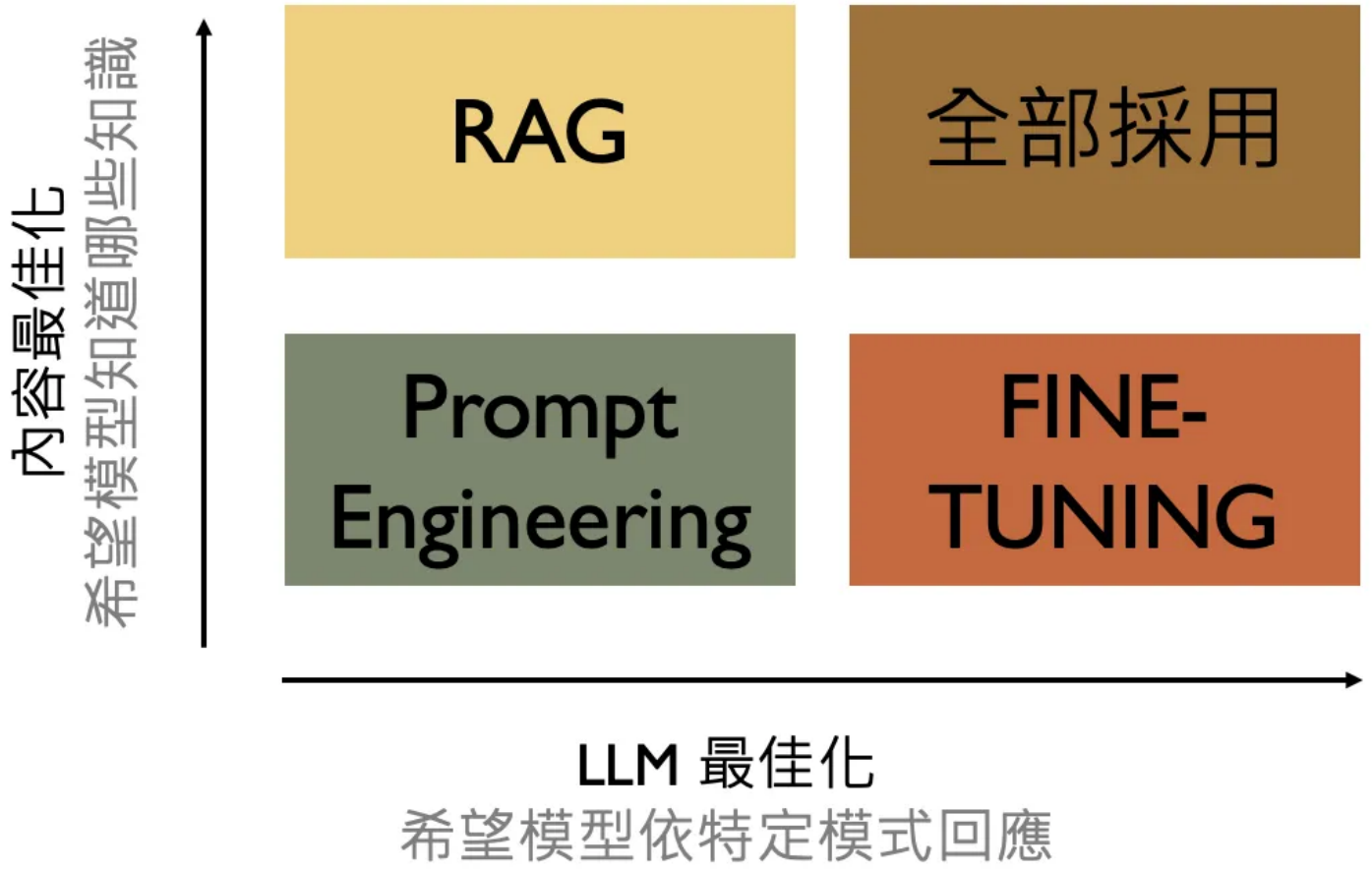


LLM Inferencing and Training On GCP


Google Cloud Next LLM
Gemini

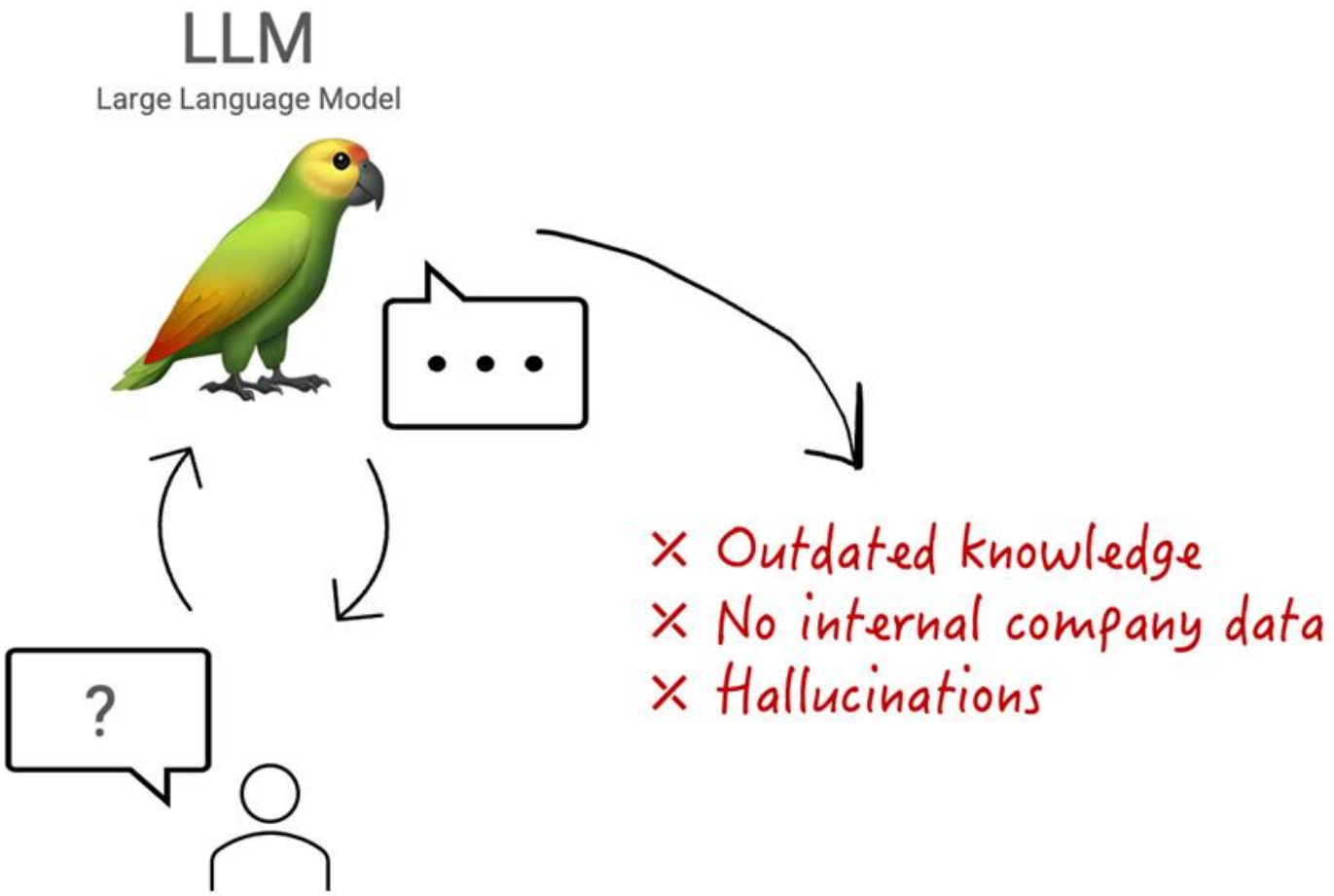
RAG: 檢索增強生成

Retrieval Augmented Generation



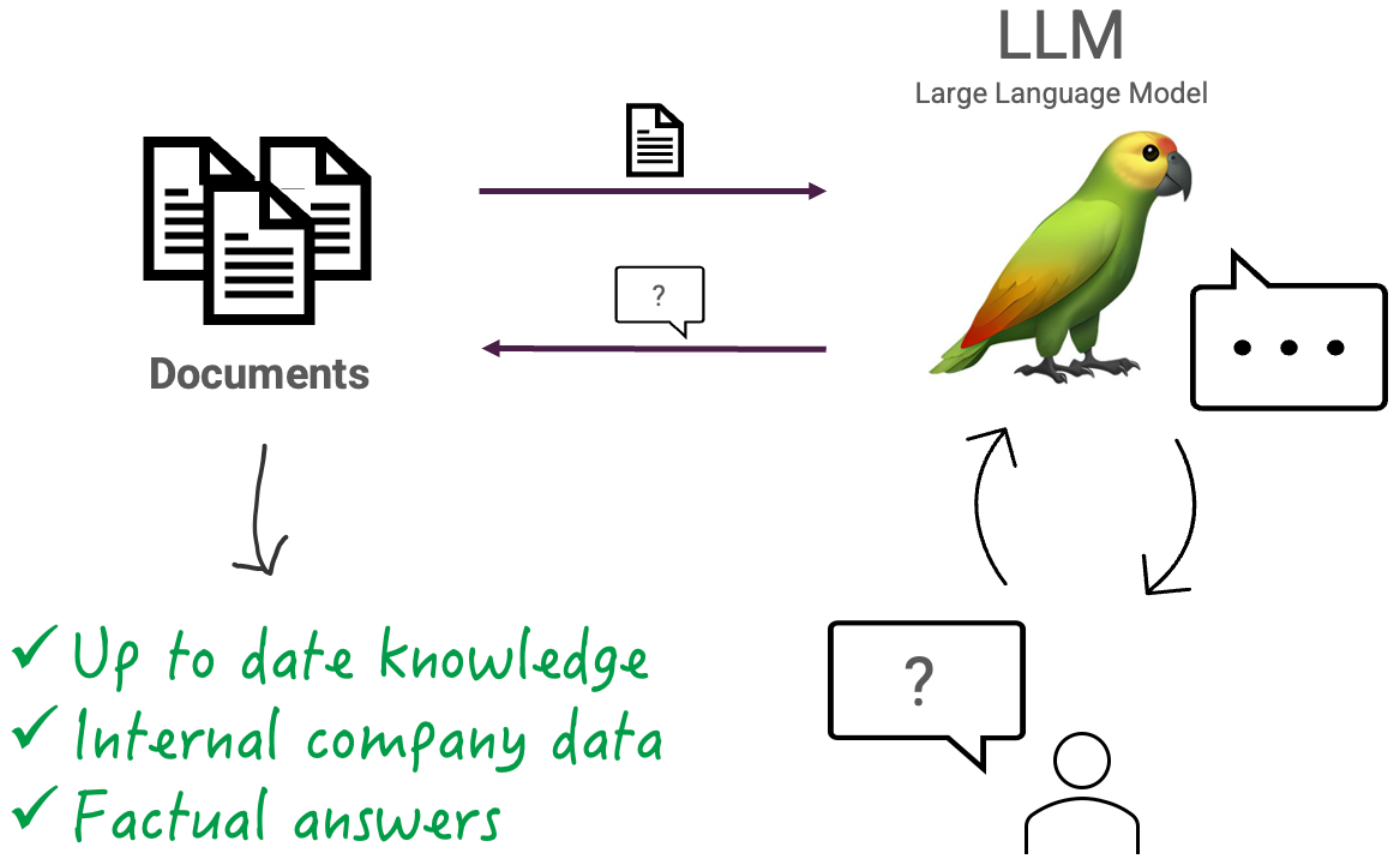
Model interactions

without RAG

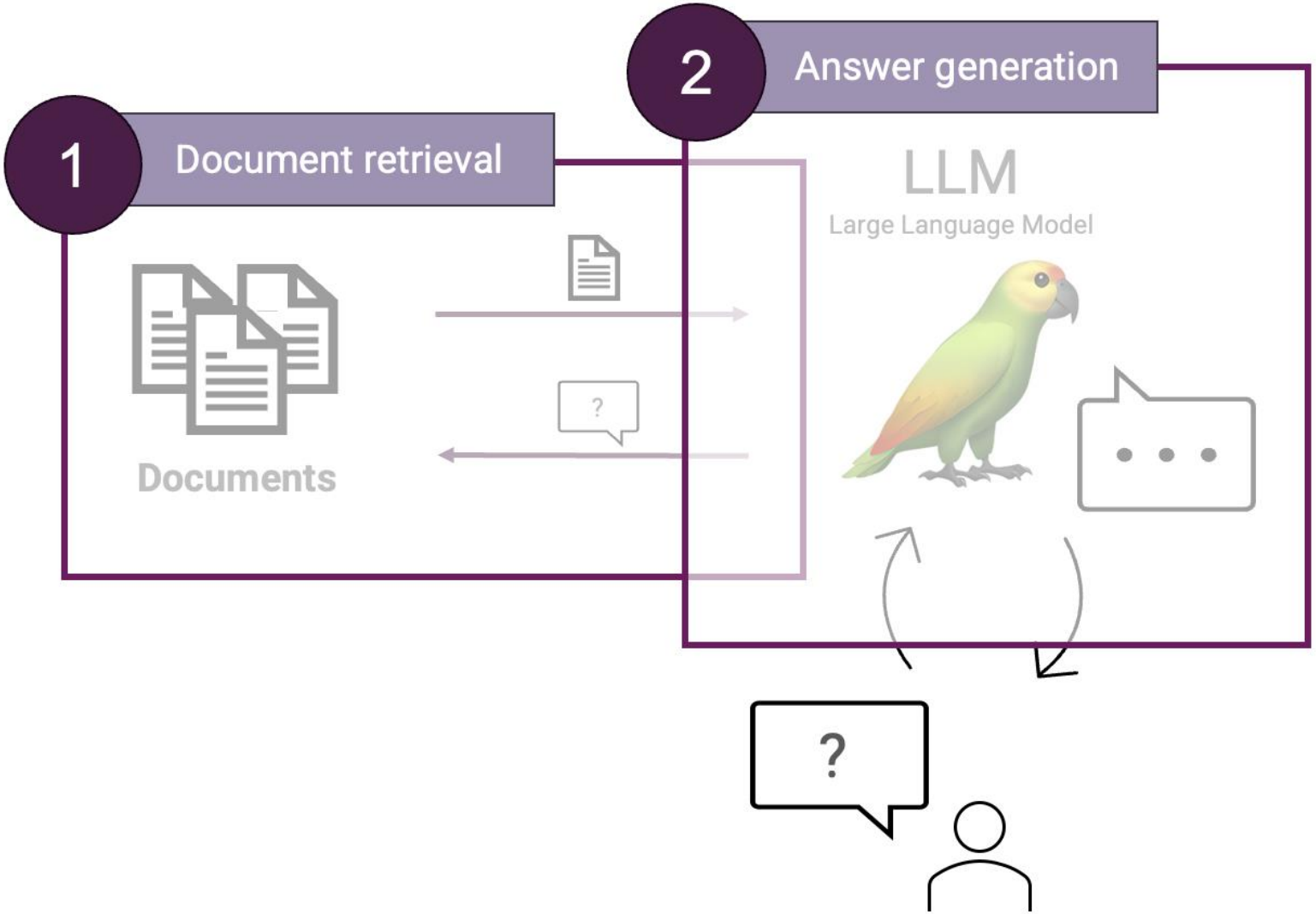


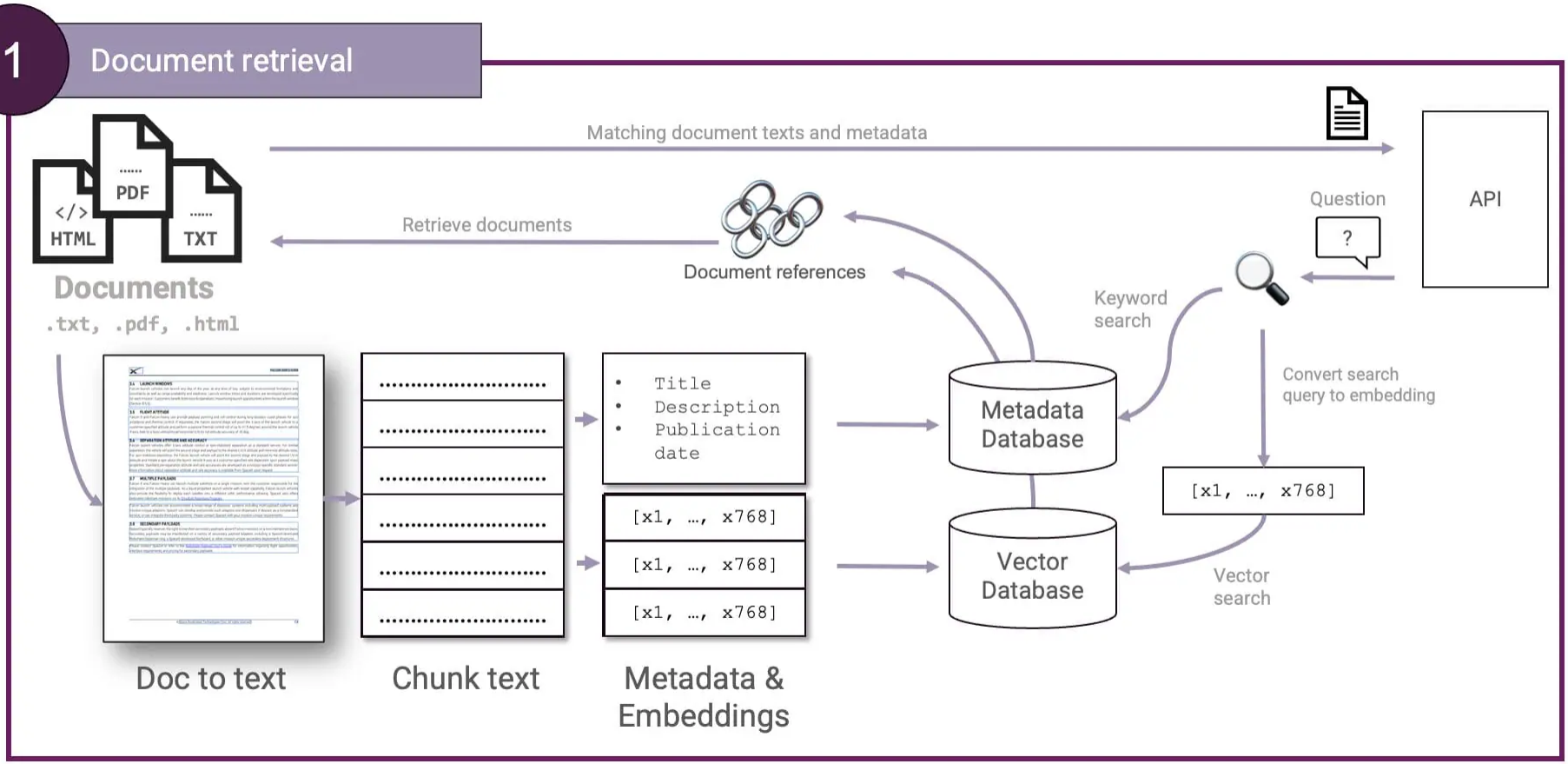
Model interactions

with RAG

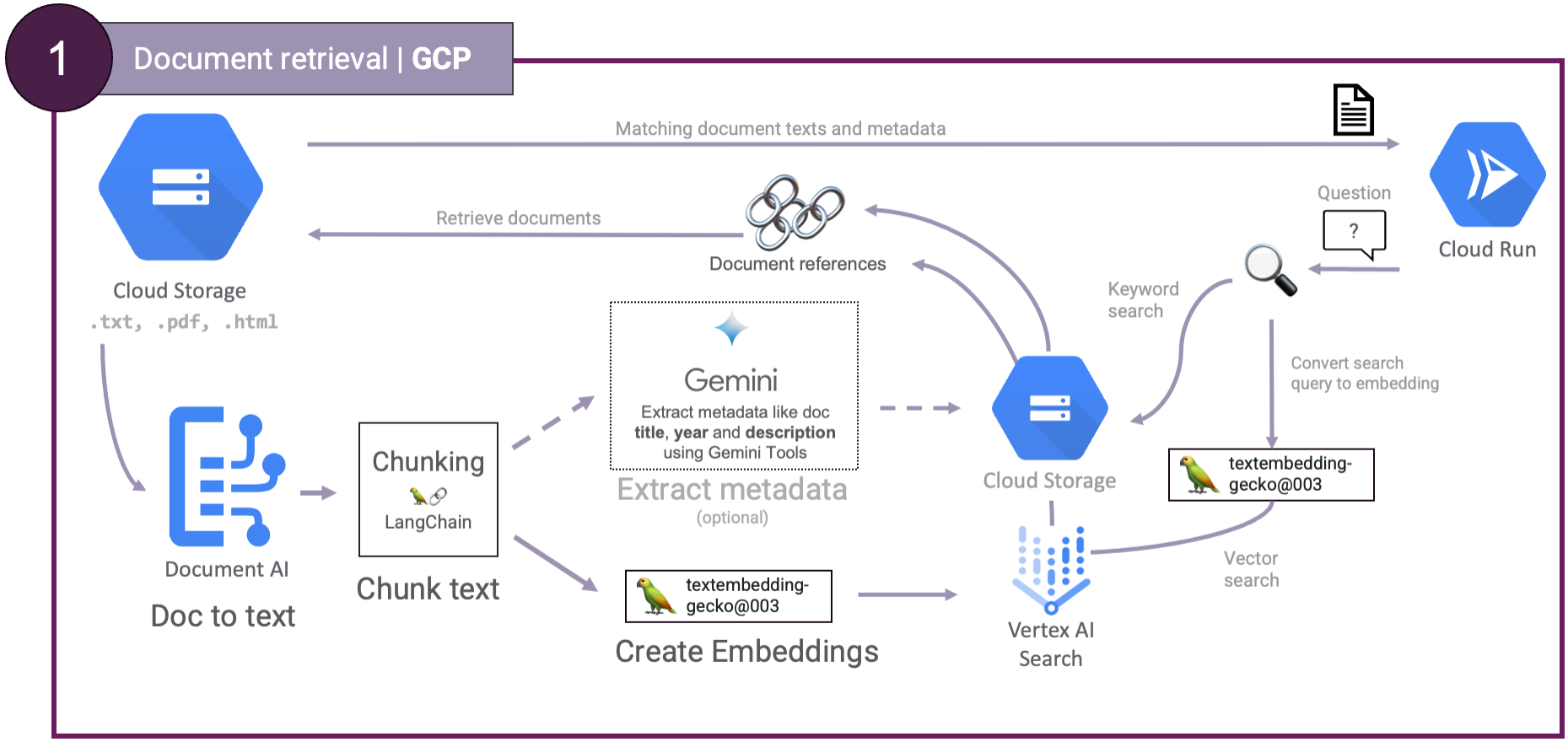


- ✓ Up to date knowledge
- ✓ Internal company data
- ✓ Factual answers


1
Document retrieval
Documents
2
Answer generation
LLM
Large Language Model
?
?



Document retrieval step in a RAG system. Documents are converted to text and converted to embeddings. A user's question is converted to an embedding such that a vector similarity search can be performed.



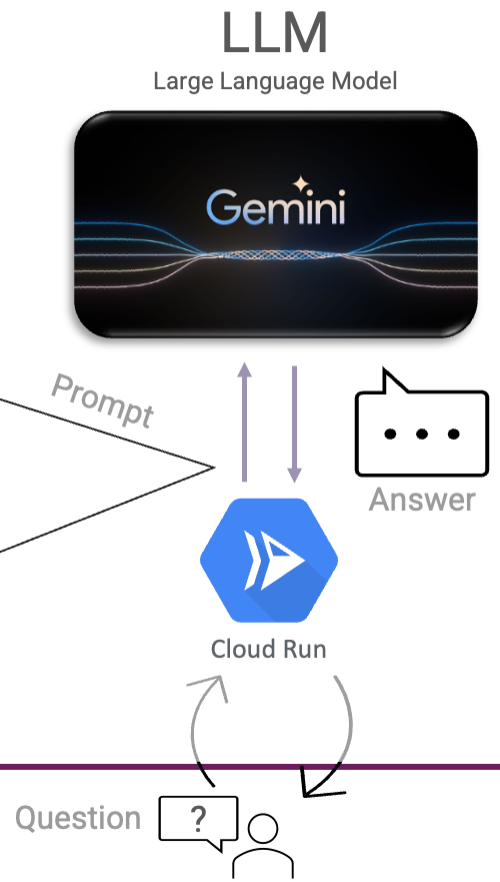
Document retrieval using GCP services including Document AI, textembedding-gecko and Vertex AI Vector Search.

2 Answer generation

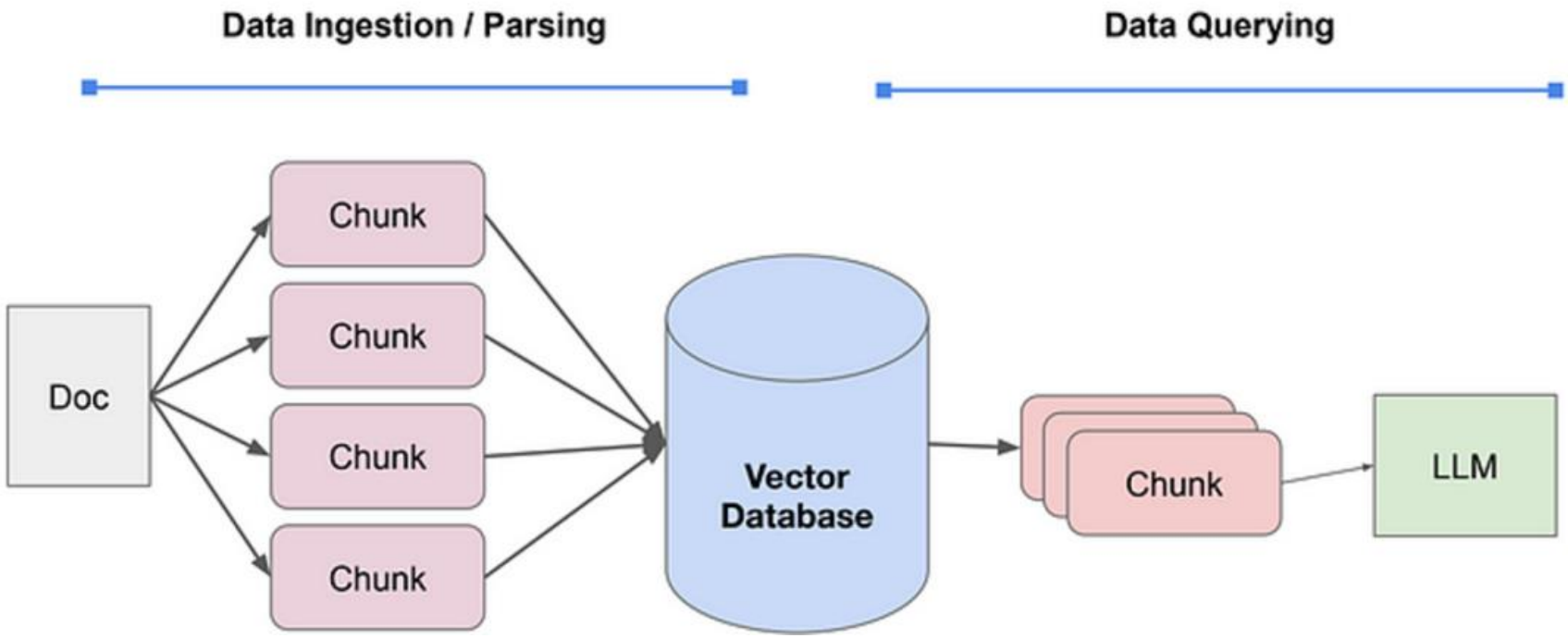
```
f"""
A question of a user will follow. Answer the
question best to your ability, using the
information provided in the documents.
Only answer with truthful and citable
information. The answer should be at the
maximum five sentences.

Question: '{query}'

Documents:
{
    format_doc(doc) for each doc in
docs
}
"""
```



What if it is big data



商業用

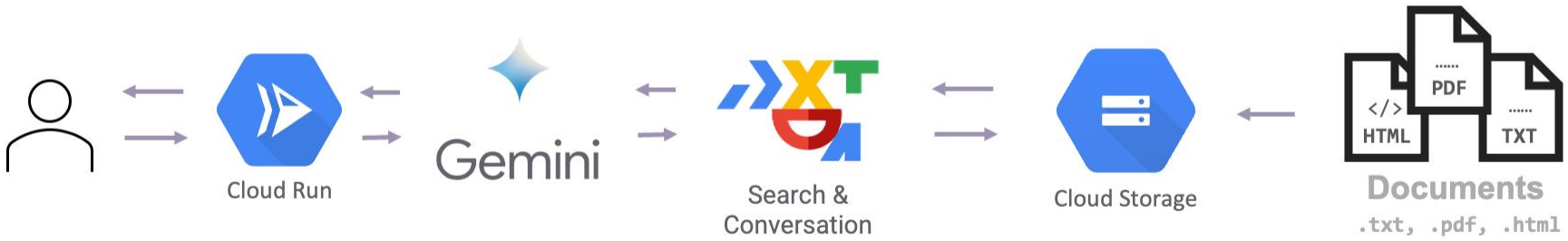
RAG on GCP:

Fully managed

商業用

RAG on GCP:

Partly managed



商業用

RAG on GCP:

Full control