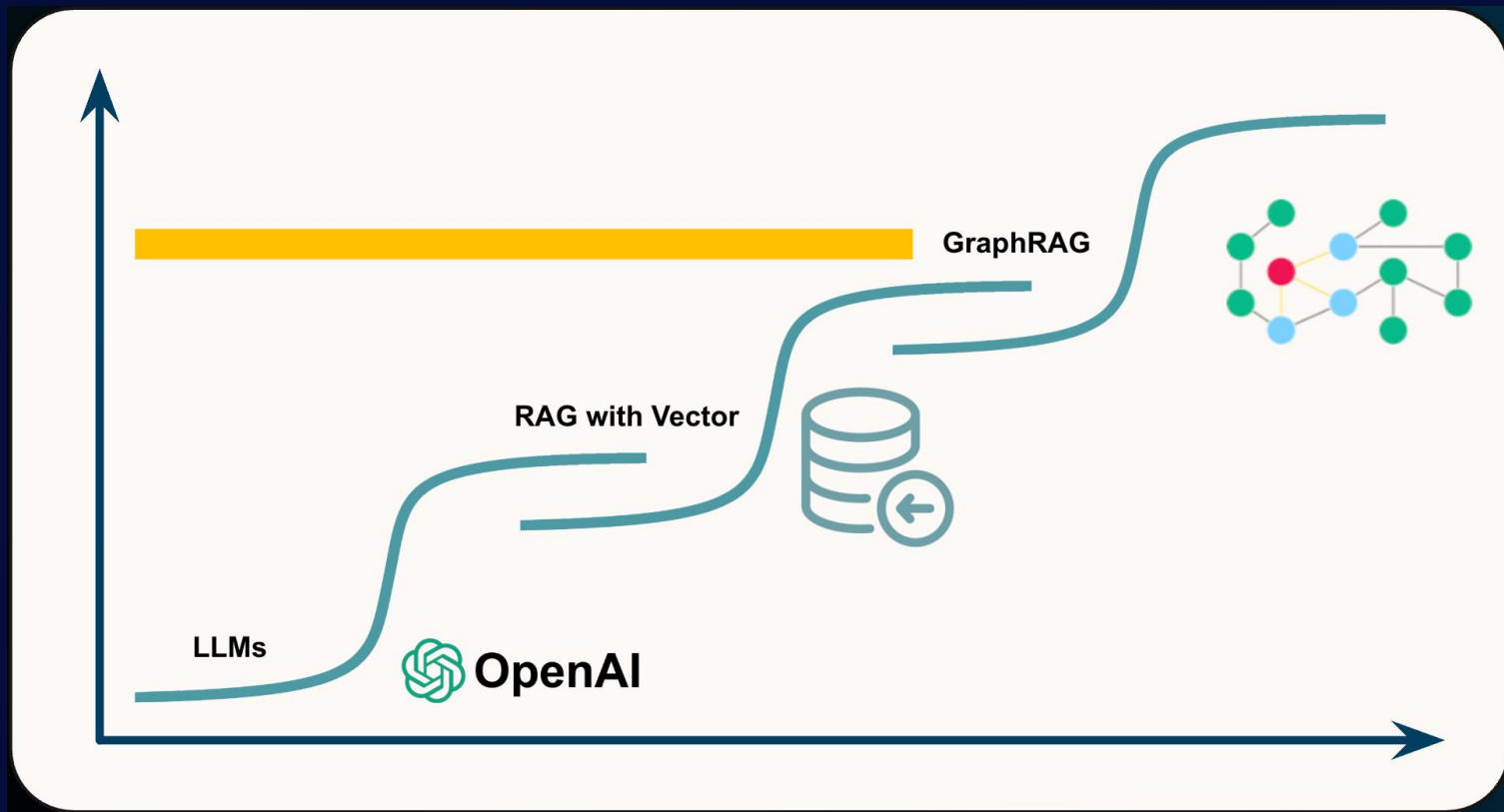


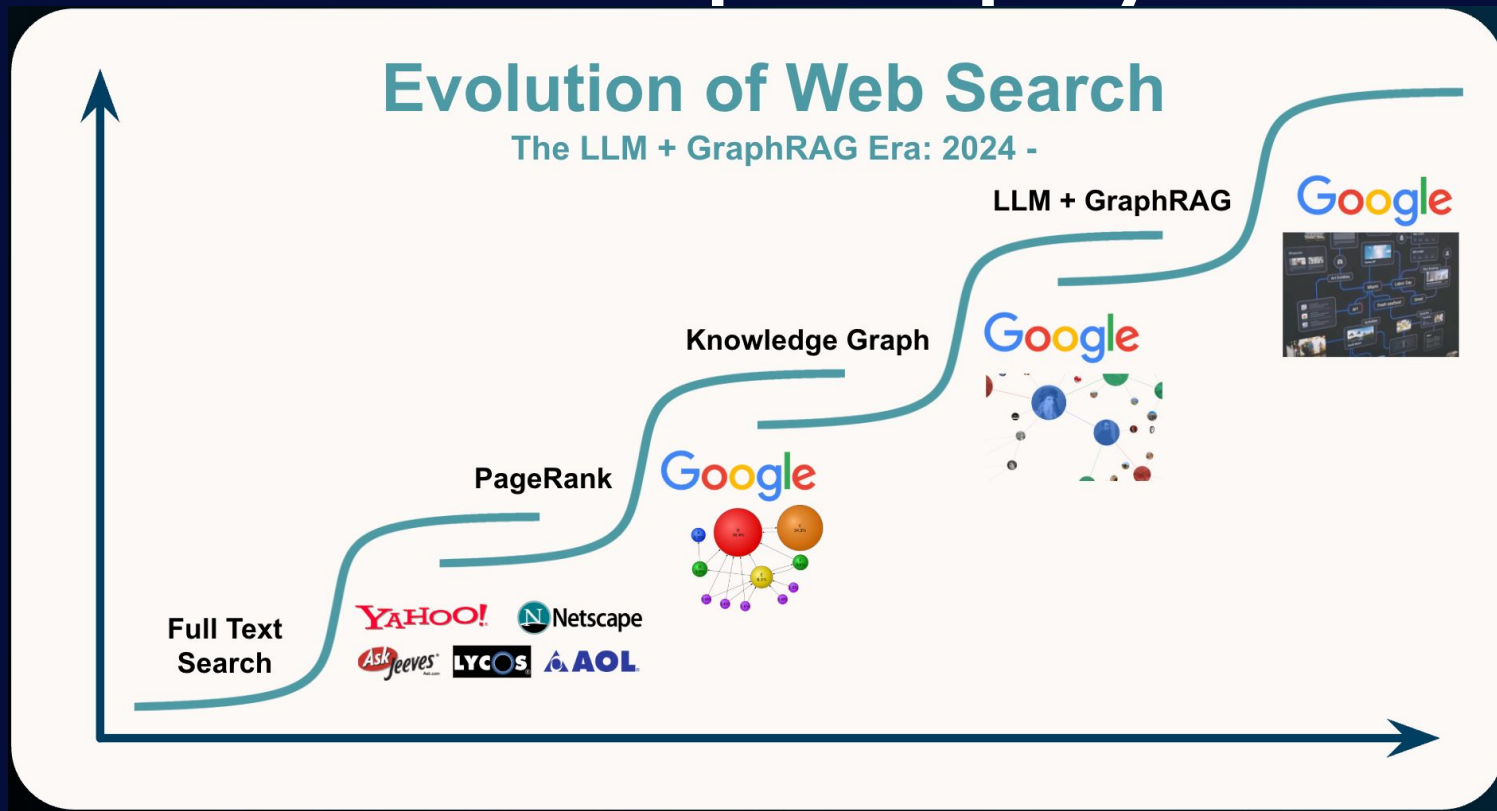
The State of Graph AI: GraphRAG, Klarna, and beyond!

Philip Rathle | CTO @ Neo4j
@prathle | <https://linkedin.com/in/prathle>

Flashback to The AI Conference 2024



Analogy to Google: World's 1st \$Trillion+ Graph Company



What *is* GraphRAG

GraphRAG is RAG where the Retrieval path includes a Knowledge Graph.

GraphRAG Benefits

1

**Better
Answers**

2

**Easier
Development**

3

**Explainability
& Governance**



Fast-Forward to Today...





Sebastian Siemiatkowski   @klarnaseb · 18h

Yes, we did shut down Salesforce a year ago, as we have many SaaS providers—an internal estimate is about 1,200 SaaS shut down.

No, I don't think it is the end of Salesforce; might be the opposite.

Here is what actually happened and how/why we originally intended to NOT share it publicly:

“At Klarna, we’re transforming the way we collaborate with our GenAI chatbot Kiki, powered by Neo4j’s **knowledge graph**. It’s having a huge impact on productivity in ways that were not possible to imagine before without graph and Neo4j.”

Sebastian
Siemiatkowski
Co-Founder and CEO



Tom Nijam
@TomNijam

Follow

Makes a lot of sense. Grok summary here for anyone on the run: 🏃

Answer

- Klarna’s decision to shut down Salesforce and other SaaS providers stems from a strategic shift to consolidate fragmented corporate data using AI and graph databases, particularly Neo4j, to improve knowledge management and productivity.
- The move, part of a broader generative AI overhaul, was initially meant to stay private but became public after a leaked investor call, sparking speculation and media attention, including questions directed at Salesforce CEO Marc Benioff.
- Neo4j, a Swedish graph database company, has seen significant growth, surpassing \$200 million in revenue and becoming a key player in AI-driven graph technology, aligning with Klarna’s approach to unify data.



3 Relevant Web Pages



6:10 PM · 3/3/25 · 2.7K Views



8

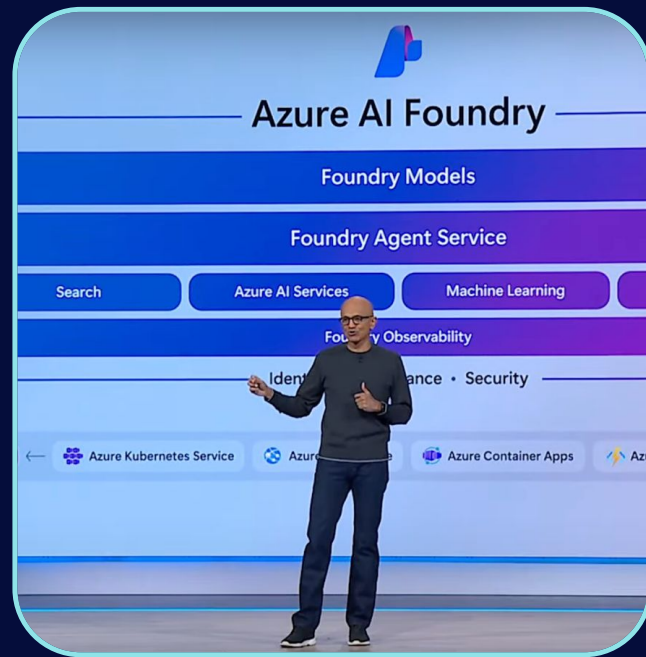
13

2



“Models are just part of the equation. For anyone building an agent you need to be able to have truly great access to the real time web **as well as the entire enterprise knowledge graph.**”

We have learned building RAG apps that you need a more sophisticated retrieval system. It's **not good enough to have just vector search** and some embeddings.”



**Satya Nadella @
Microsoft BUILD 2025 keynote**

Walmart Cross Channel Insights

Empowering People Operations with Knowledge Graphs and AI

Walmart * Global Tech

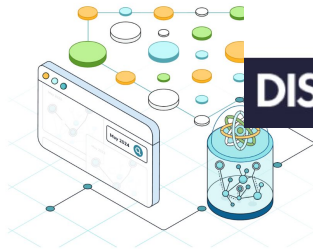
Graph Minds: Building an AI Agent That Thinks in Connections

Household-level Marketing and Behavior/Journey- based Audiences



DISCOVER

The ARCH Knowledge Graph



abbvie



Config Knowledge Graph

Correctness and Comprehension with GraphRAG

Vignesh Murugesan

Uber

“GraphRAG 2.0”: GraphRAG encompasses many patterns

Text2Cypher

Convert natural language prompts to explicit Cypher queries for retrieval



Graph Vectors

Use graph embeddings for retrieval -incorporating both structured and unstructured data in vector similarity search



Hybrid Search with Graph Context

Use graph patterns to retrieve items related to vector or fulltext search results



Graph Filtering

Use graph patterns and properties to pre/post filter vector search results. Also includes hybrid search



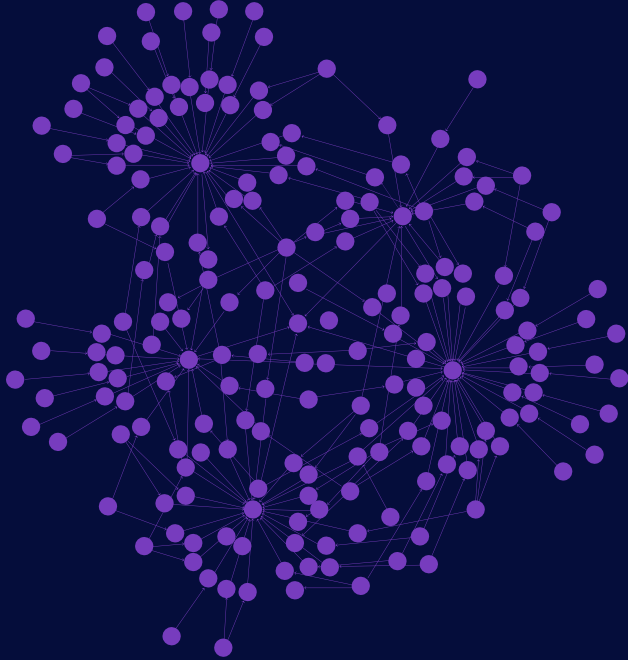
Agents and Multi-Step

Combine multiple tools and GraphRAG patterns together for intelligent GenAI applications. Leverage corrective GraphRAG , semantic layers, and more



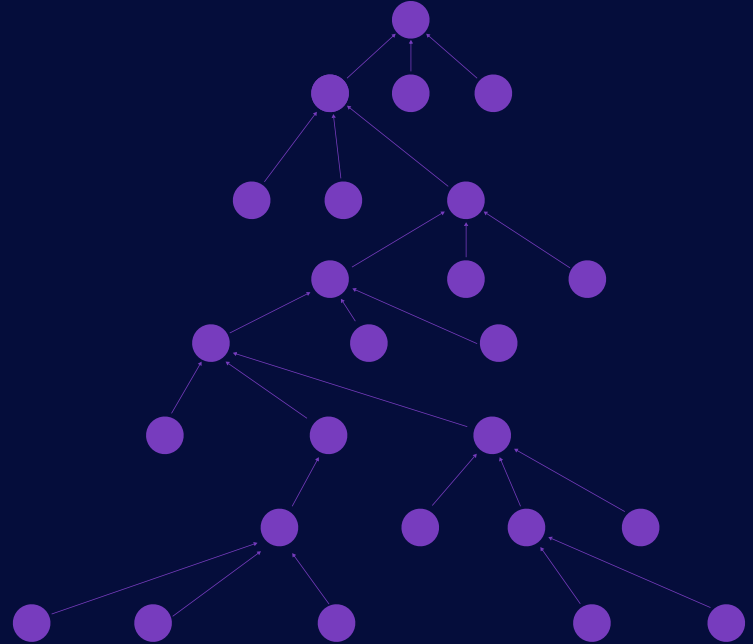
What Goes Into a Knowledge Graph?

Networks



Computer, social, communications,
biological, ecological,
transportation, payment, etc.

Hierarchies



Org, supply chain,
bill of materials, asset ownership, etc.

Types of Knowledge Graphs Relevant in AI

Domain Graph

Reflection of your real-world network, hierarchy, or journeys



Lexical Graph

Graph of the vector chunks, their interrelationships, and their relationships to the structure of a text corpus



Ontology Graph

Graph of the concepts and categories in your domain graph



Memory Graph(s)

Includes* episodic, procedural, semantic, and temporal memory

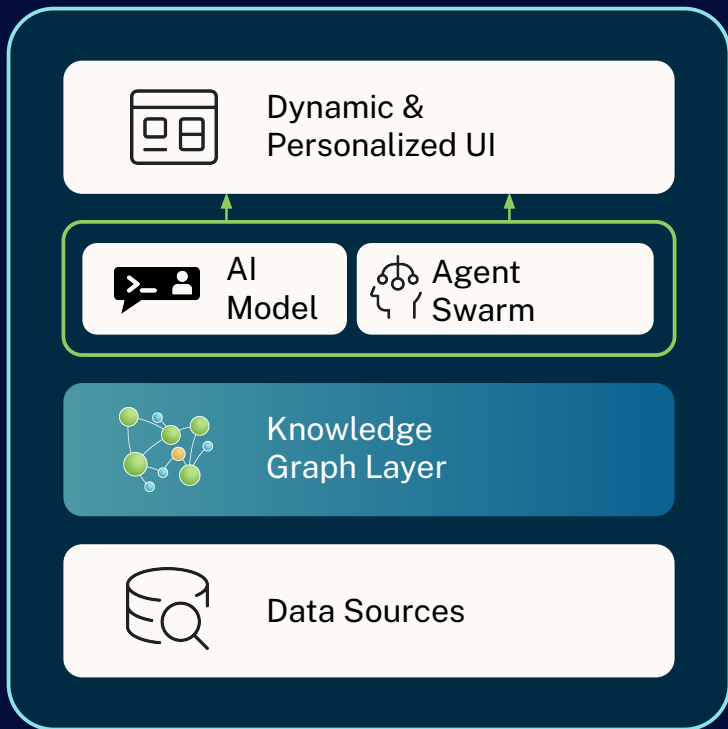
*Definitions @ graphrag.com



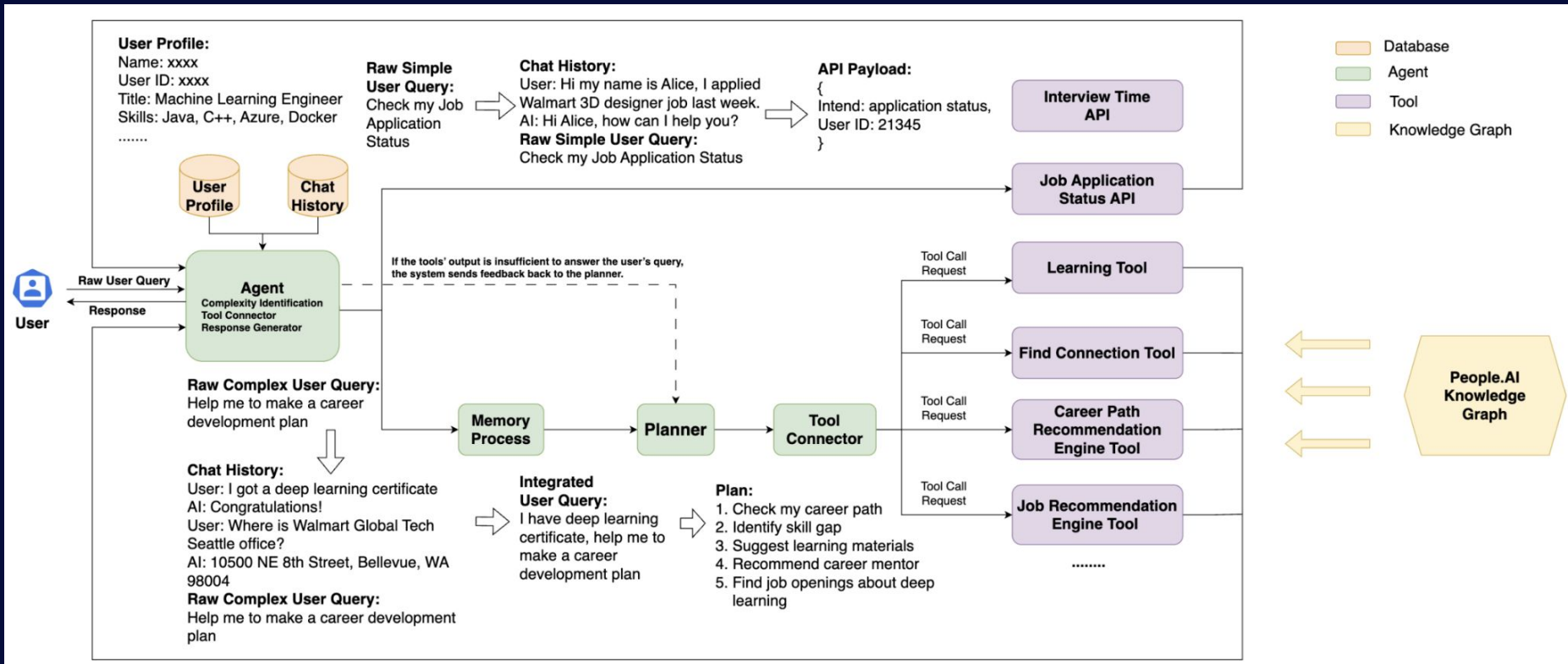
Algorithmically-Enriched Graphs

Any one of the above with graph algorithms, embeddings, or predicted relationships folded in

An Emerging AI Application Stack



Putting it All Together: Example Agentic Workflow



Source: AdaptJobRec: Enhancing Conversational Career Recommendation through an LLM-Powered

Agentic System. <https://arxiv.org/pdf/2508.13423>. Walmart Global Tech & Univ of Arkansas.

neo4j

THE AI
CONFERENCE

New AI Building Blocks: Latest in Graph Tooling

#1: Graph Construction from
Structured Sources



Get started

Developer hub

Data services

Instances

Import

Graph Analytics

Data APIs

Agents

Tools

Query

Explore

Dashboards

Operations >

Project >

Learning

Import

Data sources Graph models Import jobs

Name	Type	Last modified
Patient DB	Snowflake	23 days ago

Showing 1 of 1 results

Patient DB ✎



Type: Snowflake

Last modified: 23 days ago

Host: hiysshm-team_data_importer.snowflakecomputing.com

Port: 443

Database: PATIENT_DB

Schema: PUBLIC

Warehouse:

Role:

Credentials

Username: DI_TEST

Private Key: *****

Private Key
Passphrase: *****

Edit



/ Graph models / Untitled model 1

Generate model



Run import



Get started

Developer hub

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Import

Graph Analytics

Data APIs

Agents

Tools

Query

Explore

Dashboards

Operations >

Project >

Learning

Data source Cloud



Patient DB

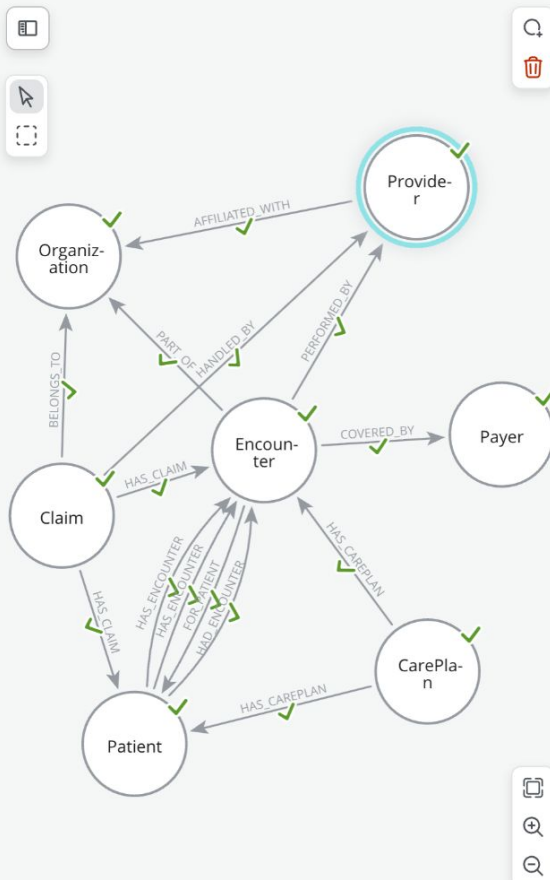
☐ Switch to unstructured files

ALLERGIES

- START_DATE
- STOP
- PATIENT
- ENCOUNTER
- CODE
- SYSTEM
- DESCRIPTION
- TYPE
- CATEGORY
- REACTION1
- DESCRIPTION1
- SEVERITY1
- REACTION2
- DESCRIPTION2
- SEVERITY2

CAREPLANS

- ID



Definition Constraints & Indexes (2)

Label

Name

Provider

Table

Name

PROVIDERS



Filter table

Properties

Map from table



<input type="checkbox"/>	Name	Type	Column	ID
<input type="checkbox"/>	providerId	string	ID	
<input type="checkbox"/>	name	string	NAME	
<input type="checkbox"/>	gender	string	GENDER	
<input type="checkbox"/>	specialty	string	SPECIALITY	
<input type="checkbox"/>	address	string	ADDRESS	
<input type="checkbox"/>	city	string	CITY	

Run import



1. Select instance

Patient DB Graph



2. Data source configuration

Host

hiysshm-team_data_importer.snowflakecomputing.com

Port

443

Database

PATIENT_DB

Schema

PUBLIC

Warehouse

<Not set>

Role

<Not set>

Username

DI_TEST

Private Key

Private Key Passphrase

3. Neo4j Aura database credentials

Aura Instance

Patient DB Graph (ID: de5c2e19)

User

neo4j

Instance id: a074f0d0

Data source:  Patient DB

Submitted time: 21 days ago

Duration: 1 minute 11 seconds

Status: **COMPLETED**

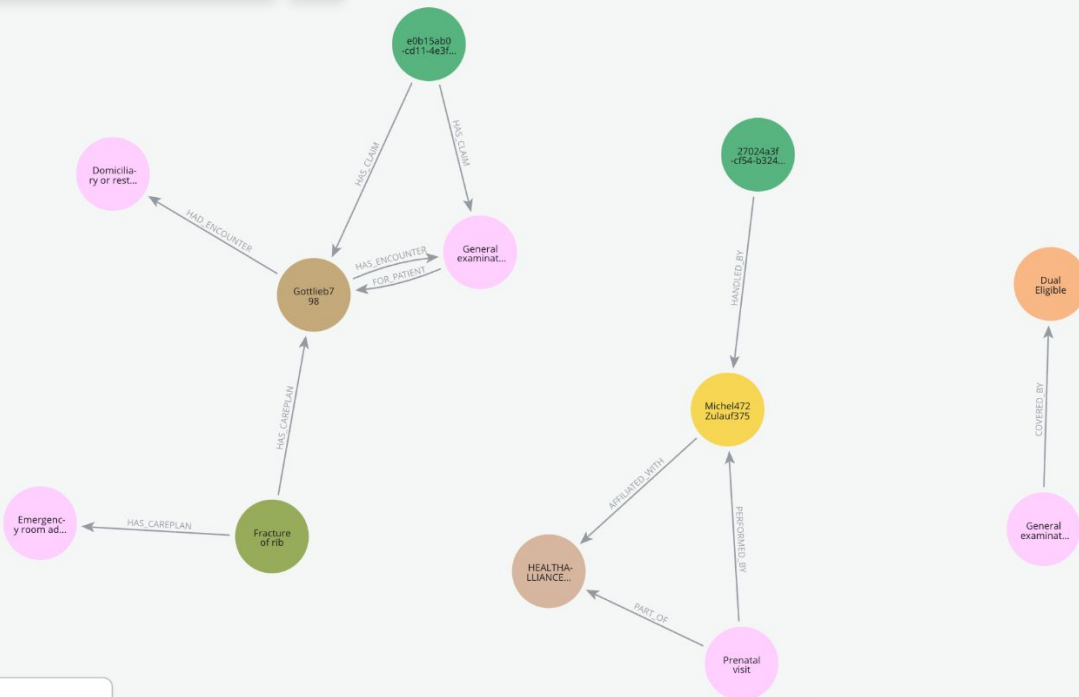
Entity	Rows processed	Items created	Status
CarePlan	4,022 / 4,022	4,022	COMPLETED
Claim	119,812 / 119,812	119,812	COMPLETED
Encounter	60,602 / 60,602	60,602	COMPLETED
Organization	1,396 / 1,396	1,396	COMPLETED
Patient	1,174 / 1,174	1,174	COMPLETED
Payer	10 / 10	10	COMPLETED
Provider	5,095 / 5,095	2,871	COMPLETED
AFFILIATED_WITH	5,095 / 5,095	2,871	COMPLETED
BELONGS_TO	119,812 / 119,812	0	COMPLETED
COVERED_BY	60,602 / 60,602	60,602	COMPLETED

Instance: Patient DB Graph ▾ Database: neo4j CYPHER 5 ▾ User: Aura (philip.rathle@neo4j.com)

Default Perspective



Export



All (24)

Selected (0)



Force-based layout



174%

New AI Building Blocks: Latest in Graph Tooling

#2: Text-to-Graph from
Unstructured Sources

Microsoft

161 languages

Contents hide

(Top)

- > [History](#)
- > [Corporate affairs](#)
- > [Corporate identity](#)

[See also](#)

[Notes](#)

[References](#)

[External links](#)

Article Talk

Read View source View history Tools

From Wikipedia, the free encyclopedia

Coordinates: 47°38′33″N 122°07′56″W﻿ / ﻿

Microsoft Corporation is an American [multinational corporation](#) and [technology conglomerate](#) headquartered in [Redmond, Washington](#).^[2] Founded in 1975, the company became influential in the [rise of personal computers](#) through software like [Windows](#), and the company has since expanded to [Internet services](#), [cloud computing](#), [video gaming](#) and other fields. Microsoft is the [largest software maker](#), one of the [most valuable](#) public U.S. companies,^[a] and one of the [most valuable brands](#) globally.

Microsoft was founded by [Bill Gates](#) and [Paul Allen](#) to develop and sell [BASIC interpreters](#) for the [Altair 8800](#). It rose to dominate the personal

Microsoft Corporation



Microsoft

Logo used since 2012




Aerial view of the [Microsoft campus](#) in Redmond

Company type

[Public](#)

LLM GraphBuilder




←

Drag & Drop

or [browse](#)


Documents, Images,
Unstructured text

ⓘ




Web Sources

ⓘ



Amazon S3

Neo4j connection


 neo4j+s://9ab89be0.databases.neo4j.io:7687 / neo4j

● Graph Schema configured(4 Labels + 8 Rel Types)

Graph Enhancement


Disconnect


<input checked="" type="checkbox"/>	Name	Status	Upload Status	Size (KB)	Source	Type	Model
<input checked="" type="checkbox"/>	Microsoft	Completed	Uploaded	8.87	Wikipedia	TEXT	Openai gpt 4.1




Web Sources

Convert Any Web Source to Knowledge graph







Wikipedia Link

Reset

Submit

ⓘ Large files may be partially processed up to 10K characters due to resource limit.

Show 10



LLM Model for Processing & Chat

Openai gpt 4.1

Generate Graph

Delete Files(1)

Preview Graph (1)

 + 



Graph Enhancements

This set of tools will help you enhance the quality of your Knowledge Graph by removing possible duplicated entities, disconnected nodes and set a Graph Schema for improving the quality of the entity extraction process

Entity Extraction Settings

[Additional Instructions](#)[Disconnected Nodes](#)[De-Duplication Of Nodes](#)[Post Processing Jobs](#)

1.Predefine the structure of your knowledge graph by selecting specific node and relationship labels.

2.Focus your analysis by extracting only the relationships and entities that matter most to your use case. Achieve a cleaner and more insightful graph representation tailored to your domain.

Graph Pattern

Select/Create Source

Select...

Select/Create Type

Select...

Select/Create Target

Select...

+ Add

Selected Patterns

4 Nodes & 8 Relationships



(Person)-[WORKS_FOR]->(Company) X

(Company)-[COMPETES_WITH]->(Company) X

(Company)-[PARTNERS_WITH]->(Company) X

(Company)-[LAUNCHED]->(Technology) X

(Person)-[DEVELOPED]->(Technology) X

(Company)-[LOCATED_AT]->(Location) X

(Person)-[LIVES_AT]->(Location) X

(Person)-[LEADS]->(Company) X

Add Schema from ...

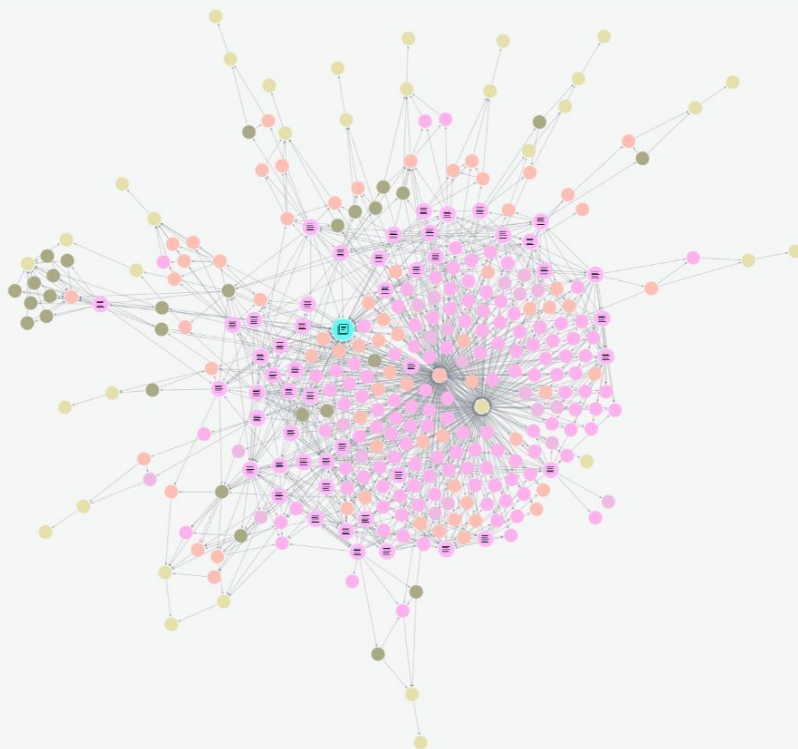
Clear Schema

Apply

Generated Graph

ⓘ We are visualizing 50 chunks at a time

☒ Document & Chunk ☒ Entities ☒ Communities



Result Overview

🔍 Search On Node Properties

Total Nodes (332)

Chunk (50) Document (1) Communities (34)

Company (68) Location (21) Person (28)

Technology (132)

Total Relationships (1128)

COMPETES_WITH (29) DEVELOPED (4)

⋮

HAS_ENTITY (378) IN_COMMUNITY (239)

LAUNCHED (130) LEADS (33)

LOCATED_AT (20) NEXT_CHUNK (49)

PARENT_COMMUNITY... PART_OF (50)

PARTNERS_WITH (34) SIMILAR (125)

WORKS_FOR (19)



Welcome to the Neo4j Knowledge Graph Chat. You can ask questions related to documents which have been completely processed.

9/12/2025 6:12:27 AM



As of December 2023, the members of Microsoft's Board of Directors are Satya Nadella, Reid Hoffman, Hugh Johnston, Teri List, Sandi Peterson, Penny Pritzker, Carlos Rodriguez, Charles Scharf, John W. Stanton, John W. Thompson, Emma Walmsley, and Padmasree Warrior.

9/12/2025, 8:24:38 AM

[Details](#)  

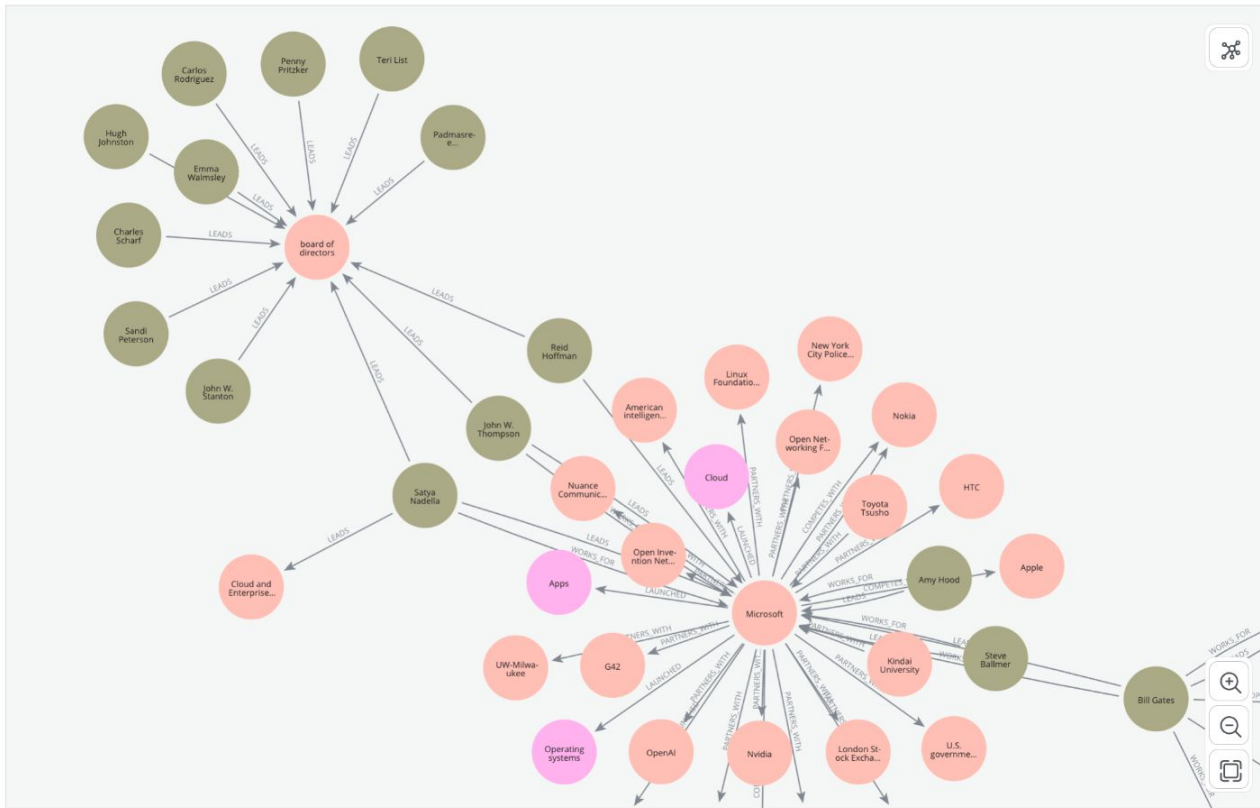
Who is on the Board of Directors of Microsoft?

9/12/2025 8:24:38 AM



Ask

Generated Graph



Result Overview

Total Nodes (48)

Company (27) Person (16) Technology (5)

Total Relationships (56)

COMPETES_WITH (3) DEVELOPED (1)

LAUNCHED (4) LEADS (22)

PARTNERS_WITH (19) WORKS_FOR (7)



Pay us a visit! Booth #200

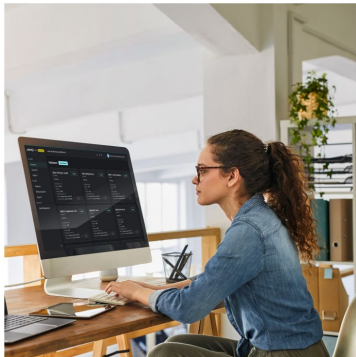
Learn, Train, and Connect with Neo4j



Free, Self-Paced Training to Build GraphRAG and Accurate GenAI

Get hands-on with graph databases, knowledge graphs, and GenAI at GraphAcademy.

[GET FREE TRAINING](#)



Take the DeepLearning.ai Course: Agentic Knowledge Graph Construction

Go beyond RAG: Build smarter answers with knowledge graphs and AI agents.

[START HERE FOR FREE](#)

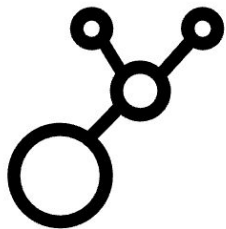


<https://events.neo4j.com/aiconference2025sf>

Thank You!

Philip Rathle | CTO @ Neo4j
@prathle | <https://linkedin.com/in/prathle>

New AI Building Blocks: Graph Database MCP Tools



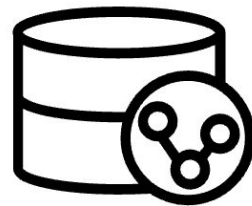
mcp-neo4j-cypher

natural language to
Cypher queries



mcp-neo4j-memory

knowledge graph
memory stored in
Neo4j



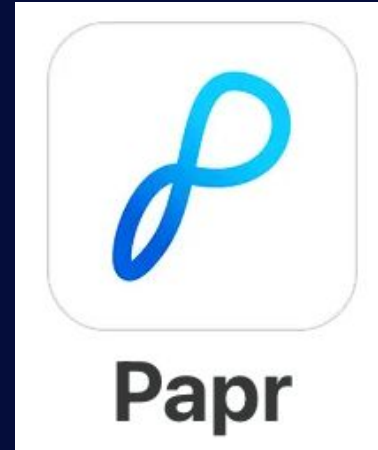
mcp-neo4j-cloud-aura-api

Neo4j Aura cloud service
management API

New AI Building Blocks: Graph-Enabled Agentic Memory Frameworks



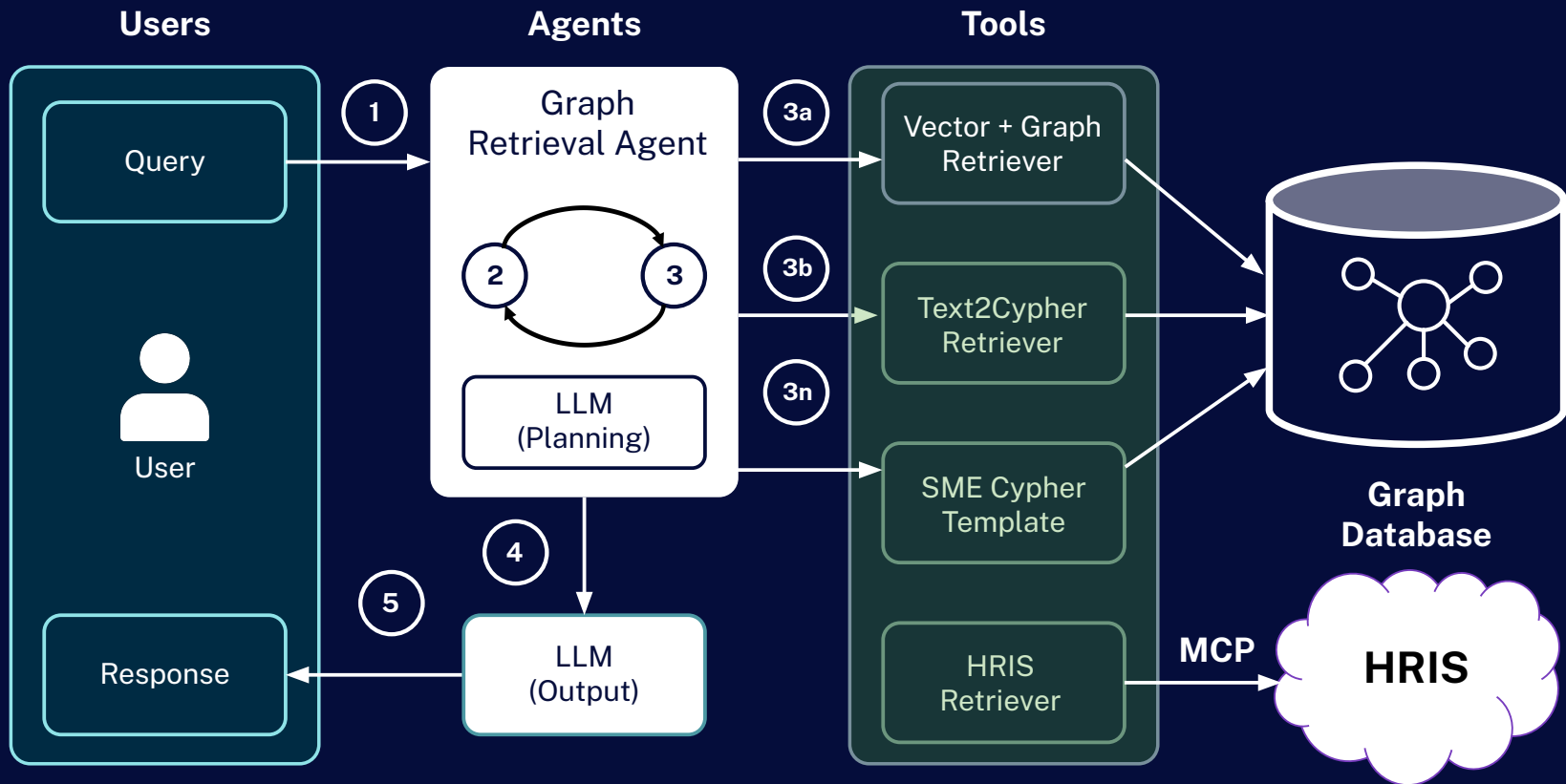
cognee



#1 STaRK
leaderboard
with GraphRAG

*Measures context
retrieval accuracy

Putting it all together: Example Agentic Flow





Drag & Drop

or [browse](#)

Documents, Images,
Unstructured text



Web Sources



Amazon S3

Neo4j connection

neo4j+s://9ab89be0.databases.neo4j.io:7687 / neo4j

Graph Schema configured(4 Labels + 8 Rel Types)

Graph Enhancement

Disconnect

<input type="checkbox"/>	Name	Status	Upload Status	Size (KB)	Source
--------------------------	------	--------	---------------	-----------	--------



Retrieval information

To generate this response, the process took **3.81 seconds**,utilizing **2552** tokens with the model **gpt-4.1** in **graph & vector & fulltext** mode.

Sources used

Chunks

Top Entities used

Evaluation Metrics

Company (27) [Microsoft,OpenAI,Linux Foundation,](#)

Person (16) [Bill Gates,Hugh Johnston,John W. Thompson,](#)

Technology (5) [BASIC interpreters for the Altair 8800,Devices,Cloud,](#)

Graph Entities used for Answer Generation

ⓘ Large files may be partially processed up to 10K characters due to resource limit.

Show

10 ▾

LLM Model for Processing & Chat

Openai gpt 4.1 ▾

Generate Graph

Delete Files

Preview Graph



Ask

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9/12/2025, 8:24:38 AM

Details

