

Hands-On GraphRAG Workshop

Building Smarter GenAI Apps with Knowledge Graphs

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Workshop Rules

- Ask questions straight away, this is an interactive session
- Raise your hand if you are stuck
- Have fun

Before We Start

1. Set up a blank sandbox <https://sandbox.neo4j.com/>
2. Download the repo
https://github.com/cbooth-neo4j/AI_WEST_WORKSHOP
3. Open with your IDE and [follow the README.md](#) to set up a new virtual environment

Agenda

1. What are AI agents
2. What is GraphRAG
3. Get building!



Chris Booth

- Solutions Engineer @ neo4j
- 10 years NLP experience
- 4 years NatWest Group as ML Product Owner for bank's chatbot Cora

Generative AI use cases



Text Generation



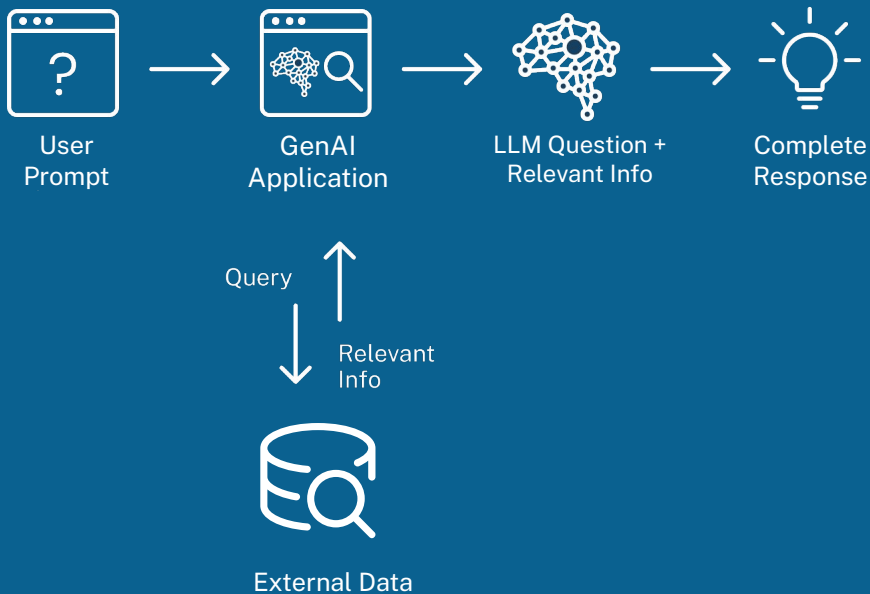
Talk to your documents (RAG)



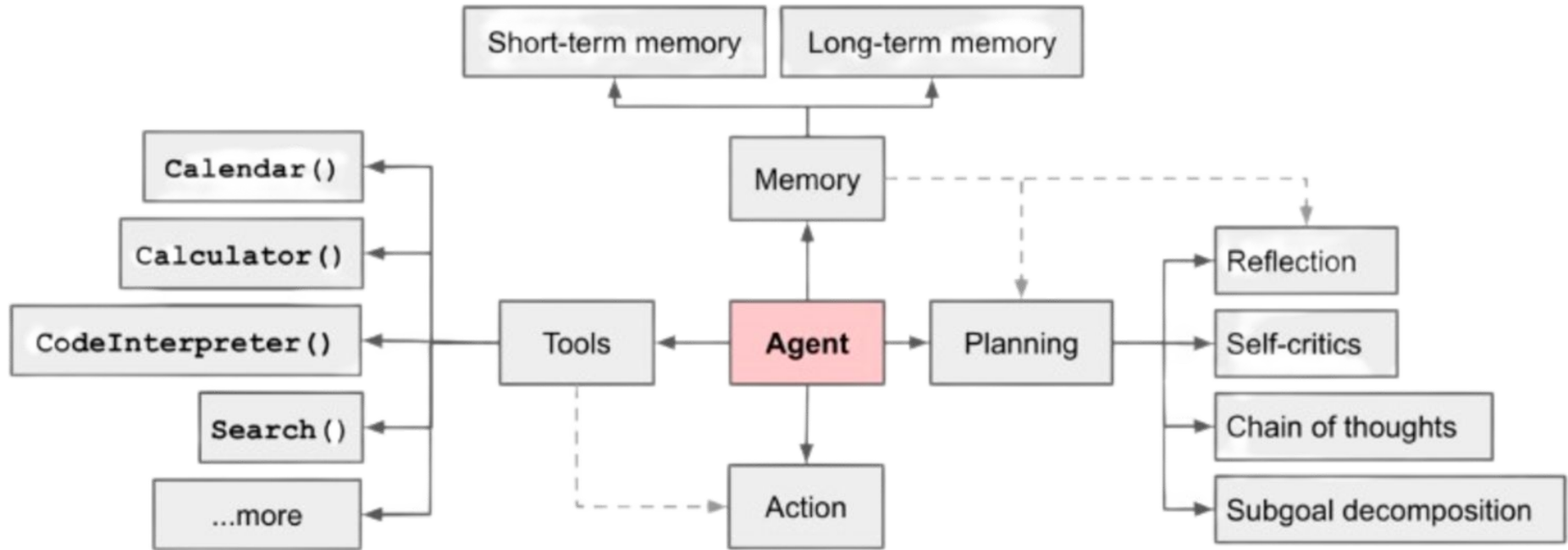
Workflow Automation (AI Agents)

RAG augments the LLM flow by

1. intercepting a **user's prompt**,
2. making a **query to external data**,
3. passing relevant results from the query back to the LLM
4. for a **complete, curated response**.



Inside an autonomous agent



GraphRAG Higher Accuracy (data.world)

3X

A Knowledge Graph improves the accuracy of LLM responses by 54.2%, an average of 3x better than SQL alone

More Validating Research @ graphrag.com/appendices/research



Knowledge Graph Components

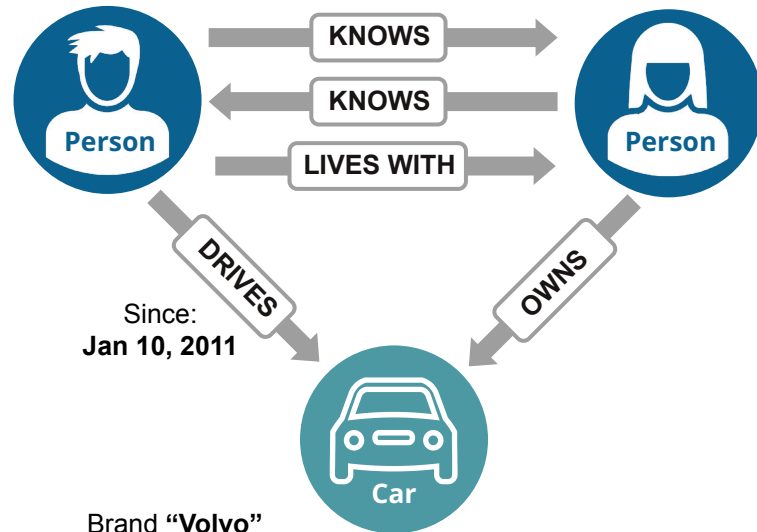
Nodes represent entities in the graph

Relationships represent associations or interactions between nodes

Properties represent attributes of nodes or relationships including vectors, can be *indexed*

Name: "Dan"
Born: May 29, 1970
Twitter: "@dan"

Name: "Ann"
Born: Dec 5, 1975

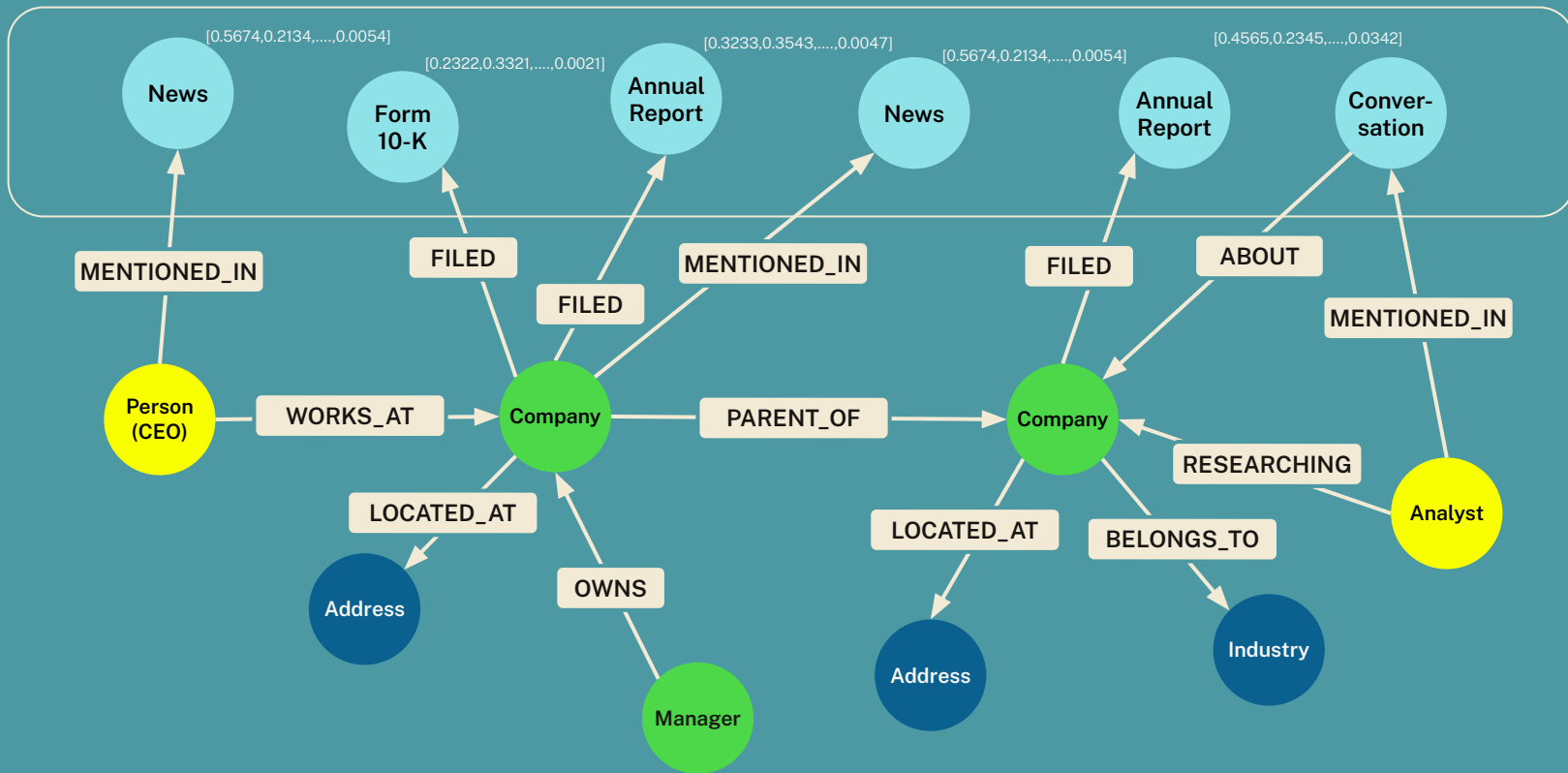


Since:
Jan 10, 2011

Brand "Volvo"
Model: "V70"
Description: "An executive car manufactured and..."
DescEmbedding: [0.1, -0.3, 0.4, ..., -0.7]
DescSource: "https://en.wikipedia.org/wiki/Volvo_V70"

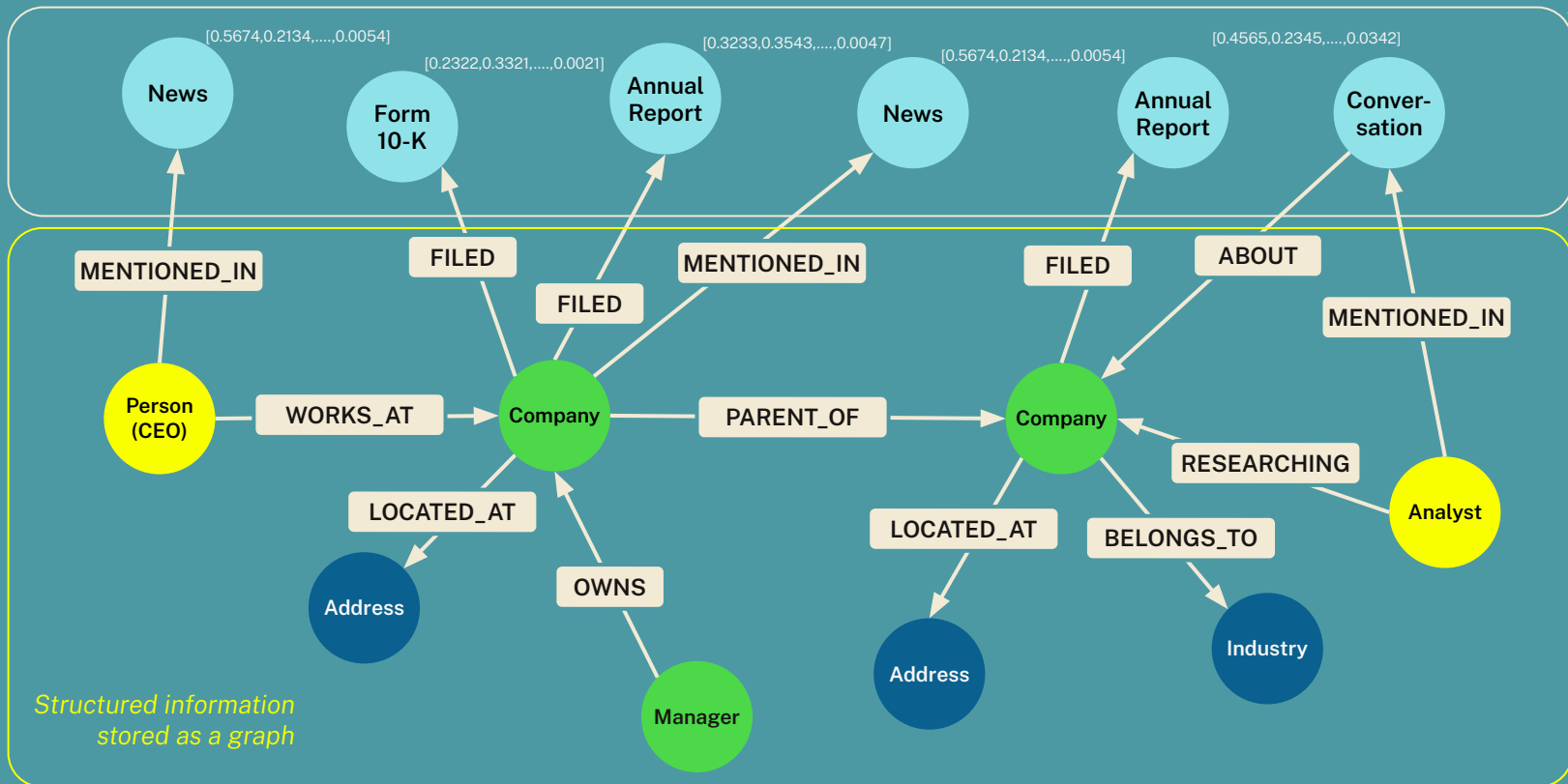
Combine Structured & Unstructured Knowledge

Unstructured text embeddings stored as node properties on document nodes

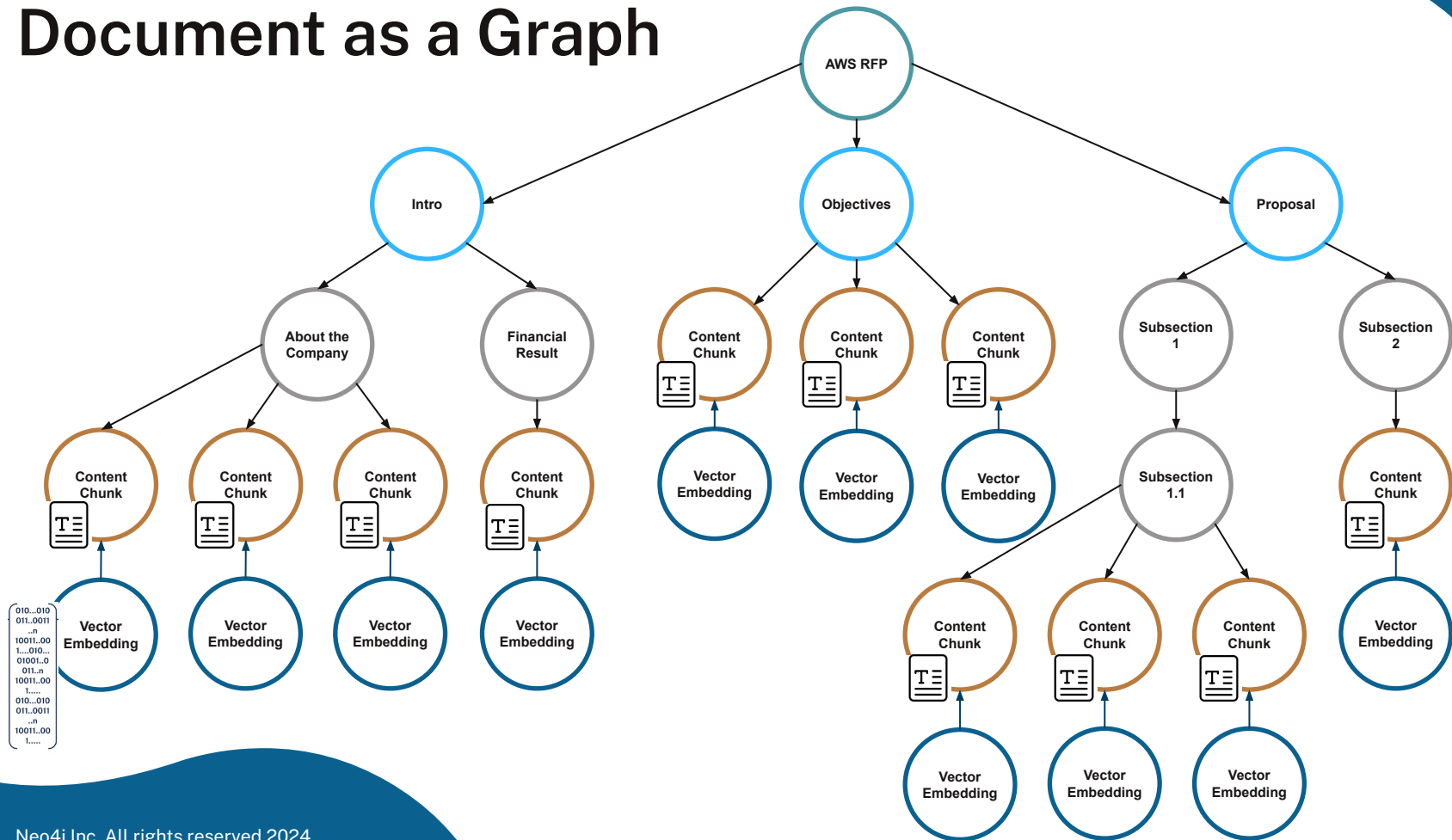


Combine Structured & Unstructured Knowledge

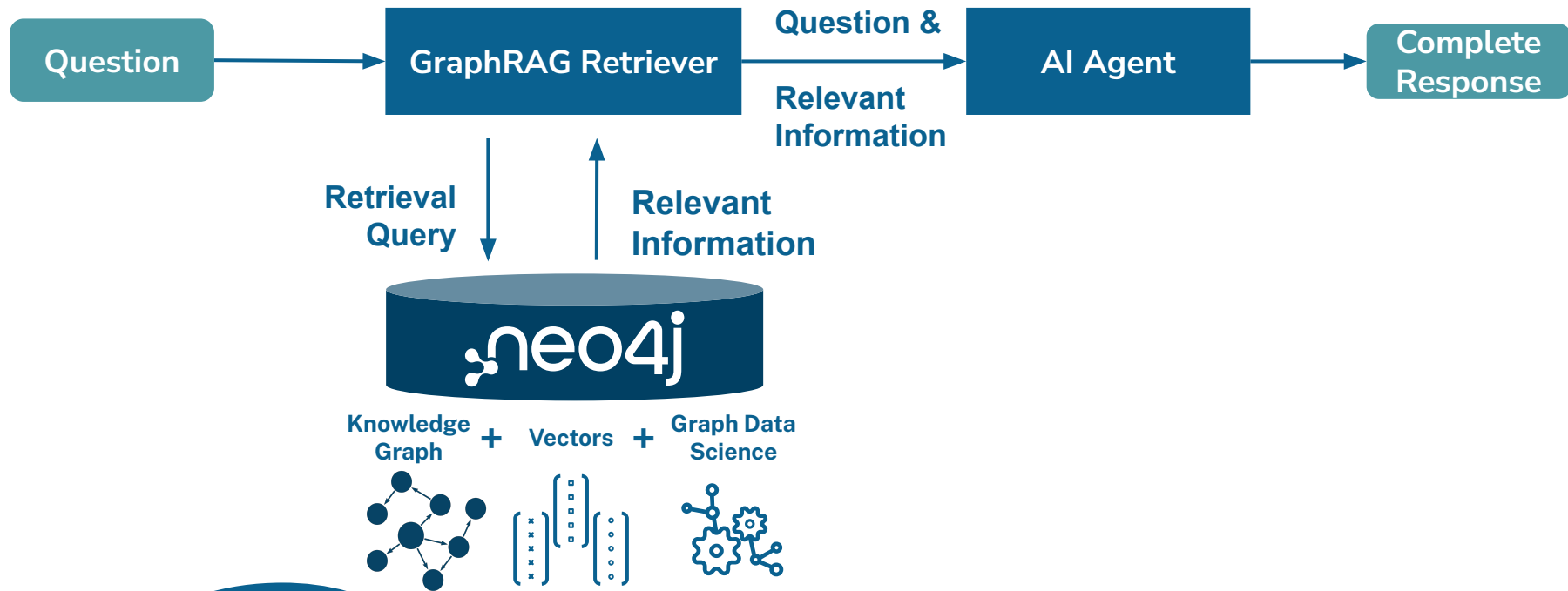
Unstructured text embeddings stored as node properties on document nodes



Document as a Graph



GraphRAG Pattern



Knowledge Graph Basics

Go to module_01



Knowledge Graph Basics

Go to module_01



Knowledge Graph Basics

Go to module_o3



You did it!



Connect with me:





Thank you!

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