"Advances and Challenges in Quantum Software, Engineering and Generative Artificial Intelligence"

Qnow.tech | #QNOW HOW

Supported by:

QNOW.TECH

We are a knowledge mining & generation company dedicated to improve understanding data for enterprises and scientist, accelerating the application development and uncovering new connections in data.

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Problem

| Quantum Technologies
Research & Talent

RELATED PROBLEMS

- The GAP between Industry and Academy in **QC.**
- QC is an **emergent** field, has its own set of terms and concept.
- The early QC has his own **learning curve.**
- The researcher aims to enhance **knowledge quality** while minimizing the time spent discovering **new connections**.
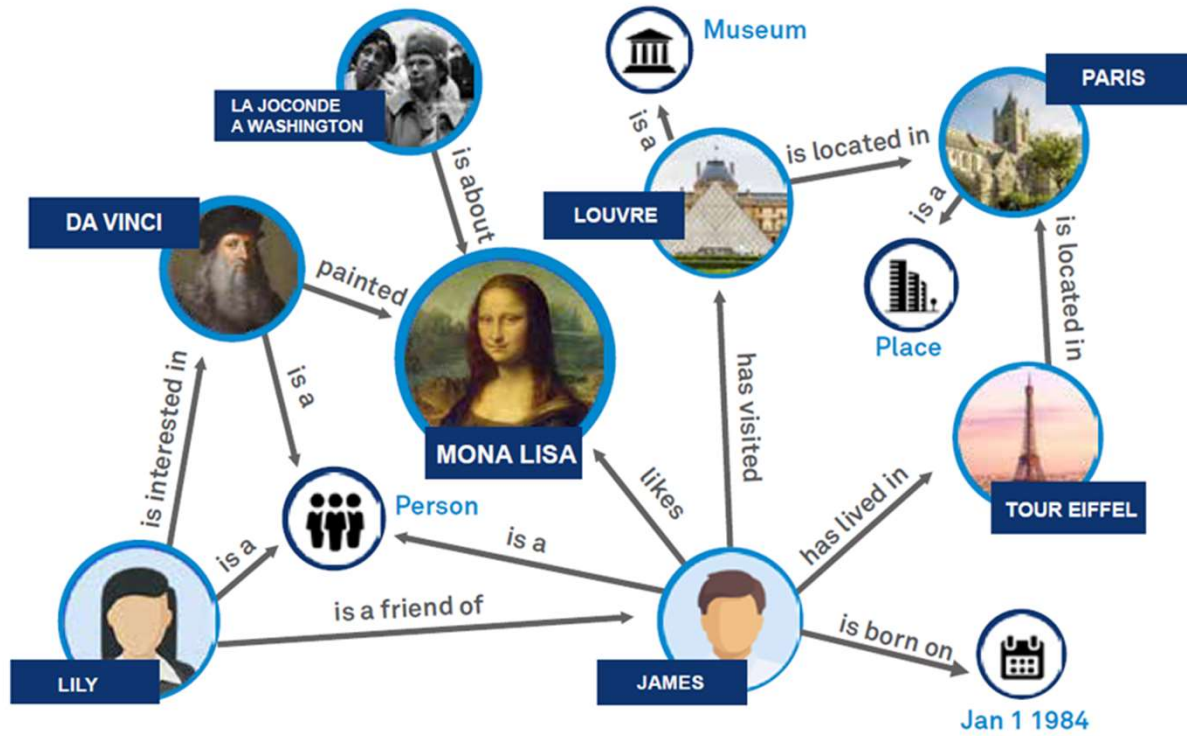
Tackling the Obstacles
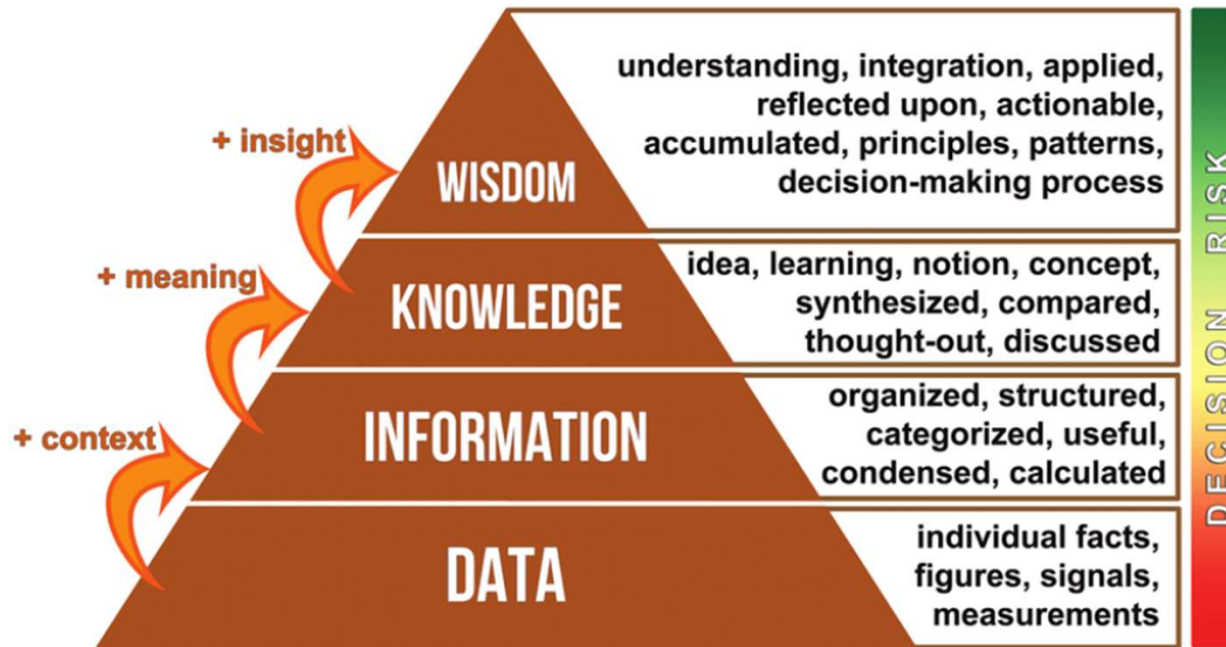
Knowledge Graphs + Agents + QC

CLEI 2024

WHAT IS KNOWLEDGE GRAPH

Aidan Hogan, Eva Blomqvist, Michael Cochez, Claudia d'Amato. (2020) Knowledge Graphs. arXiv preprint arXiv:2003.02320.

WHY KNOWLEDGE GRAPHS

DIKW pyramid

REFERENCES OF KNOWLEDGE GRAPHS

- **ORKG:** The Open Research Knowledge Graph (ORKG) aims to describe research papers in a structured manner. (Multidisciplinary)*

- **FIBO (Financial Industry Business Ontology**): Standardizes financial concepts to improve data integration and regulatory compliance in the financial sector. (Specific Domain)**

- **Gene Ontology:** The Gene Ontology knowledge base provides a computational representation of our current scientific knowledge about the functions of genes from many organisms, from humans to bacteria.***
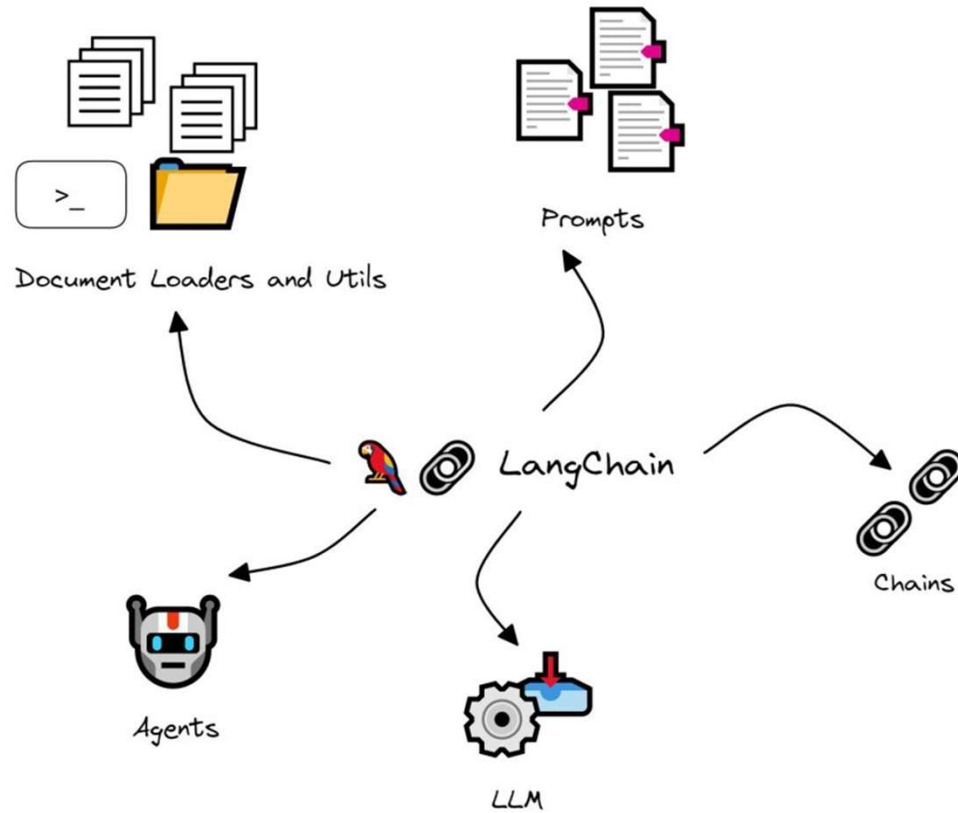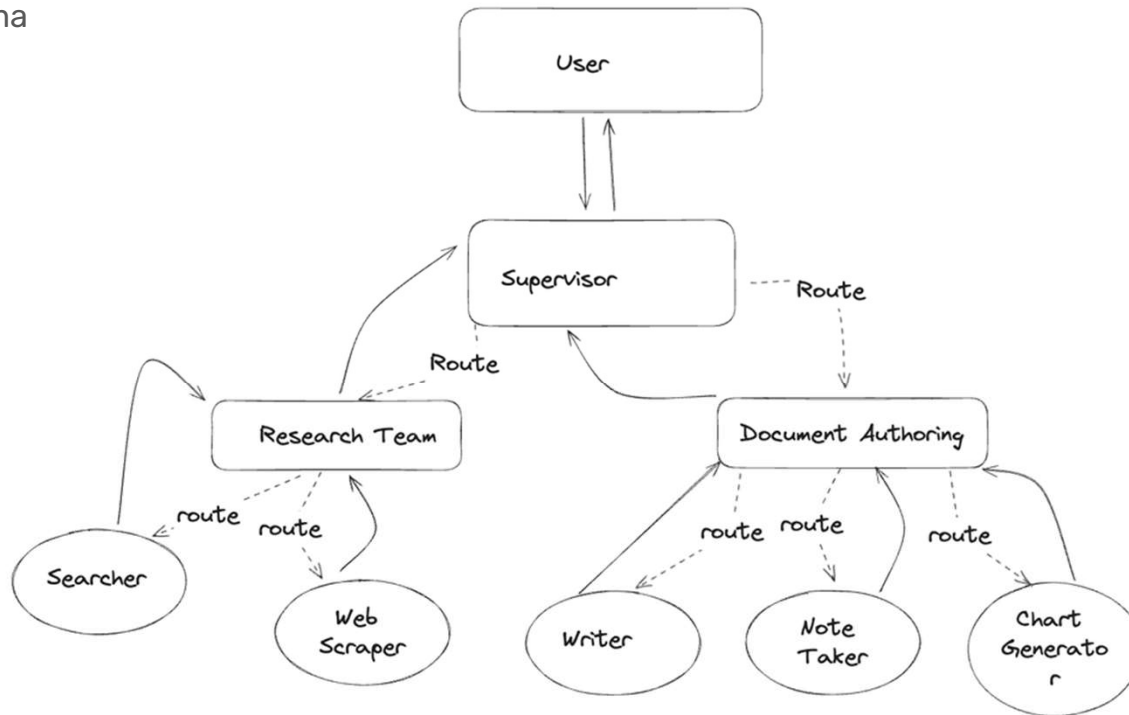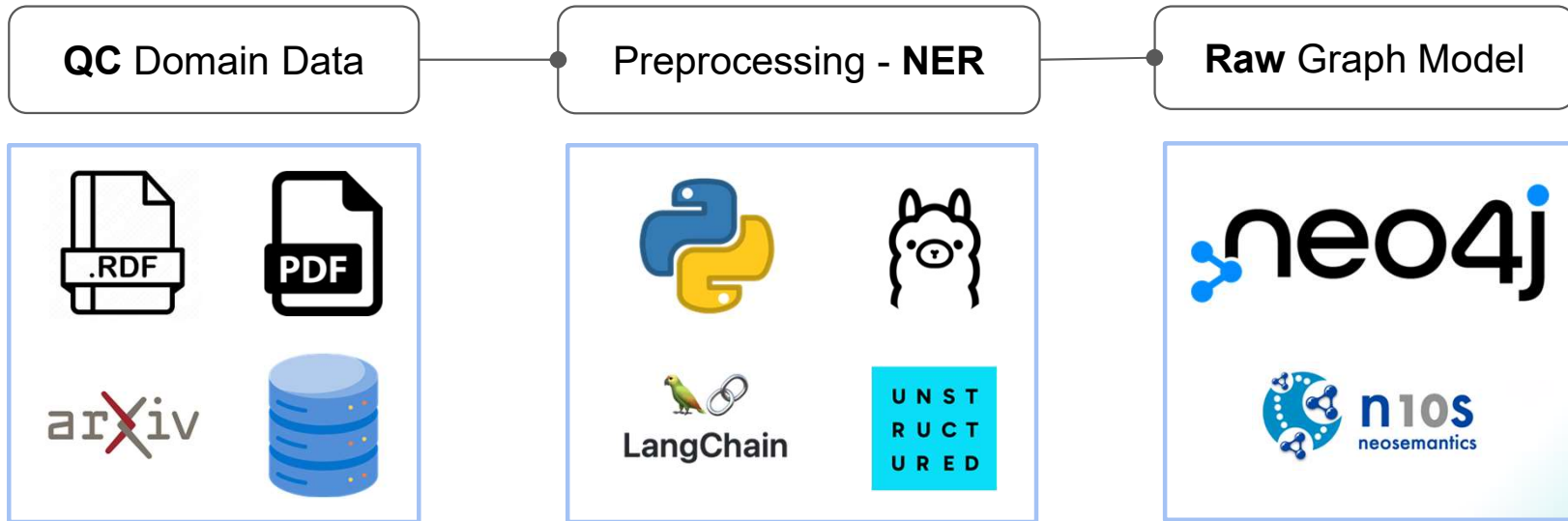
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AGENTS

Document Loaders and Utils

Prompts

LangChain

Agents

LLM

Chains

Chase, H. (2022). LangChain [Computer software]. https://github.com/langchain-ai/langchain

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AGENTS

Multi-Agent Schema

Chase, H. (2022). LangChain [Agents]. https://blog.langchain.dev/langgraph-multi-agent-workflows/

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How we tackle
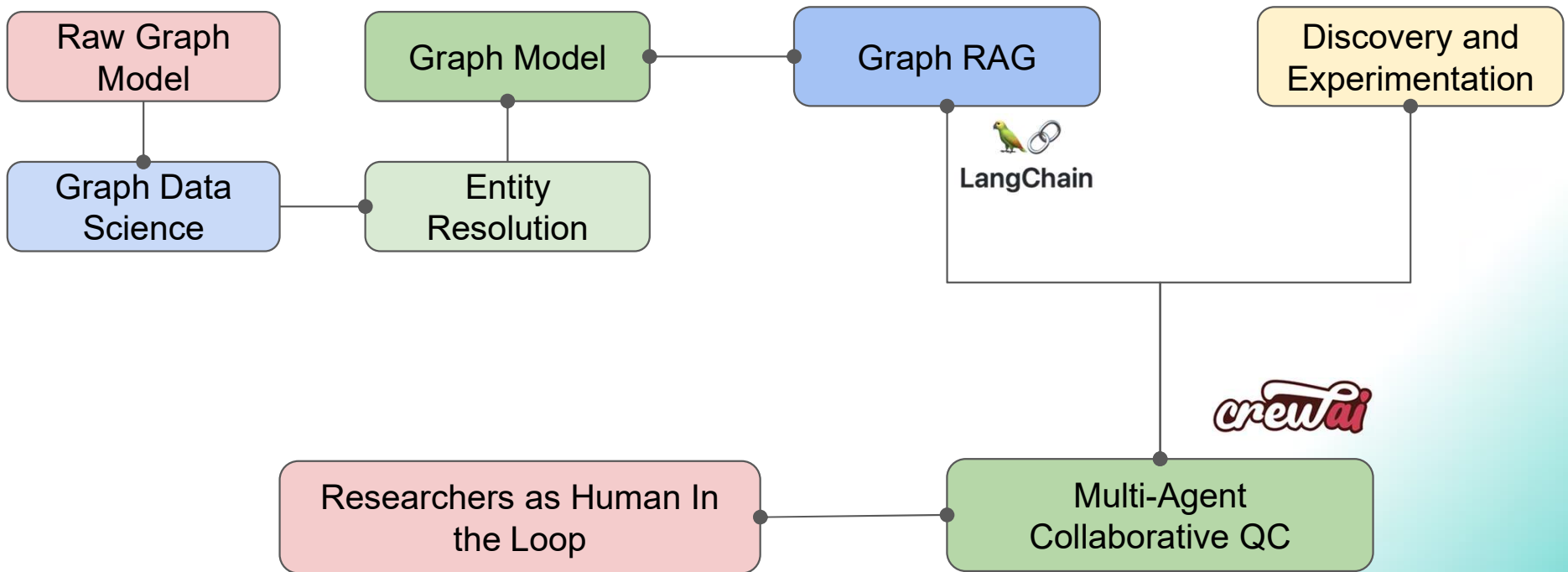

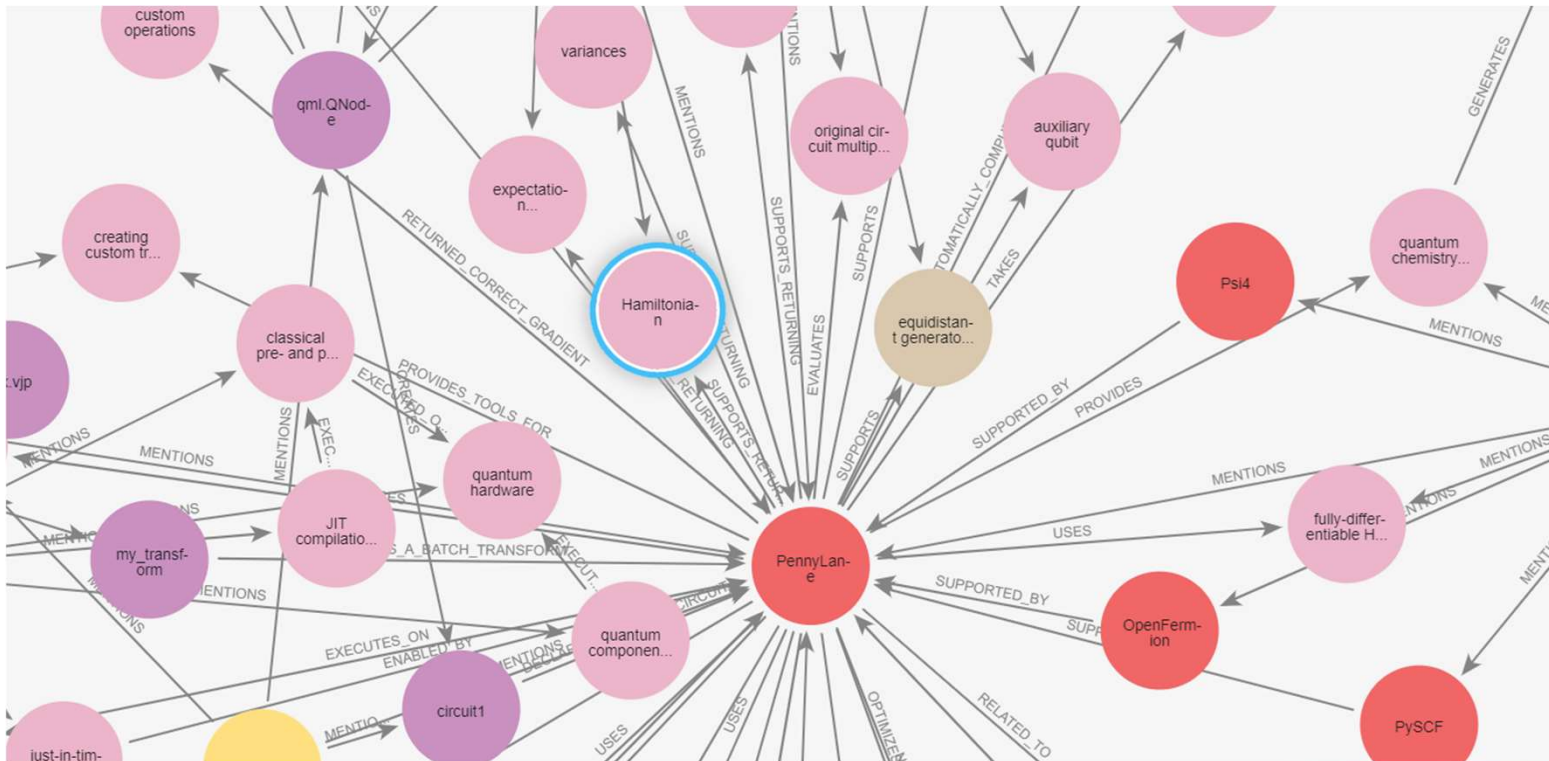QC Domain Data → Preprocessing - NER → Raw Graph Model

How we tackle

A brief view

Main Challenge: "Lack of Ontologies"

- **Fast evolution:** The field requires constant updates.
- **Ambiguity**: Concepts may be unclear.

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- **Interoperability**: Ontologies could enable integration and collaboration between different systems.
- **Search and Retrieval**: Well-defined ontologies improve query precision and relevance.
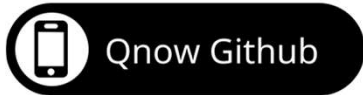
Collaboration | Feedback

We want to accelerate quantum computing research.

We need you for Ontologies validation and formalization.

CONTACT US

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Thanks!