Building a Semantic Layer with MCP and LangChain for Agentic AI

STARDOG

Presenters

Mike Grove

Co-Founder & SVP
of Engineering

Pranav Khurana

Senior Software Engineer -
AI & Cloud

We make AI intelligent.

We provide humans and agents trusted, contextual data to make critical decisions—in the boardroom or on the battlefield.

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3 Keys to success with Agentic AI

Access

**MCP
(Model Context Protocol)**

Open standard for connecting large language models, providing universal access to software systems as "tools"
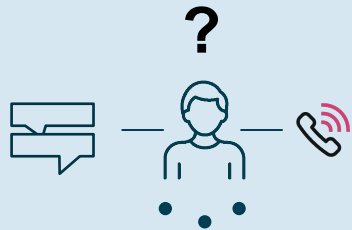
Orchestration

Langchain

Open-source framework for building applications powered by LLMs (large language models), allowing integration and orchestration of agentic systems
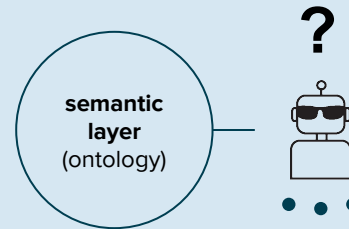
Understanding

Where do agents get this?

Humans bring General Intelligence to data problems.

Agents don't.

Agents are **more likely** to use confident language like "definitely" and "certainly" when *wrong*

Gartner

Emerging Tech: Agentic AI
Needs Context-Aware Data
Management

"A unified semantic layer is **required** to **enable AI** agents to achieve contextual **understanding** and advanced reasoning."
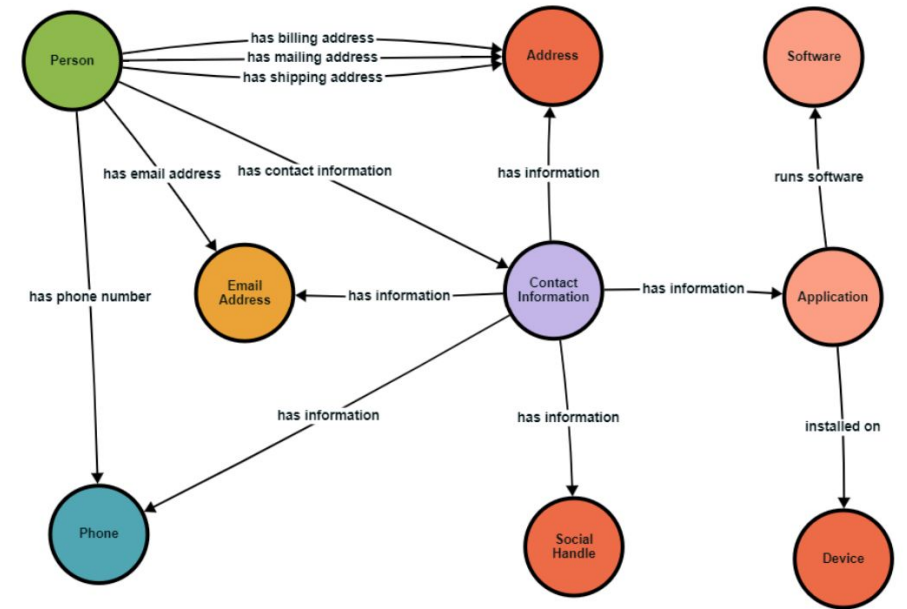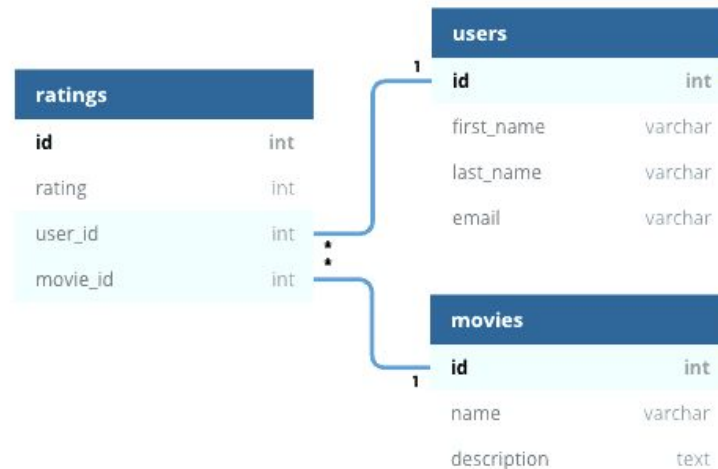
Your database is not a Semantic Layer, and labels aren't <u>context</u>.

RAG

Retrieval Augmented Generation (RAG) enhances an LLM's responses by retrieving relevant information from an external knowledge source before generating an answer.
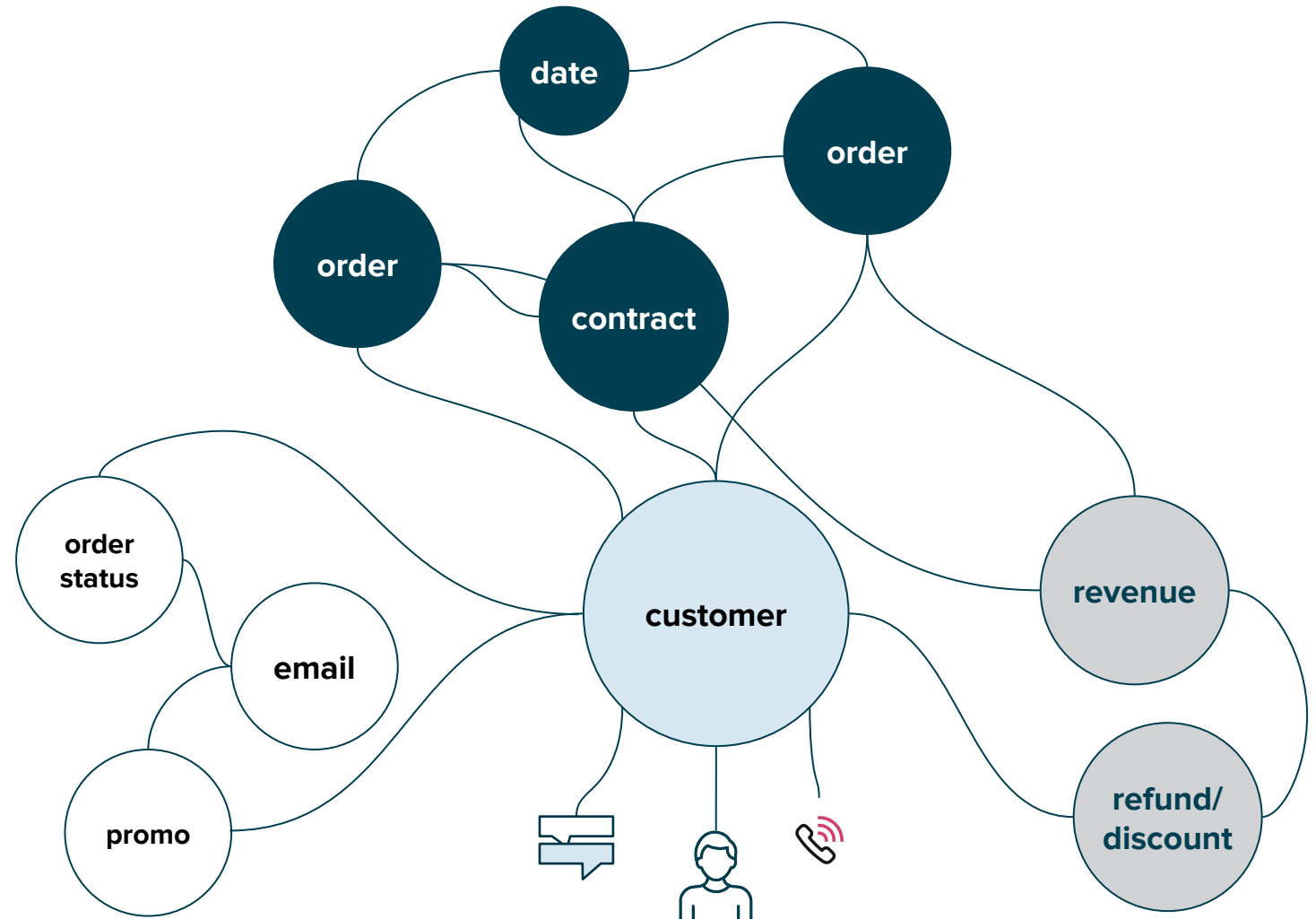
GraphRAG

An advanced version of RAG, GraphRAG leverages the relationships between data points (nodes and edges).

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Ontologies define what matters.

What is a customer?

- places an order
- signs up for email
- signs a contract
- purchased within the last year
- net positive revenue

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Stardog Semantic AI Platform
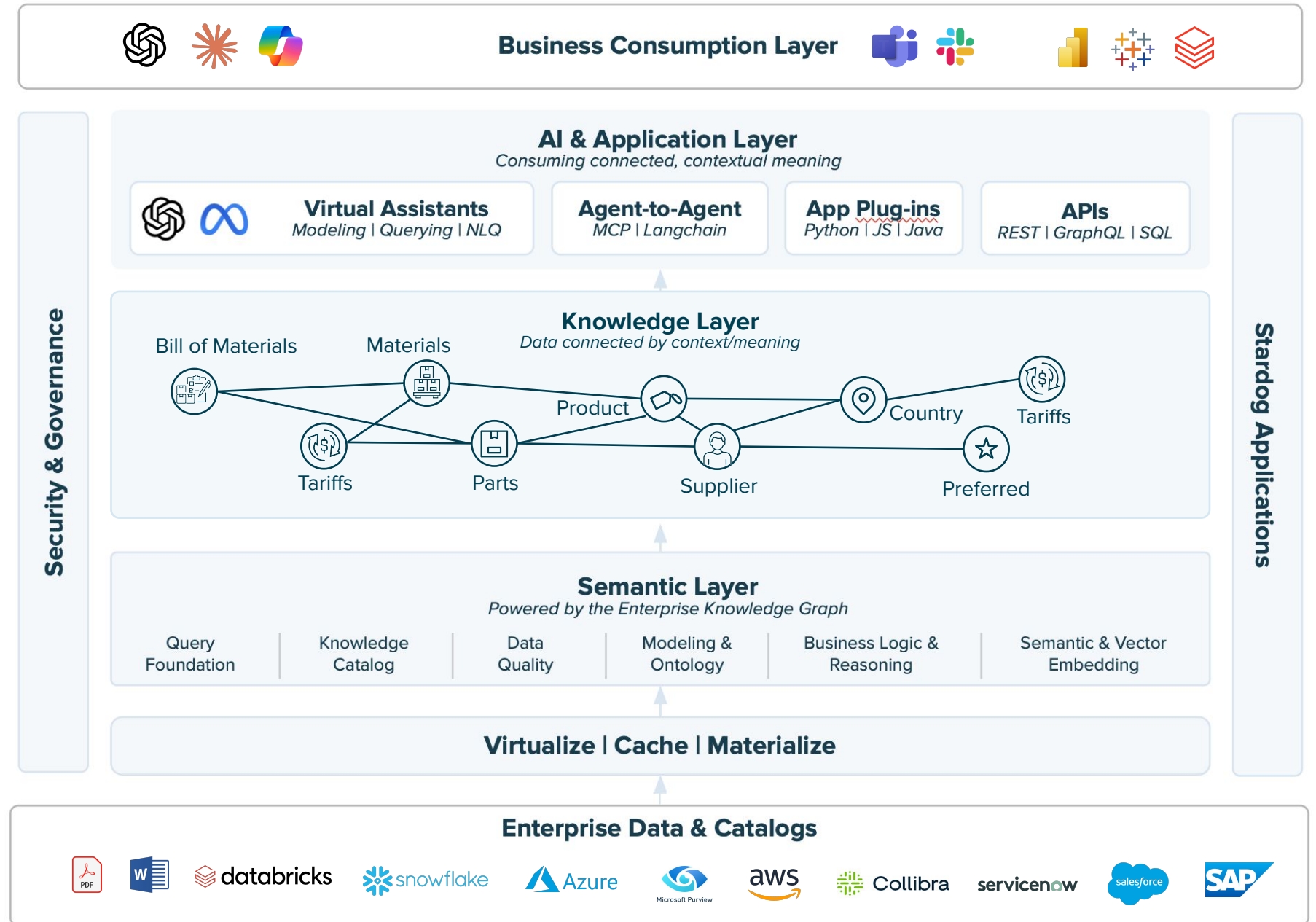
Semantic Enrichment
Generate more connections and enhance the network effect of your data. Capture, store, share, and enrich metadata using ML and reasoning

Ontology Modeling
The most flexible enterprise abstraction layer for data. Define the data model in relation to the meaning, not the structure, of the data.

Data Federation
Stop manipulating data and reduce the time, resources, and costs of deploying data for advanced analytics

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Demo

Part 1:
Zero to KG in 60s

Part 2:
Stardog integration with MCP and
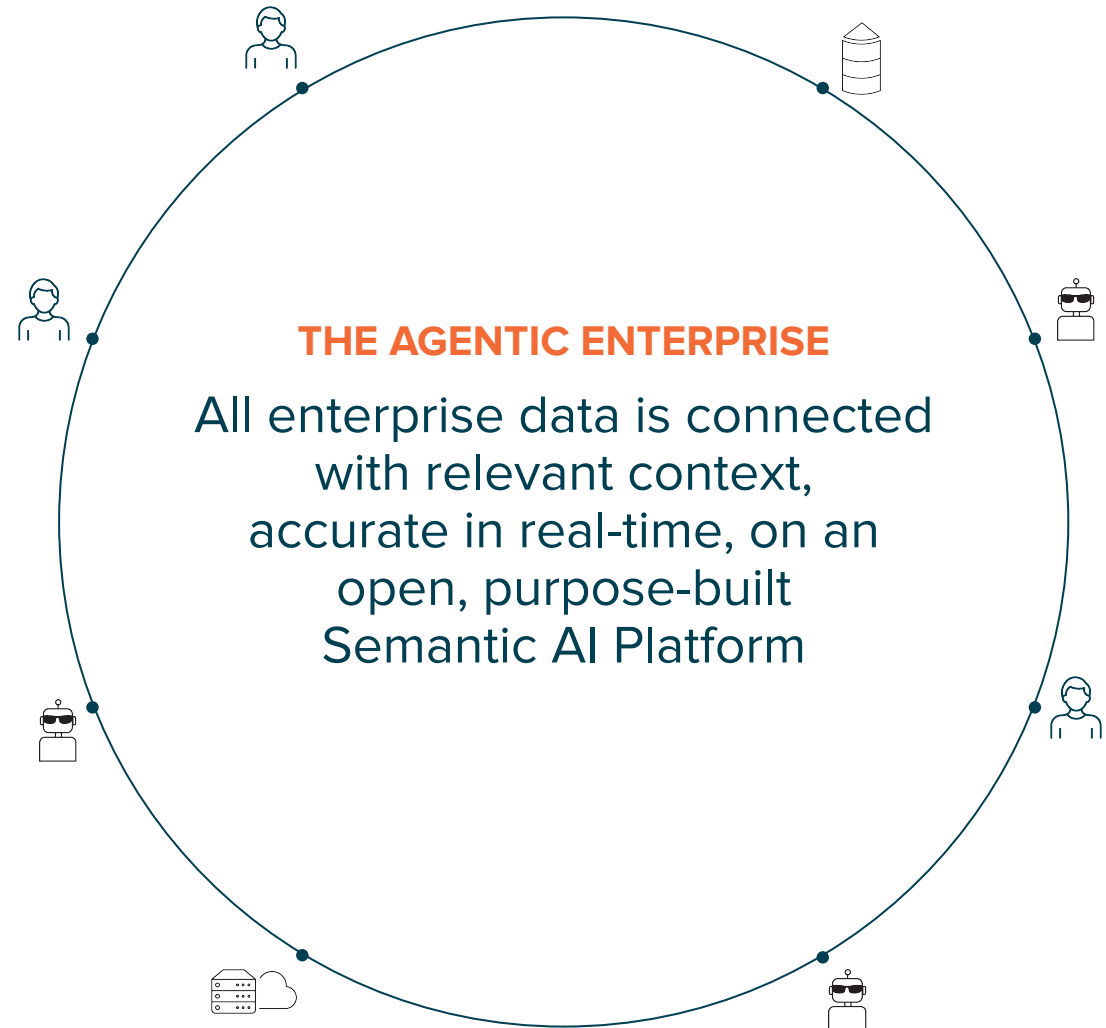Langchain deep-dive

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Stardog gives Agents understanding.

Ontologies define what matters to your business.

Data is integrated from anywhere, all at once.

Agents (like humans) can reason across systems.

THE AGENTIC ENTERPRISE

All enterprise data is connected with relevant context, accurate in real-time, on an open, purpose-built Semantic AI Platform

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Experience the power of Stardog with your own data!

Schedule your enterprise team for a Test Drive at
http://info.stardog.com/test-drive

How can I help?

ADDITIONAL RESOURCES

MCP public repo: https://github.com/stardog-union/stardog-cloud-mcp
Stardog LangChain integration: https://pypi.org/project/langchain-stardog/
Langchain demo app: https://github.com/pranav-k/mcp-lc-demo

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Questions?

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