

Why Your Data Catalogue is Not a Knowledge Graph (And Why It Matters)

A White Paper for Enterprise Architects and Business Leaders

Executive Summary

In the rush to adopt AI, many organisations conflate two fundamentally different tools: the **data catalogue** and the **knowledge graph**. This confusion is not semantic—it carries strategic consequences. This paper argues that catalogues, knowledge graphs, and **context graphs** serve distinct, complementary roles. A data catalogue is an **inventory**; a knowledge graph is a **semantic model**; and a context graph captures **how decisions are made**. Understanding these distinctions is the difference between AI that retrieves information and AI that truly understands your business.

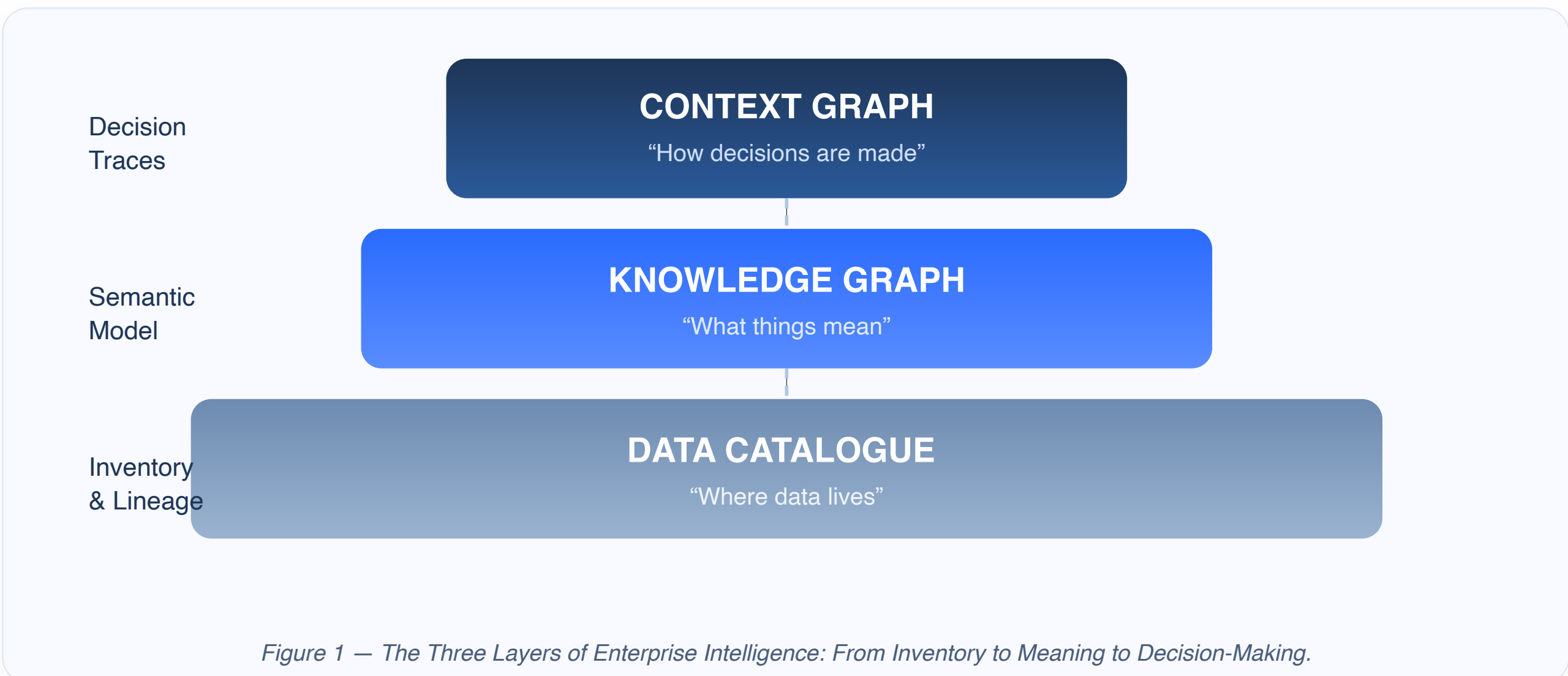


Figure 1 — The Three Layers of Enterprise Intelligence: From Inventory to Meaning to Decision-Making.

I. The Data Catalogue — Your Inventory, Not Your Intelligence

A data catalogue is, in its most basic form, an **inventory of data resources**. It helps organisations discover data, understand its structure, and track lineage. Good catalogues provide technical metadata, governance info, basic lineage, and glossary terms.

Feature	What a Data Catalogue Delivers
✓ Discovery	Find tables, columns, dashboards by name or keyword.
✓ Governance	Data owners, access controls, certification status.
✓ Lineage	Basic pipeline tracing: where data came from and how it moved.
✗ Semantics	Does not capture relationships between business concepts or operational logic.
✗ Decision Logic	No calculation rules, fiscal calendars, or metric definitions.

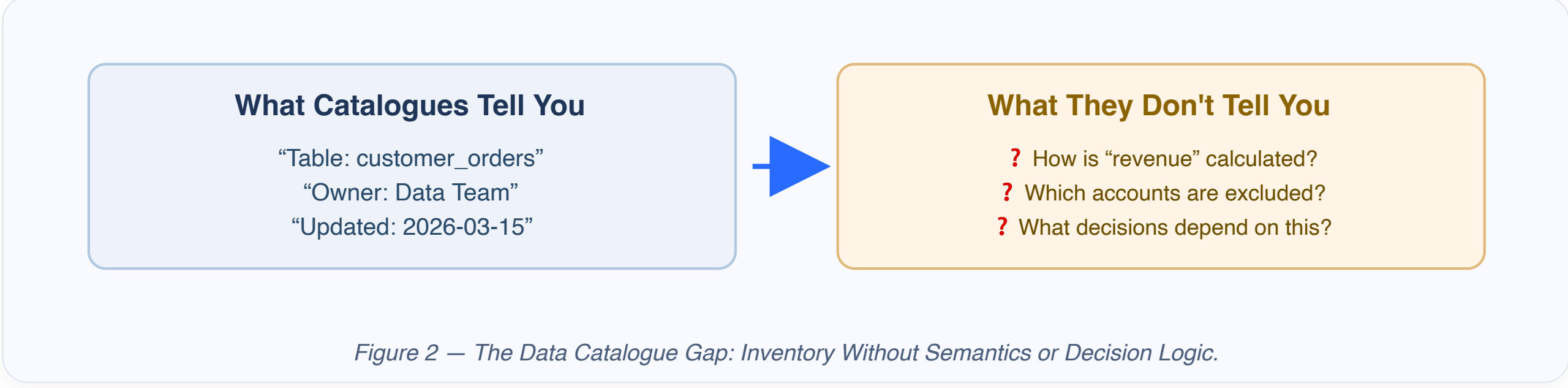


Figure 2 — The Data Catalogue Gap: Inventory Without Semantics or Decision Logic.

II. The Knowledge Graph — Meaning & Relationships

A knowledge graph represents real-world concepts (nodes) and relationships (edges). It encodes **meaning and data together**, making relationships first-class citizens. In enterprise architecture, it maps business capabilities, processes, applications, and data assets as a connected network.

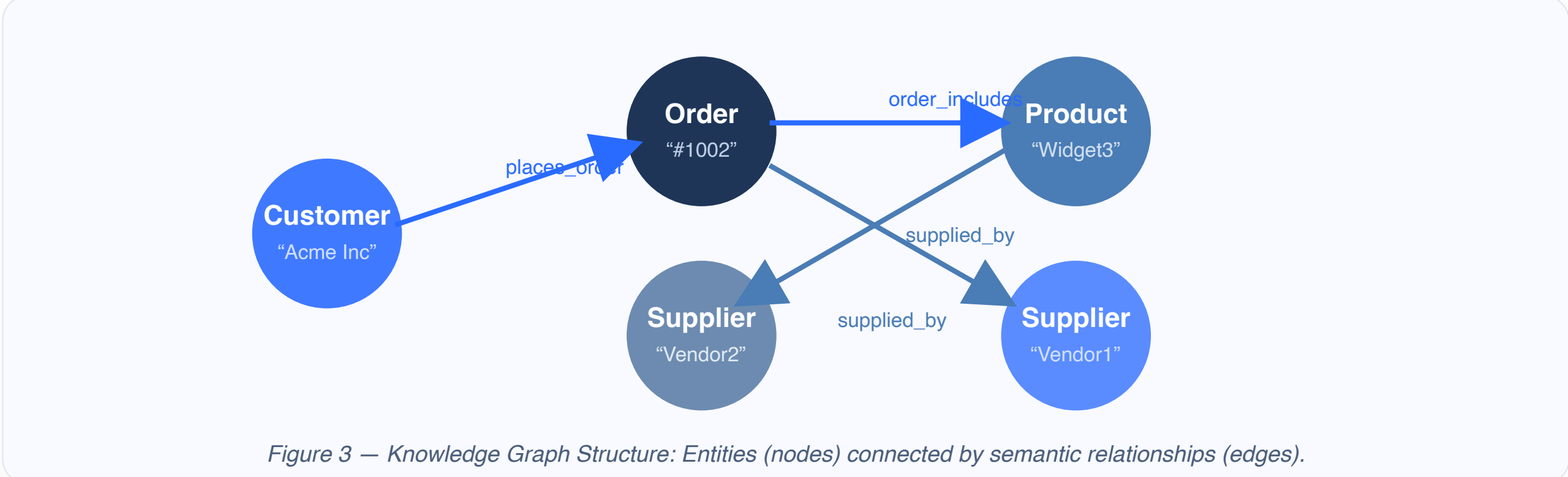


Figure 3 — Knowledge Graph Structure: Entities (nodes) connected by semantic relationships (edges).

Business Value of Knowledge Graphs

Use Case	How Knowledge Graphs Help
Customer 360	Link interactions, transactions, and behaviours across platforms.
Fraud Detection	Model relationships between users, accounts, and suspicious patterns.
Enterprise Search	Semantic search based on meaning and relationships, not just keywords.
Compliance & Governance	Track lineage, manage sensitive data, and comply with regulations.

III. Why Your Data Catalogue Is Not a Knowledge Graph

A common misunderstanding is that a data catalogue “powered by” a knowledge graph is itself a knowledge graph. While vendors often use the term loosely, there is a critical distinction: **a data catalogue that uses a knowledge graph as a storage layer is still a data catalogue**. Its purpose remains inventory and discovery—not semantic understanding.

The Technical Test: A genuine knowledge graph must have a *documented ontology*, allow *extension* of that ontology without re-engineering, and support *graph-style queries*. If you can’t query your metadata like a graph, your catalogue is not a knowledge graph.

IV. The Context Graph — The Missing Layer for AI

Context graphs represent the **newest evolution**. As Gartner describes, they track “decision flows and event traces, enabling more informed business decision-making by AI agents.” Unlike static knowledge graphs, context graphs maintain **temporal validity**, **decision traces**, **persona context**, and **continuous learning**.



Figure 4 — Context Graph Capabilities: Decision Traces, Temporal Validity, and Persona Context.

V. How They Work Together — The Integrated Stack

Knowledge graphs and context graphs are not replacements—they are **augmentations**. The complete enterprise stack has three layers:

- Data Catalogue:** tells AI what data exists and where to find it.
- Knowledge Graph:** tells AI what entities mean and how they relate.
- Context Graph:** tells AI how your organisation actually uses data to make decisions.

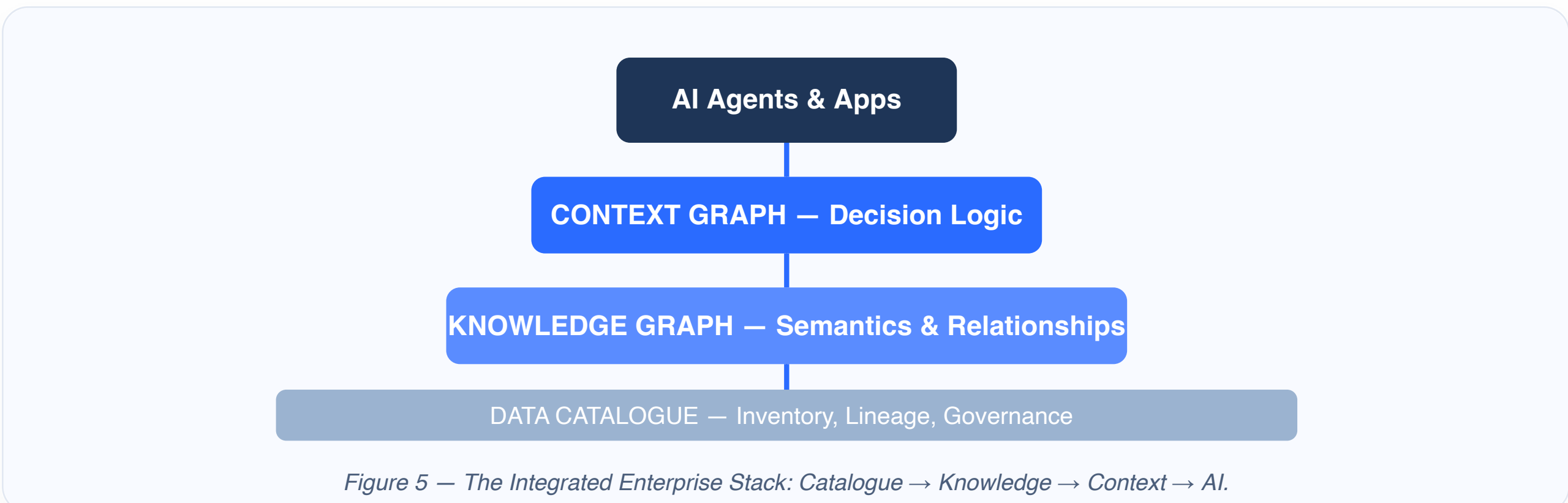


Figure 5 — The Integrated Enterprise Stack: Catalogue → Knowledge → Context → AI.

VI. Implications for Enterprise Architects

- Catalogue first, but not only.** Start with a catalogue, but recognise it is not sufficient for AI readiness.
- Invest in semantics.** Identify not just data types, but what columns represent and how data fits into business models.
- Plan for context.** As agentic AI moves to production, close the “context gap” with decision traces and temporal validity.
- Use the right tool for the right job.** Do not expect your catalogue to be a knowledge graph, or your knowledge graph to be a context graph.

A Call to Action

Ask yourself: Does our architecture capture **what things mean**, or just where they are? Can we track **how decisions are made**, or just what data is available? The organisations that answer these questions clearly will be the ones that succeed with AI.

Conclusion

Your data catalogue is not a knowledge graph. It was never meant to be. A data catalogue tells you where data lives. A knowledge graph tells you what things mean. A context graph tells you how decisions are made.

Understanding these distinctions matters—not because one is better than the other, but because each plays a distinct and essential role. The architecture that bridges these layers—with catalogues for inventory, knowledge graphs for meaning, and context graphs for decisions—is the architecture that will deliver real business value from AI.

References

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