STARDOG

How to Build an
Enterprise Knowledge Graph

What will you learn today?

1 Describe and Define an Enterprise Knowledge Graph

2 Understanding the Benefits of a Enterprise Knowledge Graph

3 Designing and Building an Enterprise Knowledge Graph

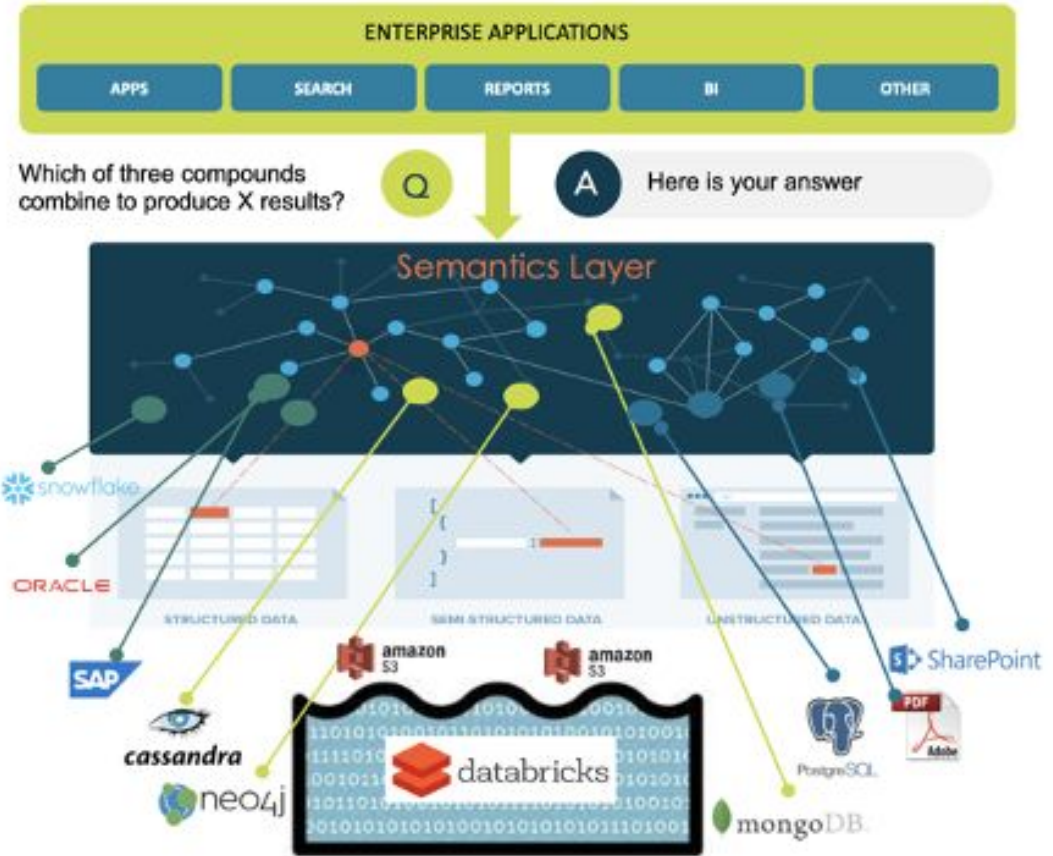**4** Power of Semantic Reasoning

5 Empowering Analytics with your Enterprise Knowledge Graph

What is a Enterprise Knowledge Graph

A flexible, semantic data layer for answering complex queries across the data lake and other data sources.

- Connects any data source / location and virtualizes access

- Enriches real-world context into data

- Infers new relationships, patterns and insights in data

- Semantically searches data by meaning

Why is a knowledge graph worth it?

1. **Data of any structure can be connected and made machine-understandable**

2. **Data from existing data management systems can be incorporated, in place**

3. **Easy to adapt to changes and accommodate multiple viewpoints using a flexible data model**

4. **Machine-understandable definitions allow you discover previously unknown connections and explain how they were derived**

76% of executives demand strategic insights from IT

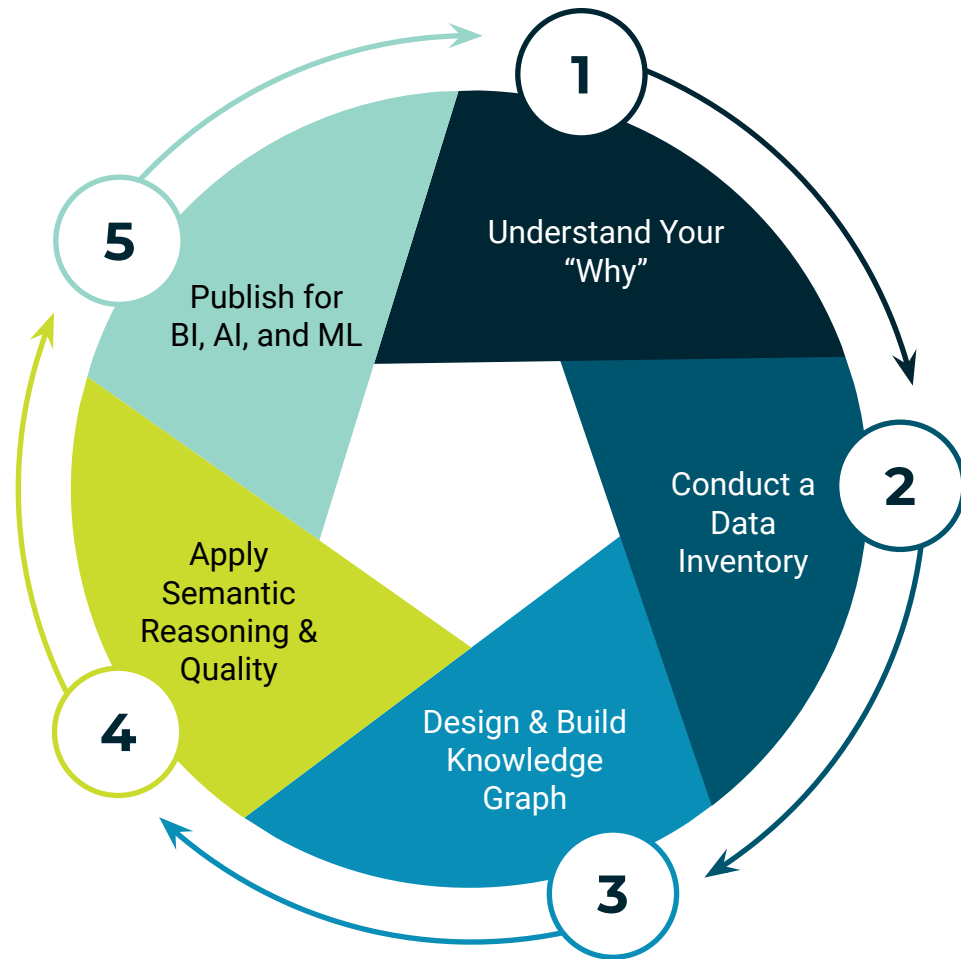*McKinsey, "Partnering to shape the future--IT's new imperative"*

65% reduction in data quality and data mastering ongoing operations costs

Gartner, "Top Trends in Data and Analytics for 2021: Data Fabric Is the Foundation," Mark Beyer et al, 16 February 2021
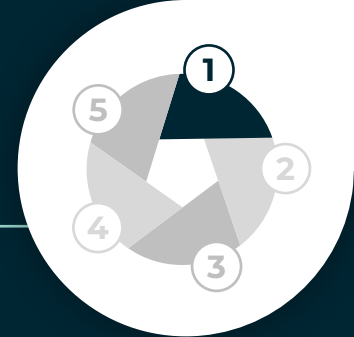
Graph leads to up to a 96% reduction in code.

Gartner, "What is 'Graph? - An Elementary Version for the Uninitiated,'"Mark Beyer et al, 7 December 2020

An enterprise knowledge graph implementation framework

1 Understand Your "Why"
2 Conduct a Data Inventory
3 Design & Build Knowledge Graph
4 Apply Semantic Reasoning & Quality
5 Publish for BI, AI, and ML

STEP 1:
Understand your "why"

Why?
- Why does this matter?
- Why are we spending time on this?
- Why, why, why

What?
- What areas of the business are you trying to address
- What are the business drivers and objectives

How?
- Interview business leaders to understand their objectives
- Discover the decisions that are made to run, operate, and improve the business
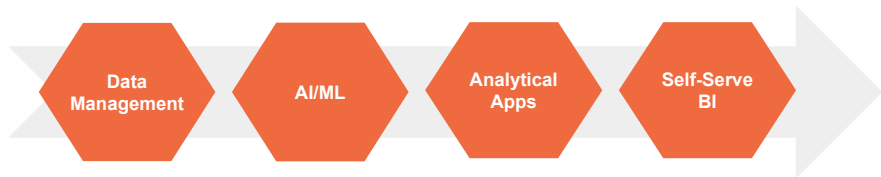
How long?
- 2-4 weeks

What can accelerate this step?
- Market research and competitive analysis
- Customer feedback
- New products and services

STEP 1:
Understand your "Why"

Technical

Data Management → **AI/ML** → **Analytical Apps** → **Self-Serve BI**

- Consolidate data silos
- Improve data governance
- Collaborative data science
- Enhanced reporting and analytics

Business

Operational Efficiency · **Mitigate Risk** · **Increase Revenue**

- Real-Time Decisioning & Supply Chain Optimization
- Fraud Detection, Regulatory Compliance & Cyber Security
- Customer retention, up-sell, and cross-sell
- New product development & entry

STEP 2:
Conduct a Data Inventory

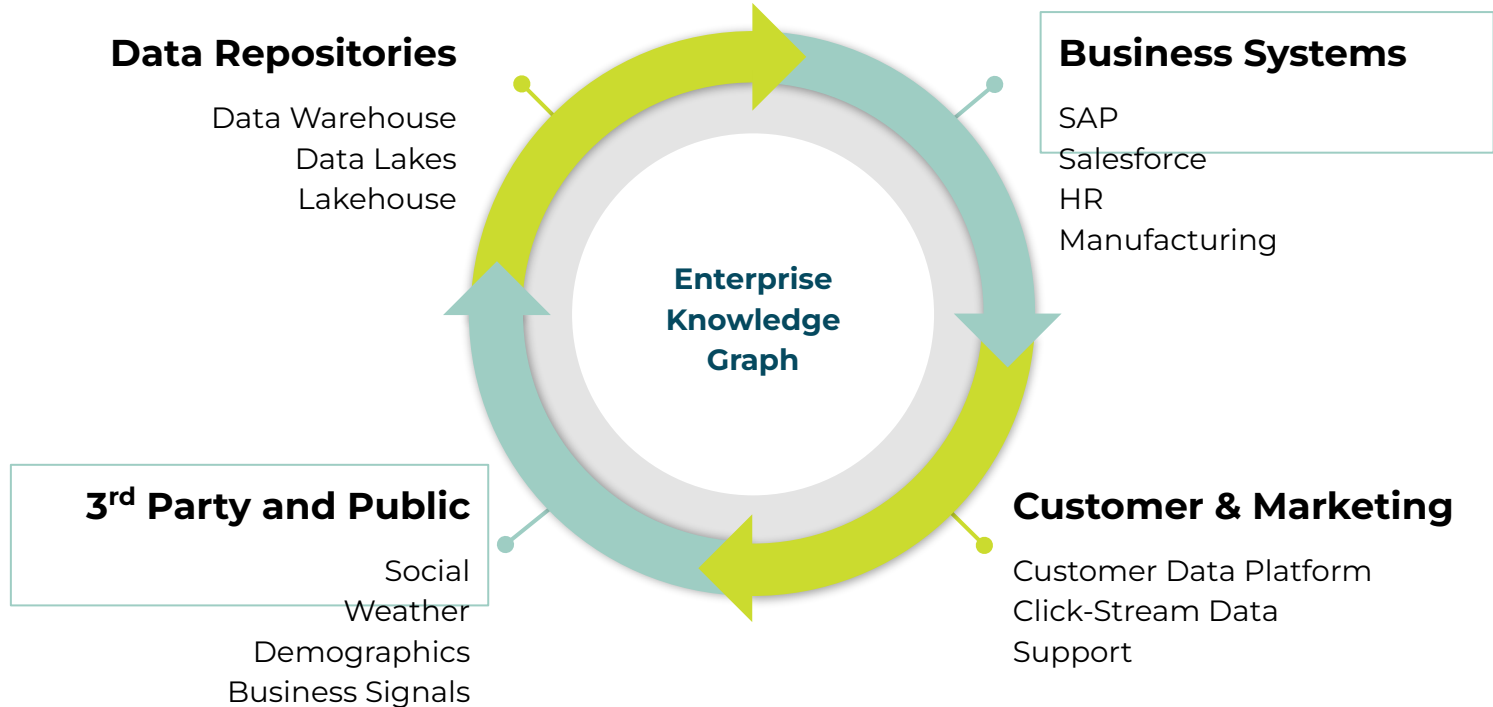|	
How?	• Identify the key subject areas and source systems to start with • Interview functional SME's and understand new and improve analytical requirements • Interview Data Scientist and identity the major data collection efforts
How long?	• 2-4 weeks
What can accelerate this step?	• Data Warehouse, DataMart, Lakehouse, etc • Data catalog • DevOps and DataOps teams
How does Stardog help?	• Connectors to data catalogs • Visual modeling for rapid data modeling • Virtual Graph

A Universe of Data
Internal, External, Public, and Paid

Data Repositories

Data Warehouse
Data Lakes
Lakehouse

Business Systems

SAP
Salesforce
HR
Manufacturing

Enterprise Knowledge Graph

3rd Party and Public

Social
Weather
Demographics
Business Signals

Customer & Marketing

Customer Data Platform
Click-Stream Data
Support

Design & Build Enterprise Knowledge Graph

How?	• Identify key subject areas and model primary attributes • Create data source mapping from ETL pipeline • Create virtual source mappings from source systems
How long?	• ~ 1 week per data source
What can accelerate this process?	• Pre-negotiated data access • Data catalog • metadata • attribute prioritization
How does Stardog help?	• Virtualization leverages existing data in place • Inference allows identification of new connections

Apply Semantic Reasoning & Data Quality

What?	• Semantic reasoning is Stardog's ability to infer new facts and relationships from existing data based on rules and/or the EKG. This semantic layer adds context, derived attributes, data enhancement, relationships, and valuable insights to your knowledge layer

How?	**Rules based**
	    • Active Customers = someone who has made a purchase in the past 30 days
	    • Possible Churn = last purchase > 120 days and more than 2 support events
	Schema aware and relationship driven
	    • Influencers = customers that have shared your marketing message over 30 people
	    • BlackList = person that has more than 3 fraudulent transactions within 45 days
	    • Fraud Ring = person that has relationships (foaf) with 2 or more "BlackList" people

How long?	• 1-2 weeks
How does Stardog help?	• Rules based semantic engine • EKG that is based on relationships

STEP 5:
Publish Enterprise Knowledge Graph
all knowledge workers and consumers

What?	• Making EKG available to all ......
How?	• Develop User/Application driven views of your EKG • Business Analyst, Data Scientist, Data Engineers, etc..
How long?	• 3 weeks
How does Stardog help?	• Virtualized and Materialized Graphs • Open Source Ontologies • BI/SQL Mapping Layer for Business Intelligence • Integration with Data Science Tools (Python, R, etc.) • GraphQL • API Integration

DEMO:
Stardog

WEBINAR:

LIVE Q&A

STARDOG

Thank you!

Additional information:

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Try Stardog Free: www.stardog.com/get-started