



Knowledge Graphs for Critical Enterprise Systems

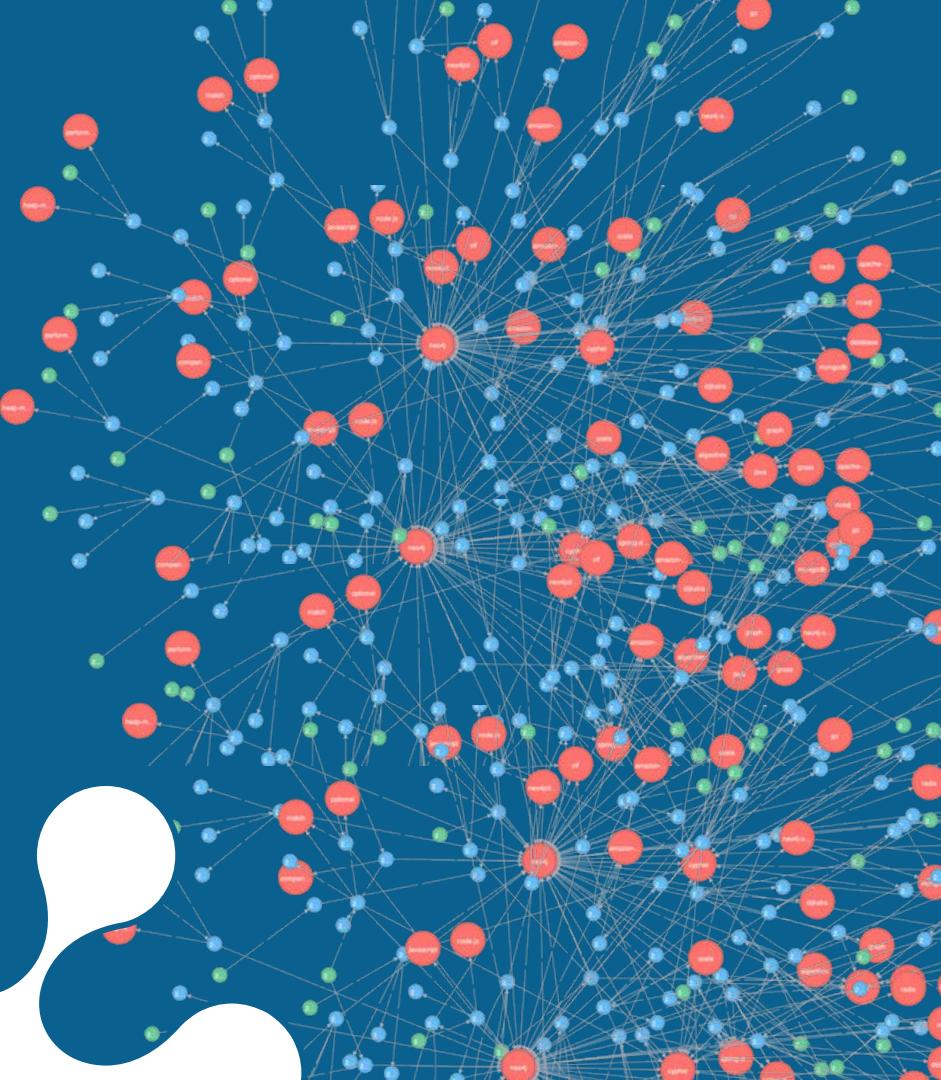
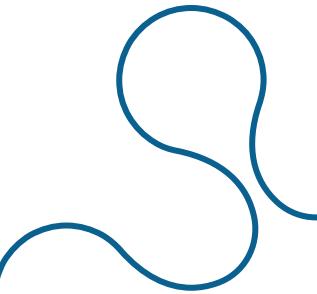
How knowledge graphs and GenAI combine in real-world solutions

Sreenath Gopalakrishna
Director of Software Engineering, BT

Dr. Jim Webber
Chief Scientist, Neo4j

Agenda

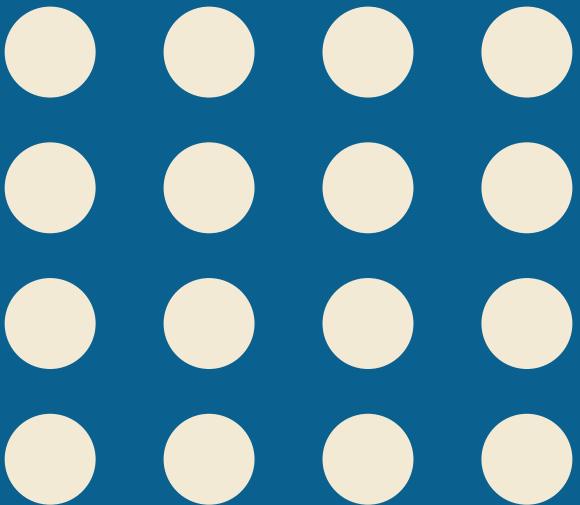
1. Introduction to Knowledge Graphs
2. Networks everywhere!
3. Evolution of SRIMS
4. Generative AI as a system component
5. Competitive advantage



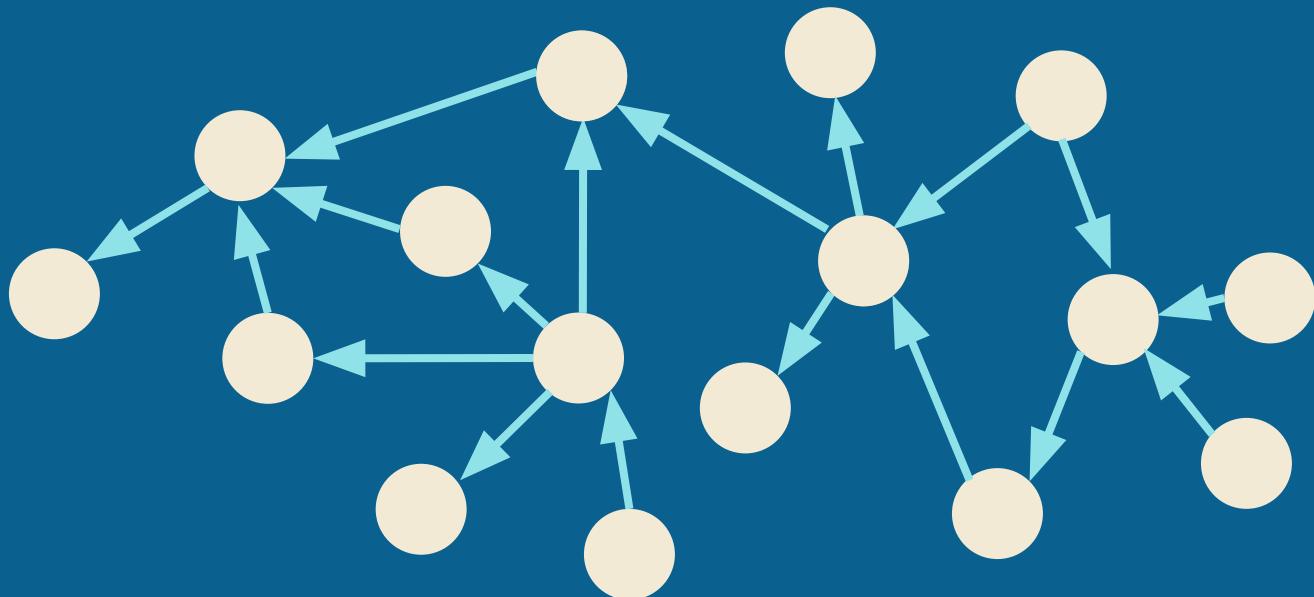
Knowledge Graphs are cool.

Let me show you around

It's Not What You Know



It's Who You Know



And where they are

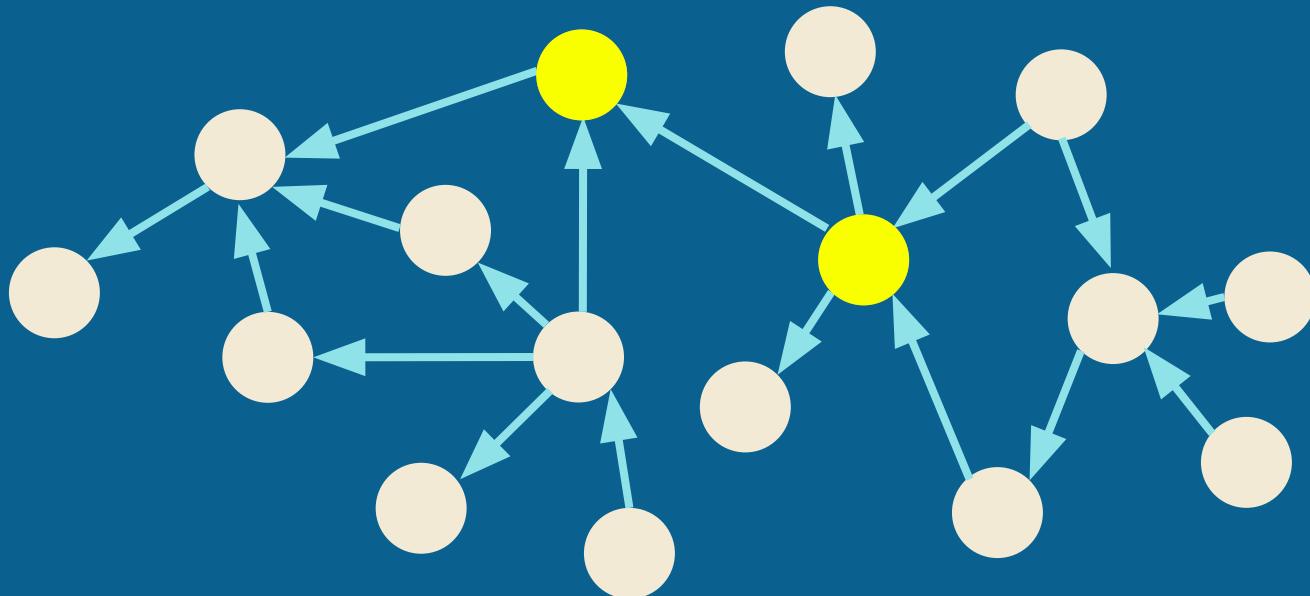
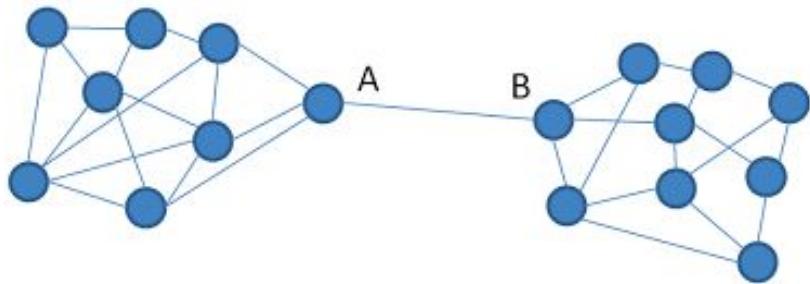




Photo by [Helena Lopes](#) on [Unsplash](#)

Network Structure is Highly Predictive

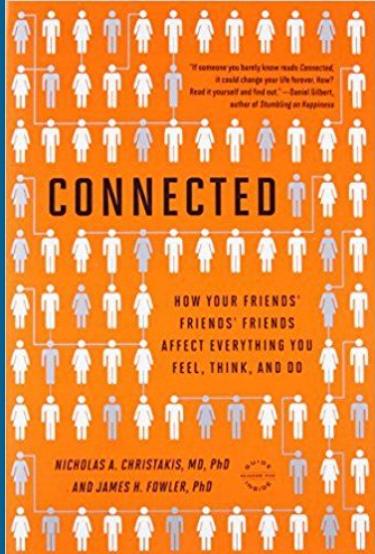


Higher Pay and More Promotions

- People Near Structural Holes
- Organizational Misfits

"Organizational Misfits and the Origins of Brokerage in Intrafirm Networks" A. Kleinbaum
"Structural Holes and Good Ideas" R. Burt

Relationships are the strongest predictors of behavior



Christakis & Fowler

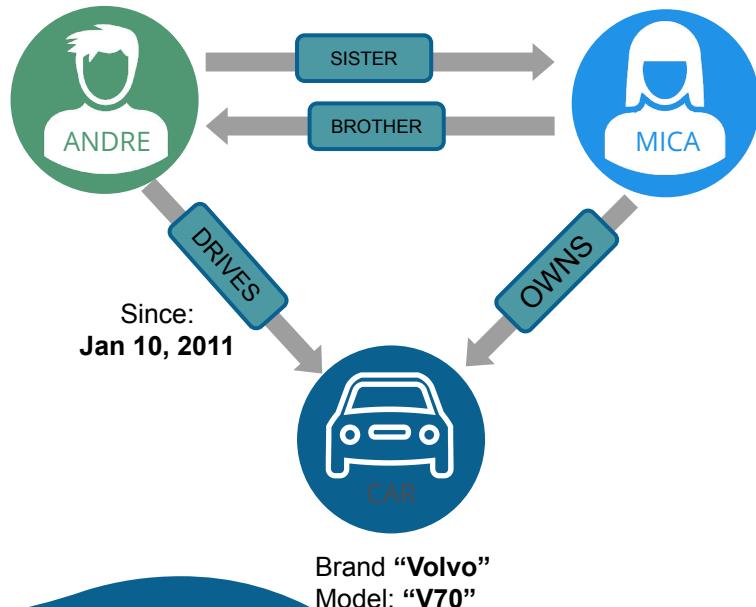
But You Can't Analyse What You Can't See

- Most data disciplines ignore relationships
- It's painful to manually engineer connected features from tabular data
- Graphs are built on relationships, so...
- You don't have to guess at the associations
- **With graphs, relationships are built in**

Graph Modeling is Straightforward

Name: "Andre"
Born: May 29, 1970
Twitter: "@andre29"

Name: "Mica"
Born: Dec 5, 1975



Node

Represents an entity in the graph with optional label

Relationship

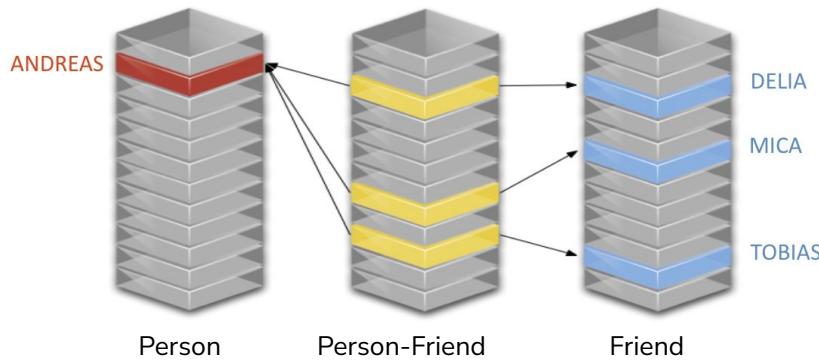
Connect nodes to each other

Property

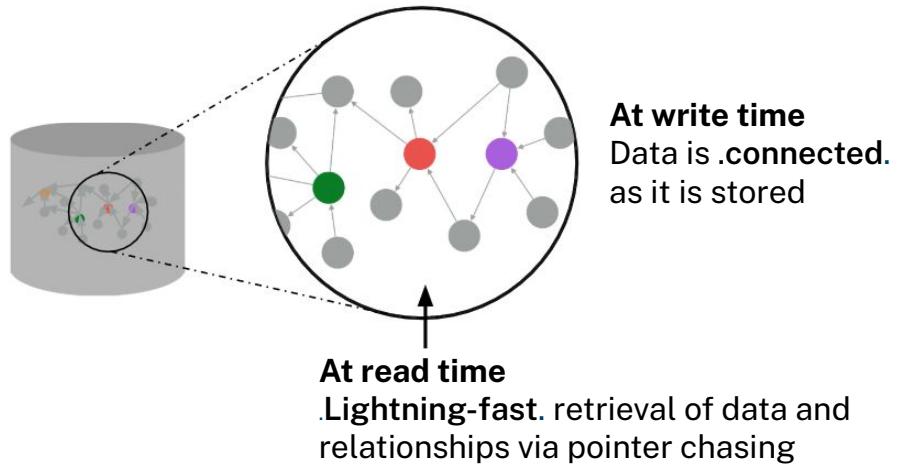
Describes a node or relationship: e.g. name, age, weight etc

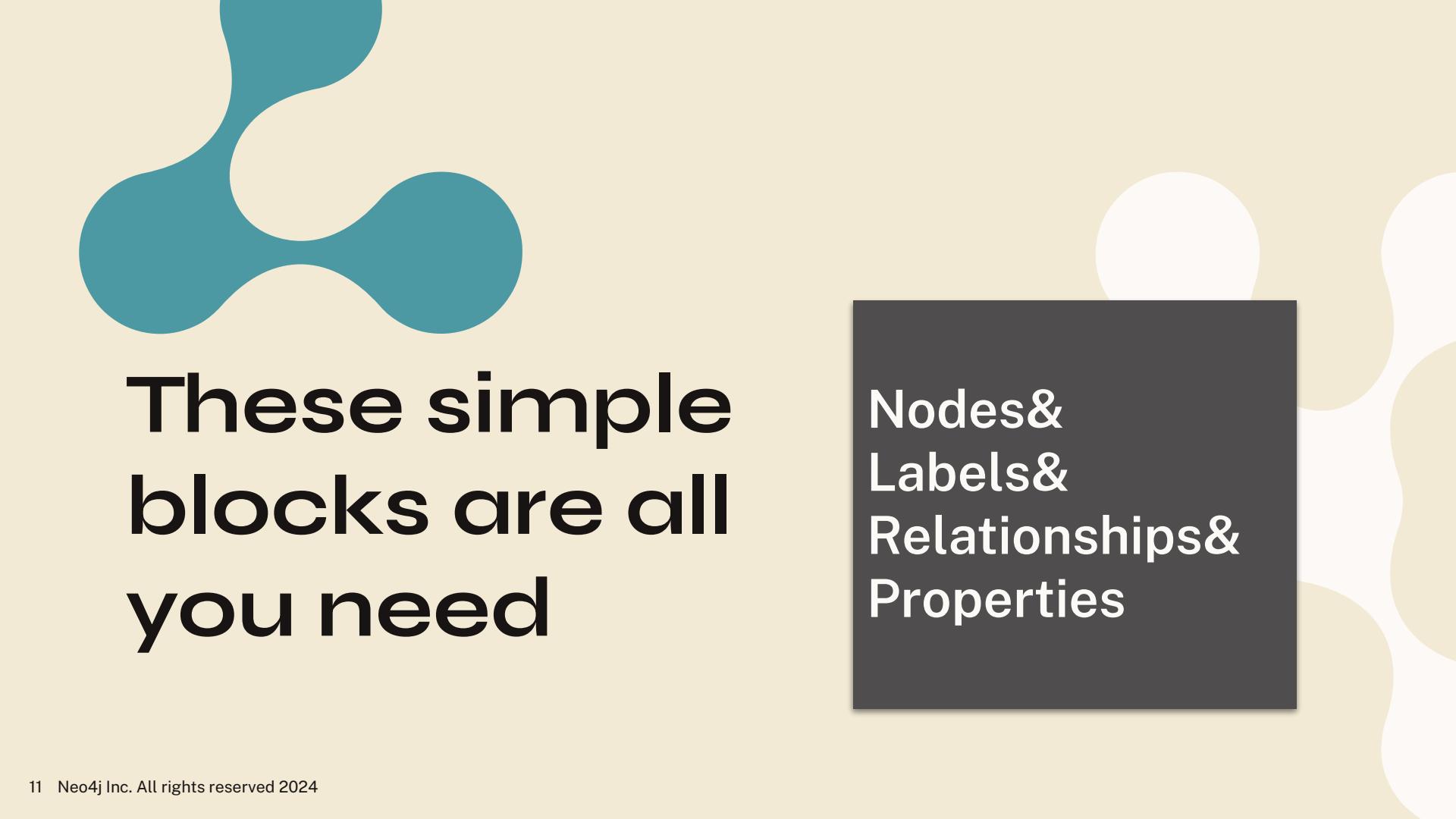
Index-Free Adjacency: Fast, Flexible, Scalable

Relational Database



Native Graph Database





These simple blocks are all you need

**Nodes&
Labels&
Relationships&
Properties**

Knowledge Graphs Help BT Group Deliver Digital Transformation

Sreenath Gopalakrishna, Director of Software
Engineering BT Group

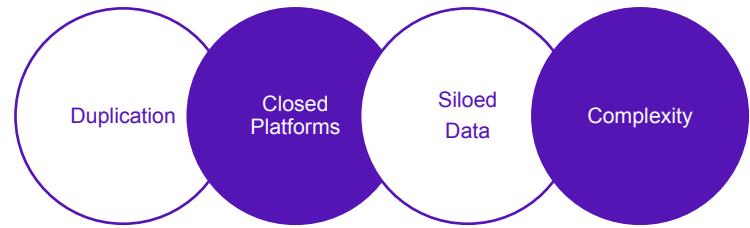


BT Group OSS Division: We develop the strategies and platforms that help modernise BT Groups's infrastructure, driving convergence and automation.

Our challenge dimensions

The traditional network equipment deployment approaches left a legacy of complexity and risk

- Multiple applications for each network technology
- Multiple vendors
- High maintenance costs
- Complex Application Integrations



The Proposed Solution - SRIMS

Our objectives were to create a platform that addressed these fundamental capabilities:

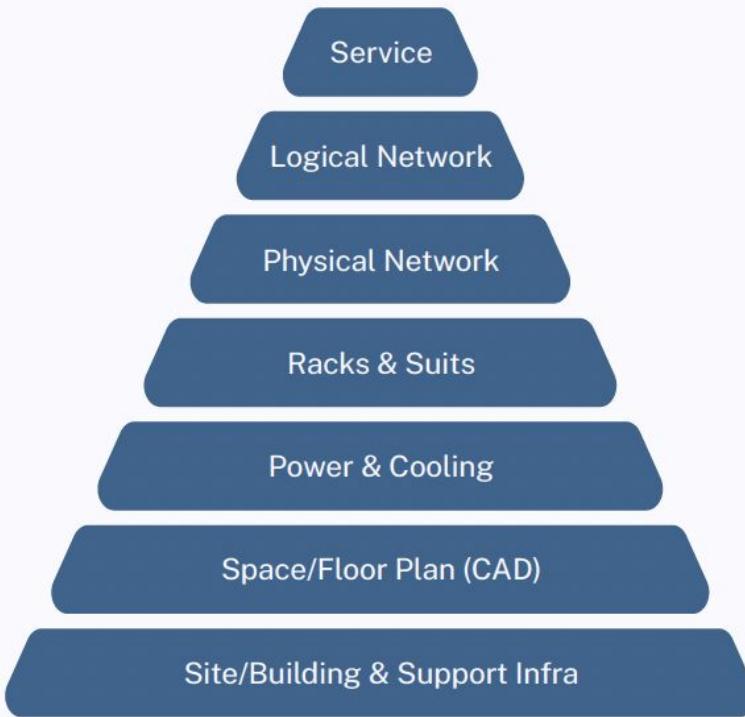
1. Self-Service framework for our network engineering teams
1. Accessible digital twin platform
1. Real-time single source of truth



Benefits of a Graph Database Approach

- Consolidation of siloed data
- Easy to extend and adapt
- Provides a single view of customers, inventory and fault information
- Model physical and virtual environments
- Increased efficiency and performance
- Reduced Total Cost of Ownership

Information Layers Covered



What did we achieve?

The business-critical nature of the project is reflected in the numbers:

5,000+	50,000	3,000	Significant savings per day
Order progress requests per hour	Product availability check requests per day	Users	
SRIMS performs service design and provisioning for various products.	It handles tens of thousands of product availability checks requests, each with strict SLAs.	With peak time concurrency regularly passing 1500.	Financial losses resulting from the inability to transact and process orders due to product non-availability.

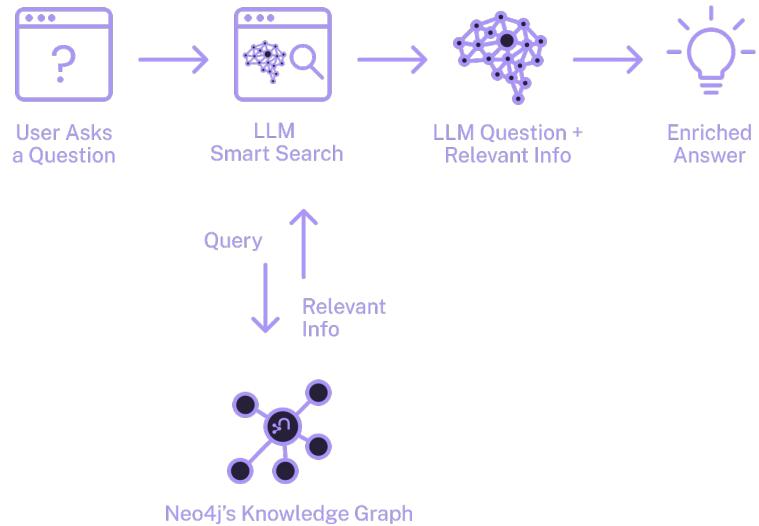
Measurable Gains: 65% reduction in OSS Apps, reduced time to deploy new capabilities, modernised processes and improved innovation culture.

Future Innovations

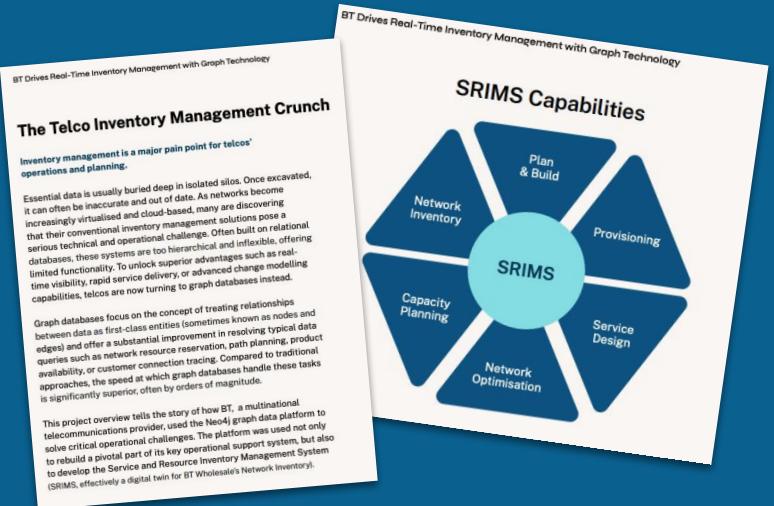
The future is positive for SRIMS both within BT Group and in the wider Telco Industry.

BT Group are now supplying the SRIMS platform via a partner to other Telecom Service Providers.

We are now exploring the use of Enterprise Knowledge Graphs + LLMs in a RAG architecture to provide intelligent searching of information to enable faster business decisions.



BT's Asset Knowledge Graph

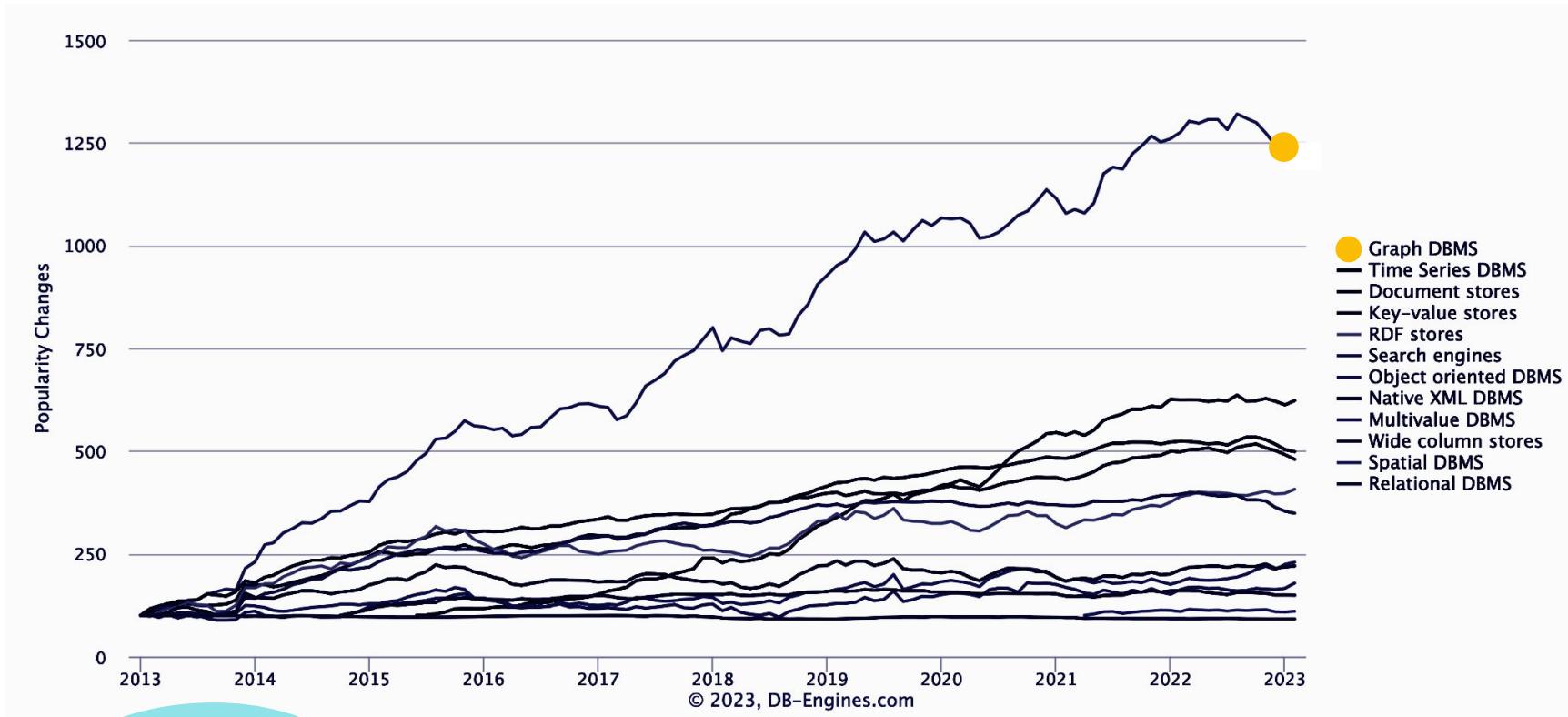


https://go.neo4j.com/rs/710-RRC-35/images/BT_SRIMS_Whitepaper.pdf

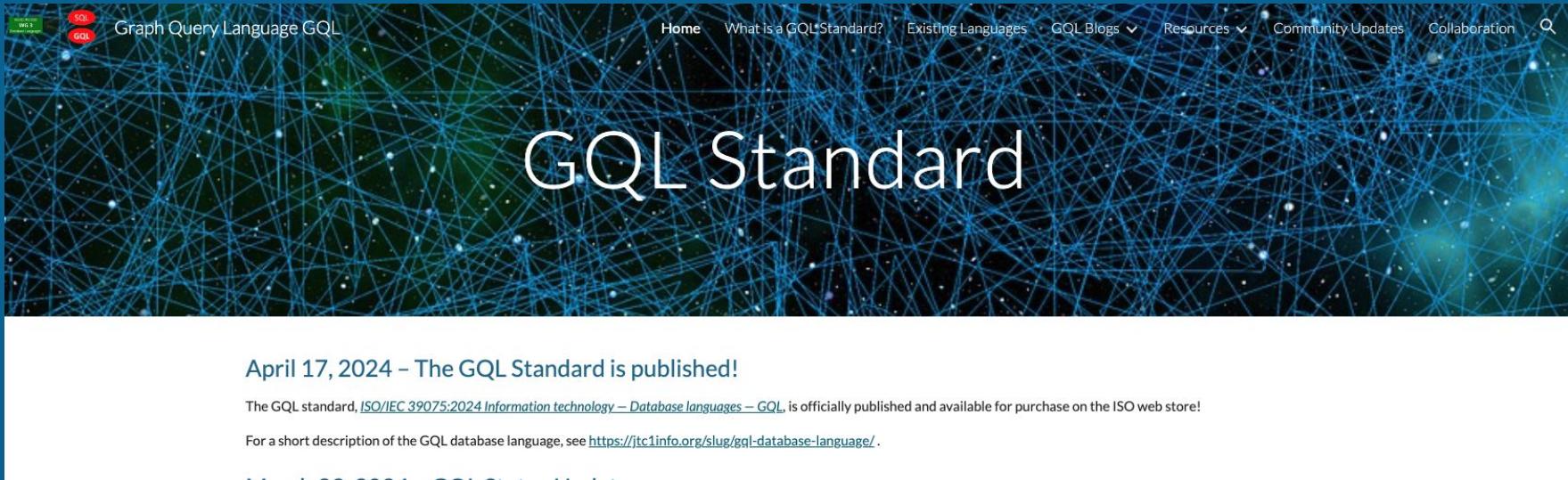
Are graphs for me?



The Fastest Growing Database Category For 10 Years



ISO SQL, meet ISO GQL



ISO/IEC JTC 1
Graph Query Language GQL

Home What is a GQL Standard? Existing Languages GQL Blogs Resources Community Updates Collaboration Q

GQL Standard

April 17, 2024 – The GQL Standard is published!

The GQL standard, [ISO/IEC 39075:2024 Information technology – Database languages – GQL](#), is officially published and available for purchase on the ISO web store!

For a short description of the GQL database language, see <https://jtc1info.org/slug/gql-database-language/>.

MAY 2024 GQL STANDARD



The future is graph



The future is graph
Rethink what's possible. Start building



Thank you for listening
Come talk to us at Neo4j Booth #324

Sreenath Gopalakrishna
Director of Software Engineering, BT

Dr. Jim Webber
Chief Scientist, Neo4j

