

Neo4j + Google Cloud Transforming Complex Automotive Supply Chains

Today, a car is the most complex product that most consumers will ever own. These increasingly sophisticated vehicles put the automotive industry at the intersection of multiple dynamic and volatile supply chains. How can companies thrive on complexity while accelerating innovation? The answer is graph technology.

It's Only Possible with Neo4j and Google Cloud

[Neo4j Aura for Google Cloud](#) is the graph data platform quickly becoming the automotive industry's go-to solution for storing, querying, analyzing, and managing highly connected data. Google Cloud and Neo4j combined provide customers with the most powerful AI/ML and analytics with the market-leading graph data platform.

Google Cloud + Neo4j Graph = Unstoppable

[Graph databases](#) are highly optimized to understand and work with the complex relationships between your data. Harnessing the power of graphs allows you to optimize your investment in Google Cloud so you can:

- Uncover rich connections across systems and sources
- Run deep queries orders of magnitude faster
- Rapidly gain value, then expand

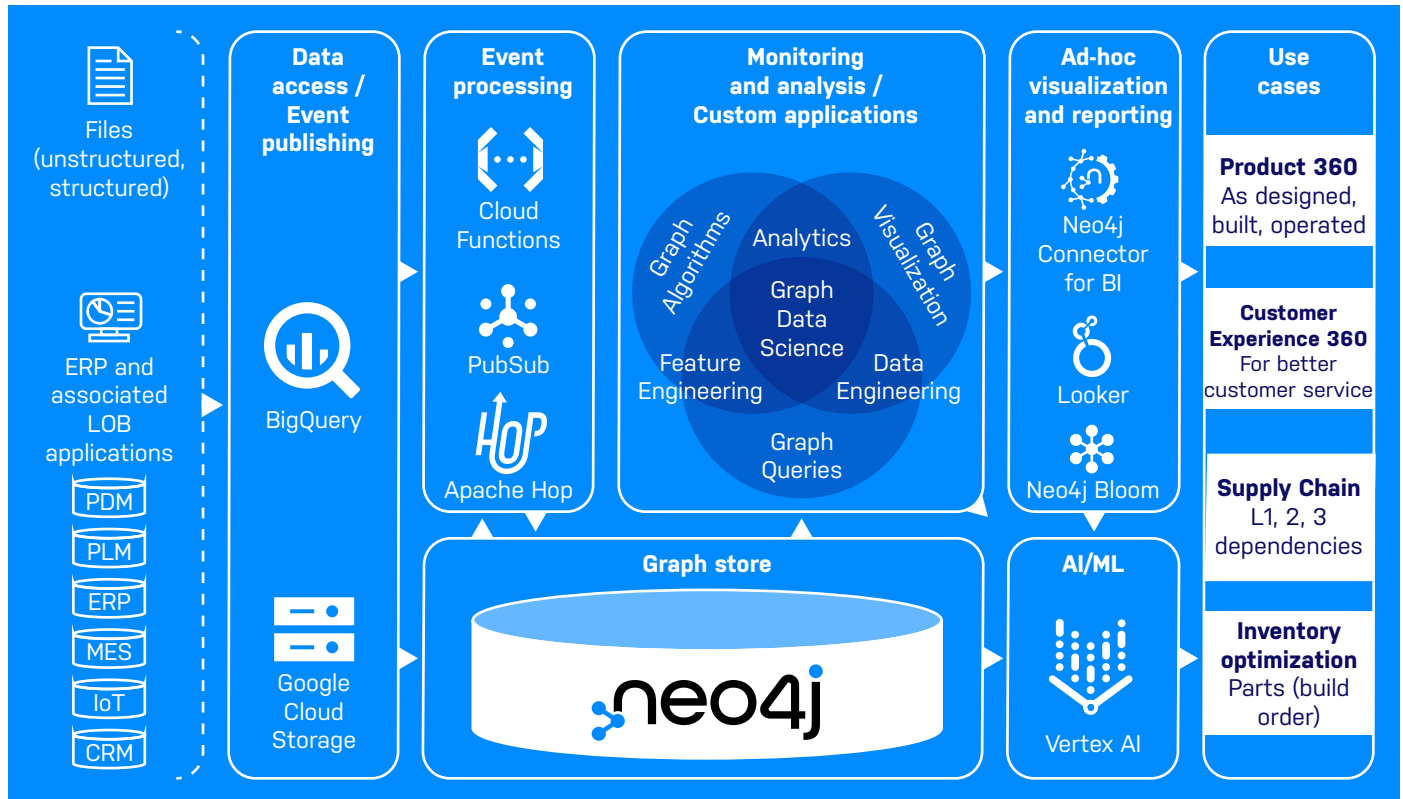
[Neo4j](#) is the only graph data platform fully integrated with Google Cloud, giving data scientists and architects tools and a managed framework that includes an analytics engine, a robust data science solution, and an insights layer for exploration.

The Future of Data Is a Powerful Graph

Relationships among data are powerful, but traditional approaches make it impossible to understand and use those connections. The bigger your dataset, the more difficult it is to know where to even get started. No wonder 7 of the 10 top auto manufacturers in the world already use Neo4j.

What Era Does Your Data Live In?

There is a new generation of data fueling today's auto



industry. Data is [hierarchical, nested, and recursive](#). And it does not exist on its own. Relationships between data provide context that can only be harnessed with graph technology.

Data is stored in various silos, typically around different lines of business in the automotive industry. Harnessing and analyzing the relationships among all that data is a huge challenge. Graph technology allows you to combine all of your data and analyze and **understand inherent relationships and dependencies that might not otherwise be visible.**

The Auto Industry Goes Graph

With Neo4j's ability to connect and process data in transformational ways, coupled with the efficiency and scale provided through Google Cloud, the automotive sector is going graph. Eight of the ten top automotive OEMs use Neo4j.

Top 10 Graph Use Cases in Automotive and Manufacturing

- Software-Defined Vehicles / Digital Twins / BOM
- Product Lifecycle & Validation Management
- Supply Chain Risk / Dependencies
- Root Cause Analysis / Predictive Analytics
- Customer 360
- Regulatory Compliance
- Cybersecurity / Software BOM
- Warranty Analytics
- Fraud Detection
- Human Capital Management

A Car Is a Graph

A car is a graph comprising hardware, technology, and software. In a single car, 30,000 hardware components from windshields to screws are complemented by 100 communication interfaces transmitting information to 200 control units, which deliver 400 types of functionality such as braking, accelerating, GPS, safety, and more. Some 2,000 software components ingest signals from 10,000 sensors.

One use case at a time, a top auto manufacturer connects its data sources in a knowledge graph in Neo4j. **"What's remarkable is that none of the information in the graph was mapped in any data system before. The only thing we had was a list of functionalities,"** said an innovation leader who works with all the manufacturer's Neo4j projects.

"We cover about 80% of all the use cases. Our knowledge graph has already become one of our most valuable knowledge sources," he said. Graph-based AI/ML improves model accuracy and uses techniques such as [link prediction](#).

Neo4j is the world's leading graph data platform and a global strategic data, analytics and AI/ML partner with Google Cloud.

"We are transforming as a company from the classical, hierarchical structure to a mixture of classic hierarchies and what is called a 'swarm,' which is a mixture of the same people working on the same project but coming from different departments and different hierarchies."

*Jochen Linkohr
Head of HR Data Integration,
Analytics, and Innovation, Daimler*

Google Cloud and Neo4j collaborate to provide customers with end-to-end Industry 4.0 solutions for their automotive business.

Learn more about [Neo4j Aura on Google Cloud](#) and [Neo4j Aura for Data Science \(AuraDS\)](#), a fully managed cloud offering. Attend a [live demo](#) or email us at ecosystem@neo4j.com.

Neo4j is the world's leading graph data platform. We help organizations – including Comcast, ICIJ, NASA, UBS, and Volvo Cars – capture the rich context of the real world that exists in their data to solve challenges of any size and scale. Our customers transform their industries by curbing financial fraud and cybercrime, optimizing global networks, accelerating breakthrough research, and providing better recommendations. Neo4j delivers real-time transaction processing, advanced AI/ML, intuitive data visualization, and more. Find us at neo4j.com and follow us at [@Neo4j](https://twitter.com/Neo4j).

Questions about Neo4j? Contact us around the globe:

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