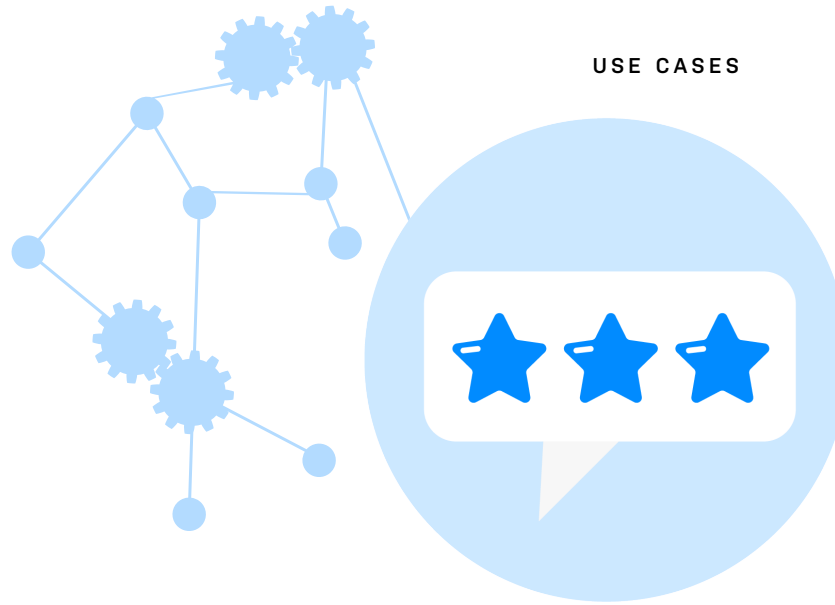# 5 Use Cases for Graph Technology

When your data is complex, the solution is in the graph.

Most companies have a data problem. The more complicated the problem, the more likely a graph data platform can solve it. Neo4j helps the world make sense of data by identifying connections and plotting relationships otherwise unseen amidst never-ending streams of data.

Here are five of the top use cases for graph technology.

1. Fraud Detection

Banks and insurance companies lose billions every year to fraud. Many companies are swapping time-consuming traditional methods with AI and machine learning.

Storing voluminous transaction detail in a graph database captures connections that already exist. The data is then ripe for graph-native machine learning techniques that surface fraud.

Fintech firm TODO1 uses Neo4j to power a proprietary fraud detection application capable of sustaining hundreds of transactions a second, spending merely tens of milliseconds on a single query, thanks to the streamlined logic behind the Cypher query language.

2. Real-Time Recommendations

To be relevant and prevent a potential customer from clicking to a competitor, recommendations must be contextual and instantaneous.

Bechtle AG, one of the leading IT companies in Europe, has ecommerce companies in 14 countries. With more than 40,000 products and thousands of pages on its website, Bechtle needed a solution that uses the network structure of customer interactions. "Every day, we record hundreds of thousands of actions on our website," explains Zoltan Kovacs, Project Manager at Bechtle. "If we want to optimize the customer experience, we need to be able to evaluate this data in real time."

Running in Neo4j, Bechtle's recommendation system generates a detailed model of all the actions customers take on the website. "We see which products end up in the shopping cart after which search terms," said Kovacs. "This helps us to continuously optimize the system and improve navigation for visitors and customers alike."

3. Bill of Materials

For vehicles, durable goods, and more, tracking every component and its cost, what equipment the components relate to, and the expected product lifespan/average time to failure into a mass bill of materials (BoM) is a behemoth operation for an organization like the United States Army, which deploys a staggering amount of equipment.

The Army uses Neo4j to rapidly collect and combine this massive BoM information and save analysts huge amounts of time. Answers are immediate. Using Neo4j, the Army can
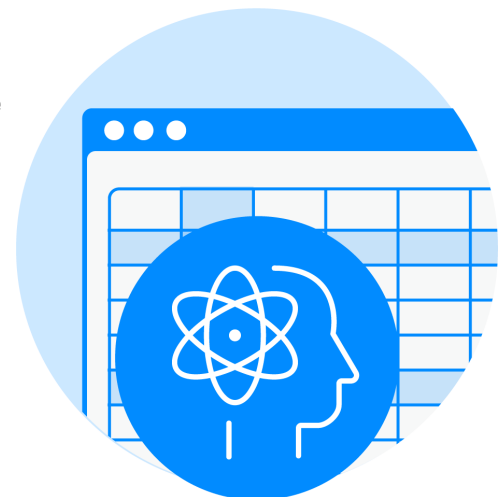
now forecast the need for replacement parts, accurately calculate mean time to failure, and answer vital "what-if" questions about the cost of deploying forces. Benefits include not only a more predictable total cost of ownership but assurance that equipment sent into the field will not break down thanks to effective predictive maintenance.

4. Track & Trace

Graph data models enable traceability for a variety of industries and use cases, including routing, logistics, supply chain management, and compliance. Track and trace enables us to find out the status of a product (batch, mail/ parcel, train, ship, container, etc.) wherever it is in the supply chain and to identify and verify its path.

Think about a pharmaceutical company using track and trace to improve recall management. Batches can be recalled for many different reasons, but the most common is the detection of faulty ingredients within a given batch. With data from systems of record coalesced in a knowledge graph, the whereabouts of the affected batch across storage locations, wholesalers, and retailer stocks can be determined so that remedial action can be taken quickly, improving patient safety and reducing the costs associated with the recall.

5. Network & IT Ops

Graph databases are a natural fit for network and IT ops; after all, a network is a graph. The graph's connected structure enables network managers to conduct sophisticated impact analyses. For example, they can discover which parts of the network – applications, services, virtual machines, physical machines, data centers, routers, and switches – particular customers depend on. Conversely, a simple graph query determines which applications, services, and customers will be affected if a particular network element fails.

Digital transformation requires modernizing the IT landscape and demands crystal clear visibility into current systems. Commonwealth Bank uses Neo4j to easily map out its business applications and see relationships in a highly visual and intuitive way using graphs. What was once a tedious chore has become a quick and easy way for Commonwealth to ensure operations remain safe, sound and secure for its customers.
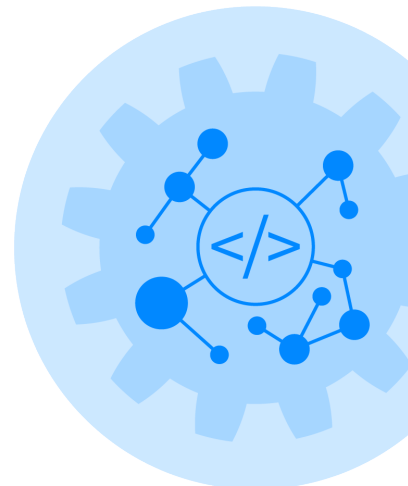
The Solution Is Graph Technology

These five use cases of graph databases are hardly a comprehensive list, but they do highlight impactful and profitable applications of graph technology. What problem can Neo4j help you solve? Contact us today at info@neo4j.com.

Scan the QRC to read the full report, Top Ten Uses Cases of Graph Database Technology.

Questions about Neo4j? Contact us around the globe:

info@neo4j.com
neo4j.com/contact-us