Jaguar Land Rover (JLR) Accelerates Supply Chain Planning from Three Weeks to 45 Minutes

THE CHALLENGE →

JLR needed to perform a timely analysis of the impact of changes to the forecast order to their supply chain, to reduce supplier charges and disruptions.

THE SOLUTION →

Using TigerGraph, JLR was able to t combine 12 separate data sources in a graph equivalent to 23 relational tables, spanning the parts of supplied by hundreds of suppliers, through the particular model and configurations' bill of materials to the manufacturing build sequencing and order forecast of those cars.

THE RESULTS ✛

With TigerGraph, JLR is able to easily and quickly model and evaluate complex processes. Queries across the supply chain model now take around 45 minutes where before they would take weeks, if they were even possible at all.

Introduction:

The automotive supply chain for manufacturing cars is one of the most complex and global in the world, with the average car being made up of around 4,500 parts from a supply base of 30,000 individual parts. Changes in manufacturing processes, consumer demand, economic factors, and new, disruptive trends all impact the vehicle supply chain network for raw materials, parts and finished automobiles.

> "With TigerGraph we can join sources of data together and make connections within the data that previously we couldn't. We can now answer questions that, for the last 20 years, we didn't think were possible to ask."
>
> Harry Powell,
> Director of Data & Analytics, Jaguar Land Rover

The Challenge:

Sales forecasts are typically made years in advance so suppliers can prepare and tool-up highly specialized production lines. Actual demand can vary widely and quickly from the initial forecast due to changes in consumer preferences and market conditions. JLR needed to perform a timely analysis of the impact of changes to the forecast orders to their supply chain, to reduce supplier charges and disruption.

The data necessary to gain transparency across the manufacturing process is distributed across numerous complex data sources from multiple departments, including forecast and supply chain data, parts data from a PLM system, and car configuration data output by a combination of the car-configuration and build-simulation systems.

The Solution:

> ❝
> "TigerGraph was the only solution that was able to execute our highly complex use case at scale. Other solutions we tried could do queries on use cases with quite limited interconnectivity, but as soon as that was scaled up, the solution no longer worked."

Martin Brett,
Senior Data Architect,
Jaguar Land Rover

JLR was able to combine 12 separate data sources in a graph equivalent to 23 relational tables, spanning the parts supplied by hundreds of suppliers, through the particular model and configurations' bill of materials to the manufacturing build sequencing and order forecast for those cars. Designs to the schema are easily made, allowing additional datasets to be added at any time. Data import jobs are generated so the data ETL can be repeated as needed. Graph post-processing adds links between the orders and parts for any build-date, allowing the query that previously never completed [on a cloud data warehouse] to give outputs across JLR's entire order-book in a few minutes.

TigerGraph is installed from the Google Cloud Marketplace, and directly feeds the output of the queries back into the enterprise data-warehouse powered by Google BigQuery so the impact information can be integrated with their existing reporting infrastructure with Tableau, producing meaningful, repeatable and sustainable results in a matter of days.
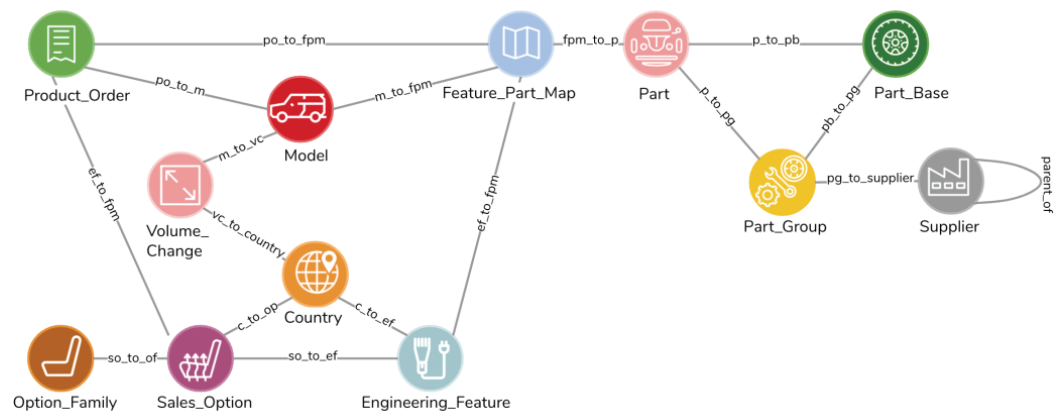
The Results:

JLR easily and quickly models and evaluates complex processes. Queries across the supply chain model now take 45 minutes, compared to weeks in the past.

JLR now benefits from a timely impact analysis of changes in their forecast to their supply chain, avoiding millions of pounds in charges from their suppliers. Having up-to-date and highly qualified information allows JLR to answer historic blind spots, identify tactical opportunities and optimize their systems and processes.

VALUE	SPEED	REDUCED RISK
3X Increased business value from decreasing inventory costs, lower working capital, and greater profitability in two vehicle lines.	120x decrease in business decision latency due to rapid information discovery and solution delivery amid sudden shifts in demand in the North American market.	35% reduction in supplier risk as the supply chain embraced graph data and analytics solutions.

About TigerGraph

TigerGraph, the enterprise AI infrastructure and graph database leader, delivers massively parallel storage and computation that scales independently and without size limits, to meet the changing workloads and growing data volumes required for crucial business needs and AI adoption within companies. By providing visibility into the multidimensional data connections and relationships, TigerGraph has become a trusted partner to leading companies including JPMC, Intuit, United Healthcare, and Unilever successfully solving fraud detection, entity resolution, customer 360, supply chain management, and many other problems. Headquartered in Silicon Valley, California and with offices around the world TigerGraph is backed by Tiger Global Management, Softbank, Susquehanna International Group (SIG), Oceanpine Capital, Celesta Capital, Nvidia, Blackopal Ventures, and Qiming Venture Partners.

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