CASE STUDY

Creating trusted data for supply chain visibility and optimization

World-wide Fortune 500 logistics and freight forwarding company that provides customized supply chain solutions

Industry
Logistics & Supply Chain

Solution
Logistics intelligence

Key benefits

- Better serve customers
- Improve decision making
- Reduce operational costs and risks

Opportunity

"Where is my shipment and when will it arrive?" Delivering trustworthy answers to those questions is an important job for international logistics companies, especially in the face of complex global supply chain challenges.

A service-based logistics company wanted to leverage their many years of logistics domain knowledge to provide high-value data services and insights to their thousands of clients around the world.

The company wanted to put all relevant data in a central portal where it could be curated and structured for use by a variety of supply chain practitioners – logistics, procurement, customer service, distribution, materials management, and others. Individuals in these roles all rely on knowing where things are – or will be.

Developing a single view for each client and collectively was challenging, however, because of the many upstream data sources involved. Each of the company's business partners presents its data in multiple formats, and the central system needs to ingest data from countless partners – thousands of suppliers of raw materials and finished goods, hundreds of carriers (ocean liners, trucks, rail, air, etc.), customs brokers in each country, and other stakeholders in the process.

In addition to the challenges of getting a single view across data sources that have no common naming conventions, the company also needed to build in logic and rules specific to the logistics domain, like shipping container parameters and global holiday schedules.

The company wanted to provide not only operational visibility but also optimization – for example, detecting and handling exceptions with an active decision engine. To do all this, they needed data agility – the ability to make simple, powerful, and immediate changes to any aspect of how information is interpreted and acted on.

With the company's newfound data agility, it can now focus on evolving the solution to provide even more value to its partners and clients.

Results

The company built a semantics-driven data engine solution for logistics visibility and optimization, based on the MarkLogic data platform with Semaphore Semantic AI.

- The Semaphore semantic model represents relevant entities and attributes – such as purchase orders, products, containers, vessels, locations, and events – and the relationships between them. The use of RDF triples provides an advantage over relational databases for use cases involving relationships, because developers don't need to worry about foreign keys, nested queries, or complex joins.
- All the instance data, metadata, and semantic information – facts and what they mean – are stored and managed together in the secure MarkLogic multi-model data platform for access by customers, suppliers, and internal users as appropriate.

Using semantic models allows the company to understand the meaning of data from any partner. The solution provides a common language, helps validate data at ingestion, and is easily extensible to new partners as they are on-boarded by the company.

The data engine functions as a gateway for the information suppliers to provide data to customers. Data from these various sources is in many different formats and definitions, so for example the API for a trucking data aggregator is different from an air data provider, each with its own object and attribute definitions. Data flows from these providers through the data engine to freight dashboards.

Each of the company's customers has a logically distinct implementation of the product, ensuring the clients' data is kept isolated for security.

The data engine solution delivers trusted data to power reports and dashboards for the company, its clients, and other transportation organizations. A front-end interface allows users to search and browse real-time data, including with a map feature that lets users perform actions like clicking on a location in the middle of the ocean with cargo ships, selecting a ship, and seeing purchase orders with products on the ship.

With the company's newfound data agility, it can now focus on evolving the solution to provide even more value – proactively diagnosing shipment issues and prescribing and automating solutions to address them.