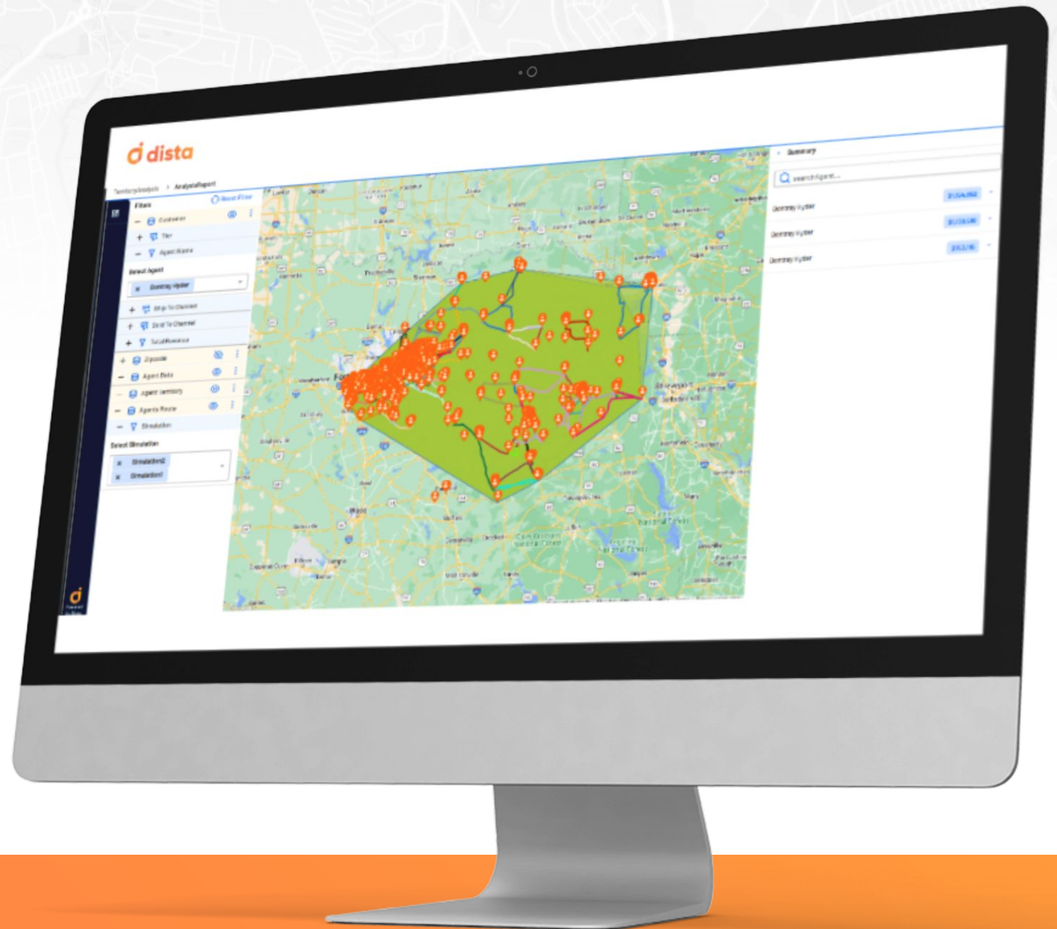
dista

Google Cloud Partner

Optimizing Supply Chain Network Design With **Location Intelligence**



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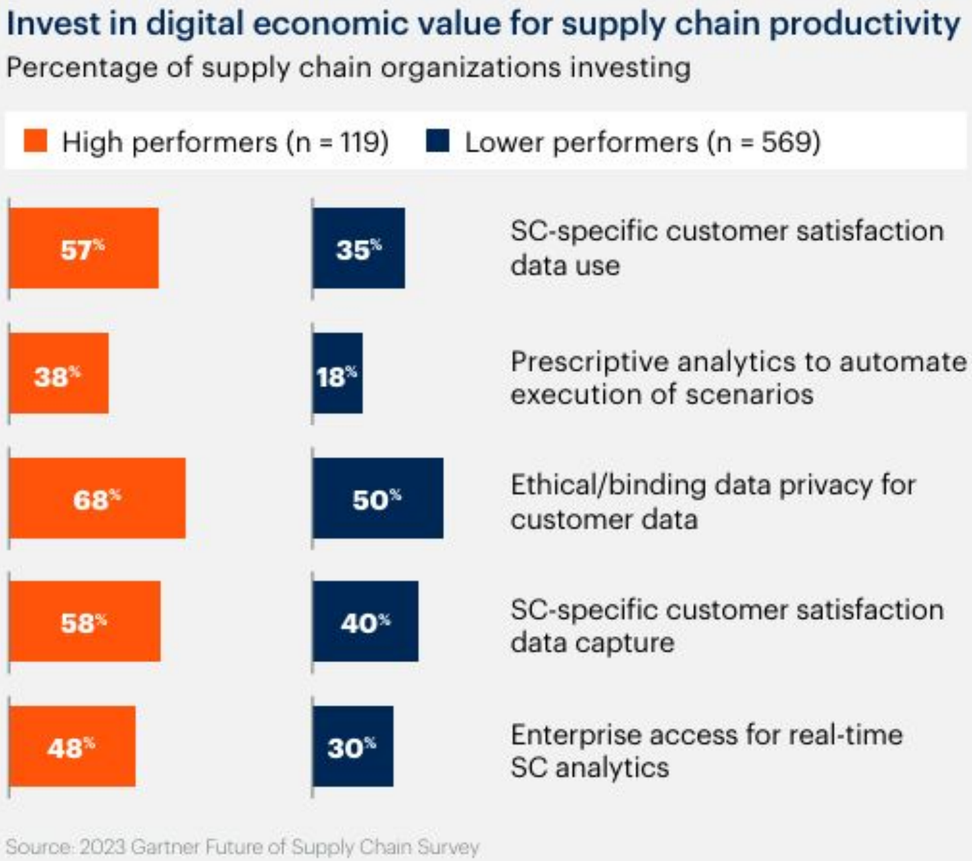
INTRODUCTION

Supply chains are central to business survival and growth, not just an opportunity to reduce costs. The adoption of advanced tracking systems, location intelligence, and geospatial analytics software offering AI-driven analytics has increased. This shift is attributed to the complexity of supply chains, higher customer expectations regarding service levels, and pressure to minimize costs.



A 2023 Gartner survey states that top-performing supply chain organizations are investing in **artificial intelligence (AI) and machine learning (ML)** to optimize their processes at more than twice the rate of their low-performing peers. [1]

[1] Gartner

An effective network design is the backbone of functional, resilient, and cost-efficient supply chains that drive last mile excellence.

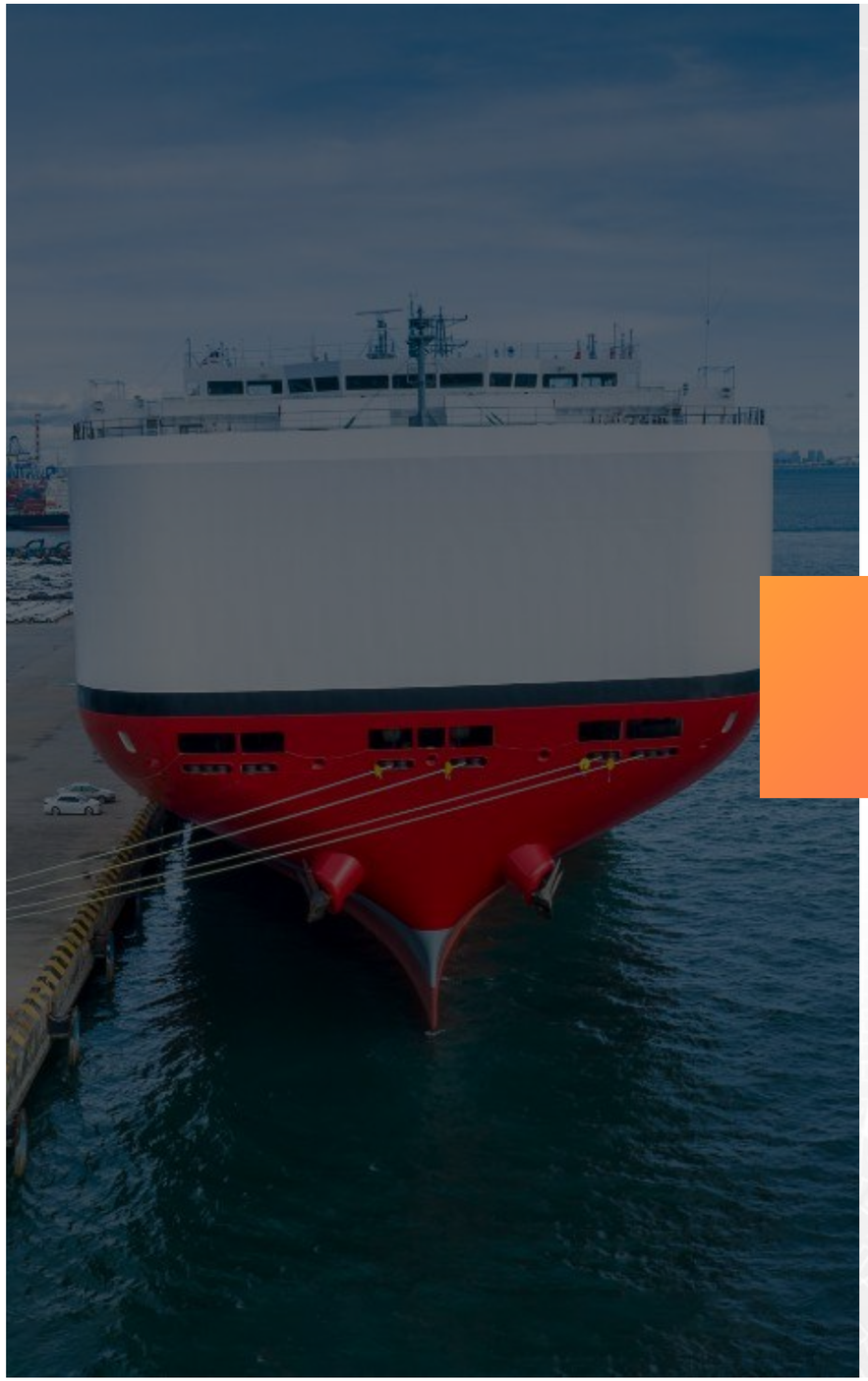
An optimal supply chain network design:

Lowers supply chain cost

Minimizes inventory

Facilitates faster route-to-market

If you are a business leader looking to strengthen your supply chain process, this ebook will act as a practical guide with key insights and fundamental steps to create an efficient supply chain network design.



Chapter 1

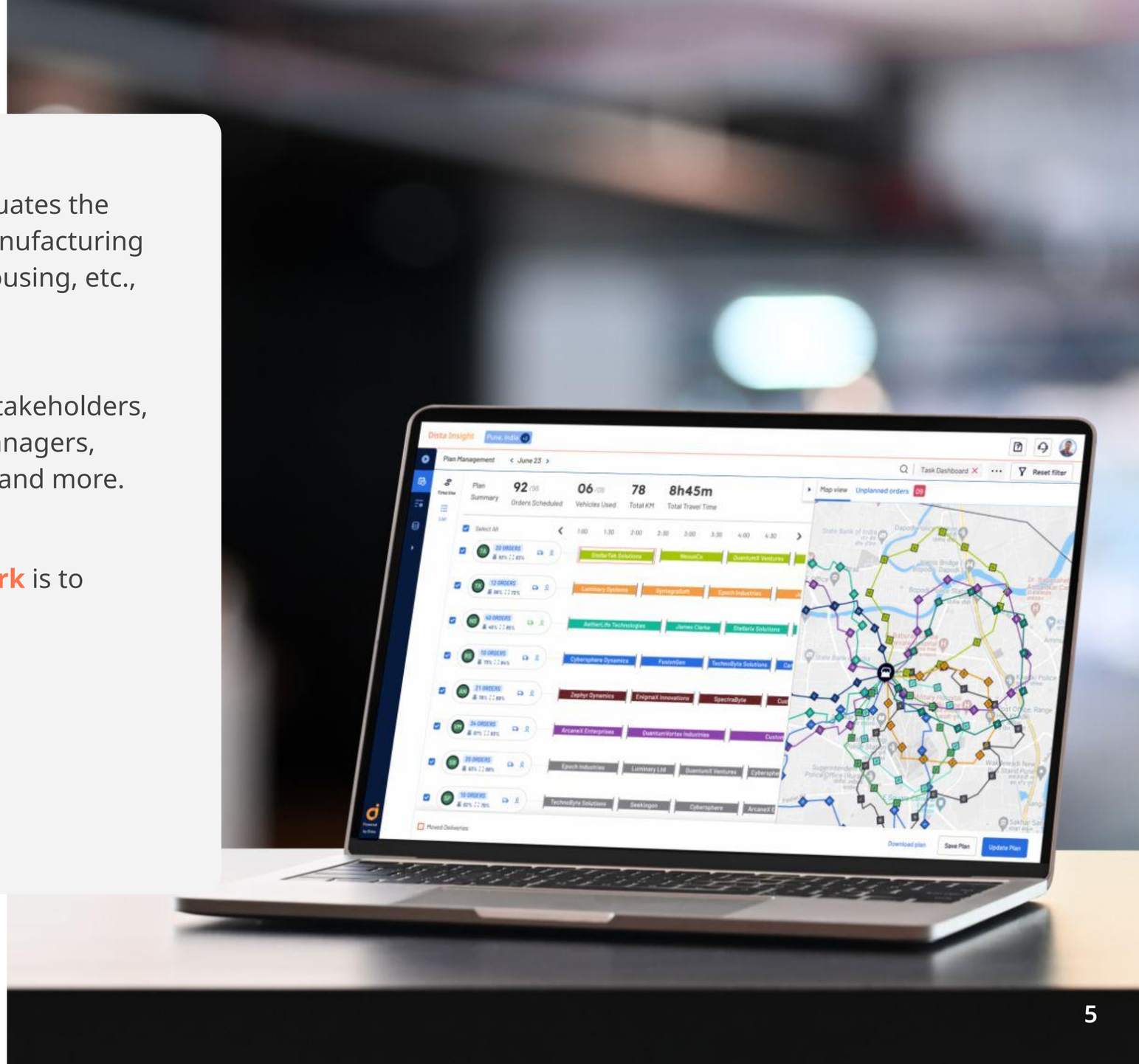
What is Supply Chain Network Design?

Supply chain network design is a process that evaluates the end-to-end function of your supply chain, from manufacturing to distribution, transportation, inventories, warehousing, etc., to make it cost-effective and efficient.

An optimum supply chain network impacts all its stakeholders, including manufacturers, suppliers, warehouse managers, distribution channels, retail and delivery partners, and more.

The main aim of optimizing a **supply chain network** is to

- **Minimize costs**
- **Maximize delivery efficiency**
- **Enhance customer experience**



Questions to evaluate while designing a supply chain network

With a structured logistics network and defined distribution strategy, how can I effectively use my resources?

How can I structure my supply chain network to provide the necessary service at minimal expense?

What technologies or tools should we use to improve visibility across the supply chain?

What metrics and KPIs should we prioritize to measure the performance and effectiveness of our supply chain strategy?

Is the current supply chain design aligned with the enterprises' sustainability goals?

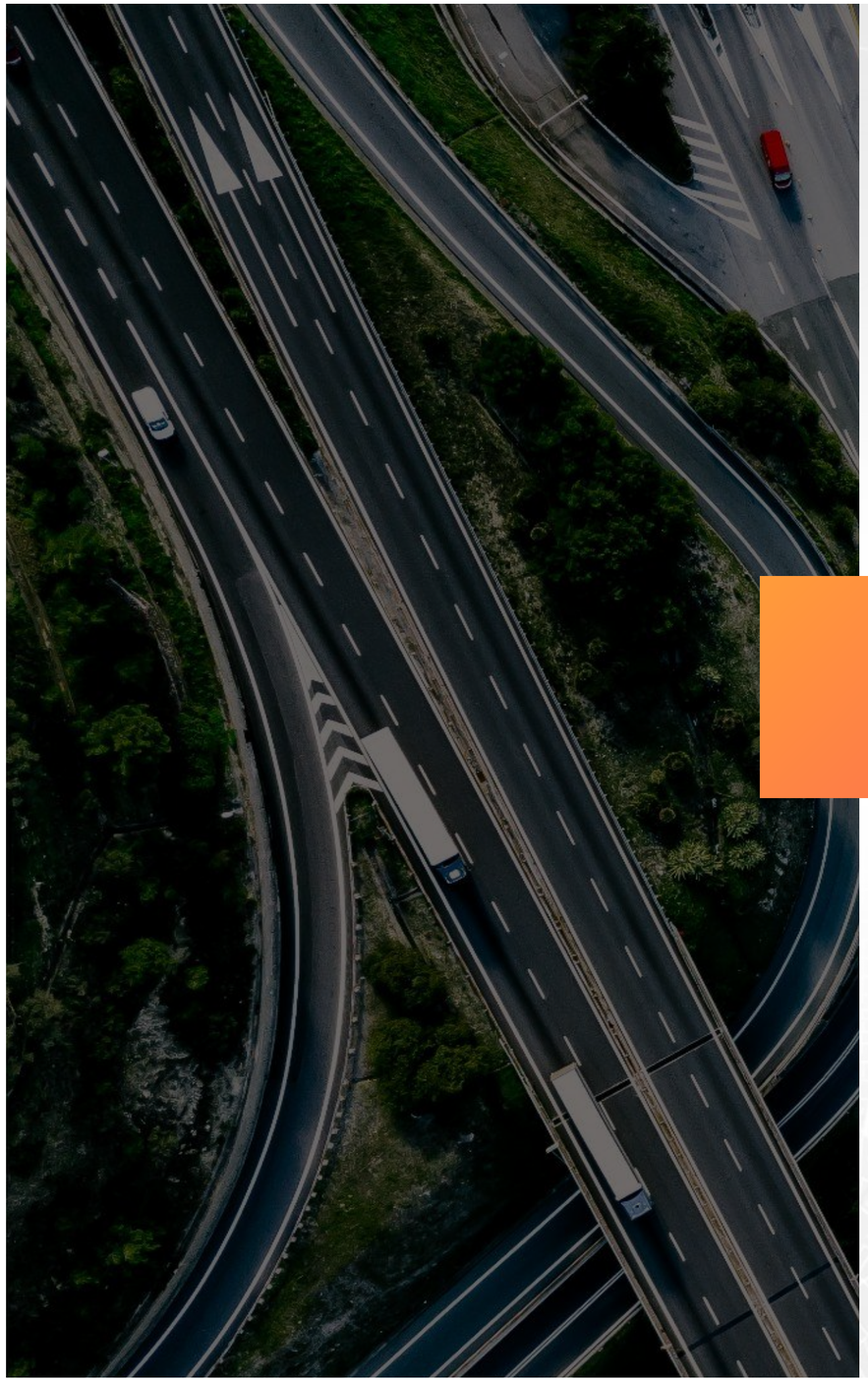
Ultimately, the objective is to establish the most efficient network to **satisfy customer demands** and **minimize transportation costs.**

By using a robust geospatial analytics software like **Dista**, organizations can not only design an efficient and resilient supply chain network but also optimize their existing network.

Our AI/ML-based system designs an efficient supply chain network using spatial analytics by running multiple simulations. The system applies **150+** business constraints like:

- Delivery time
- Delivery volume
- Total distance
- Trips per day
- Customer location
- Order sequencing
- Vehicle capacity
- Driver availability
- No. of vehicles, and more

By using these constraints the system identifies the most optimal locations for setting up factories, warehouses, and distribution centers (DC).



Chapter 2

Supply Chain Network Design Challenges

CHALLENGE

Complex Global Networks

Global supply chains are complex as they encompass multiple stakeholders. Coordinating logistics and complying with diverse regulatory frameworks across borders is challenging.

Lack of Geospatial Insights

Lack of critical geospatial insights such as high customer density areas, low competition area clusters, map-based visualization of existing networks, affects the flow of goods.

Low FADR

Unable to fit dynamic deliveries in allocated slots resulting in low first-attempt delivery rate (FADR), poor customer experience, and high costs

Disruptions and Risks

Lack of tools to proactively identify and mitigate risks such as natural disasters, geopolitical tensions, or demand fluctuations.

Limited Visibility

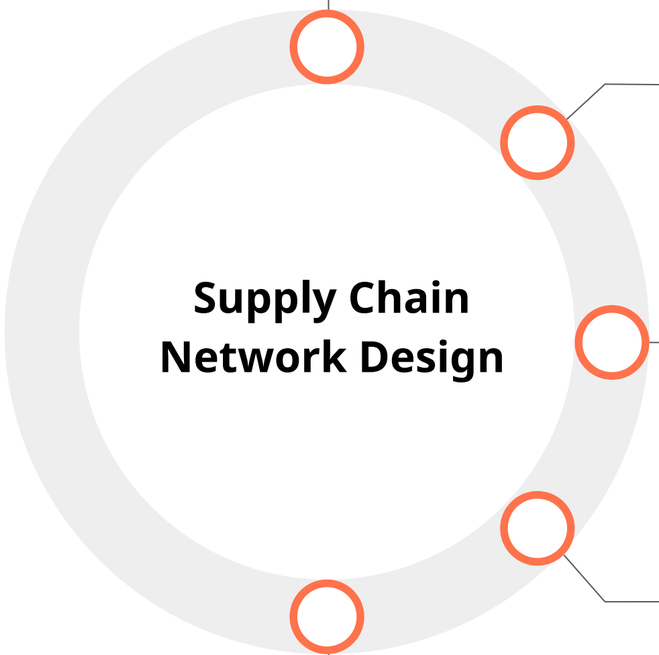
Limited visibility into the supply chain network results in ineffective design. Siloed data of suppliers, customer demand, logistics, etc.,hampers operations.

Sustainability Compliances

Unable to balance sustainability objectives like controlling emissions, minimizing energy waste, etc is daunting and complicated

Chapter 3

5 Steps to Create a Supply Chain Network Design



Step 1 — Define Objectives and Set Goals

Set clear network design objectives that align with organization goals. Define objectives like reducing costs, identifying locations for DCs, and warehouses, minimizing carbon emission, and more.

Step 2 — Gather and Analyze Data

Collect different types of data such as location, transportation, sales and demand, customer density and more. Use a location intelligence platform to overlay different data layers and spot trends and patterns.

Step 3 — Analyze Existing Model

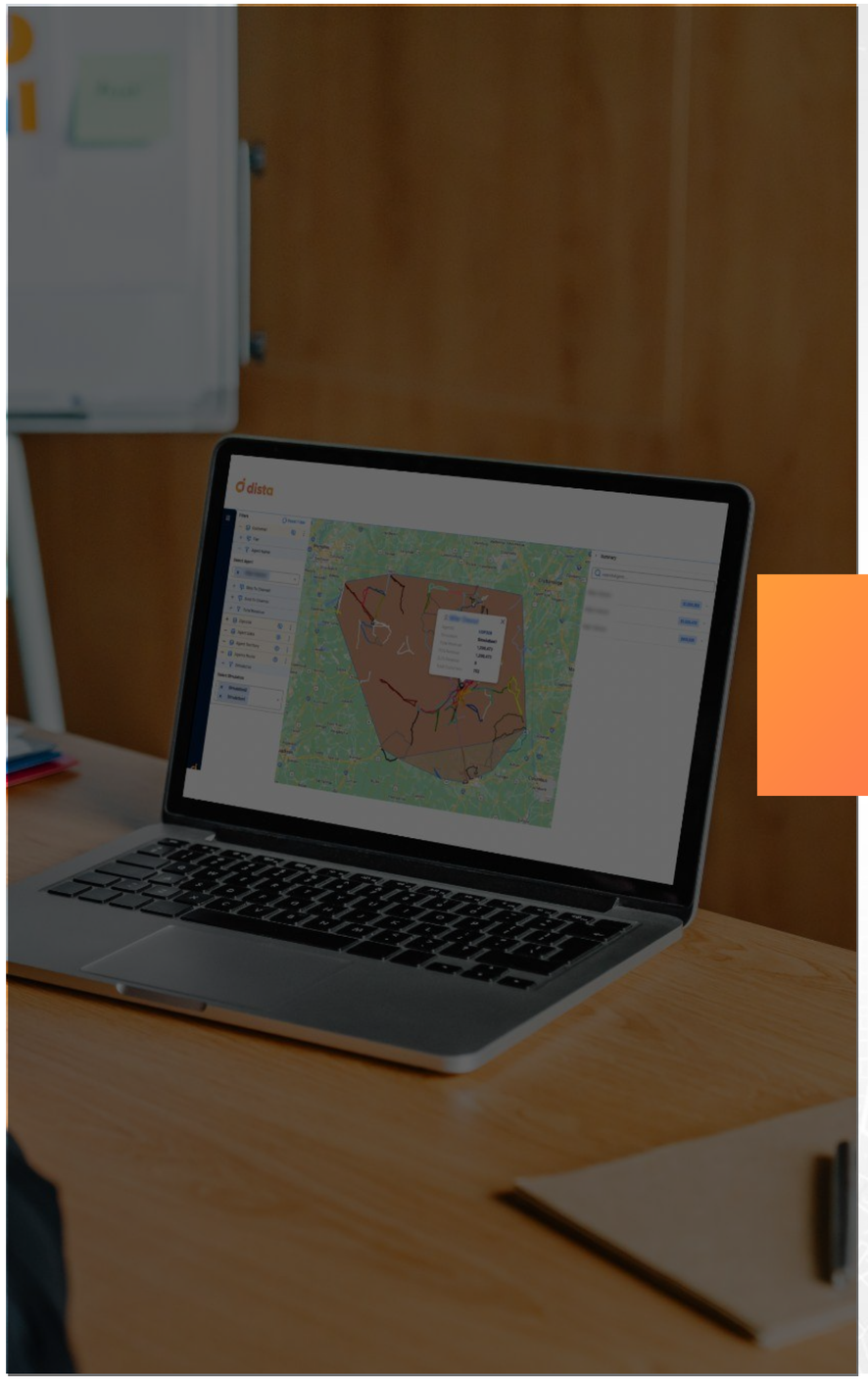
Derive actionable insights based on spatial relationships and analyze the existing supply chain network. Identify gaps, set KPIs to measure performance, and find improvement opportunities.

Step 4 — Design Network Strategies with Location Intelligence

Model multiple network simulations using existing datasets based on defined parameters by integrating the location component.

Step 5 — Implement the Network Model

Select the supply chain network model that aligns best with your objectives and take action.



Chapter 4

Key Features of a Supply Chain Network Optimization Software

According to a 2024 **KPMG** research, nearly half of supply chain organizations will invest in applications that support AI and advanced analytics capabilities.[2]

Leading enterprises leverage **Dista's geospatial analytics software** to design high-performing supply chains with location intelligence. It runs multiple simulations to find the right location to open warehouses, DCs, facilities, etc.

[2] Supply Chain Trends 2024

Key Features

Territory Cluster Analysis

Visualize and create territory clusters on a map, with Dista's patented clustering algorithm. Include supply chain constraints to create affinity-based territory clusters, and run simulations using a hub-and-spoke model to identify the most suitable locations for setting up DCs and warehouses.

Greenfield Analysis

Run multiple simulations to select optimal number of warehouses, fulfillment centers, or DCs and their locations. Apply spatial insights to create a roadmap for a refined network design to improve overall supply chain performance.

Demand Modeling

Overlay spatial analytics with existing business data to analyze demand patterns for better forecasting. Balance supply and demand by strategically placing warehouses, DCs, and production facilities.

Intelligent Scheduling

Use AI/ML-based scheduling algorithms to sequence orders by priority, delivery time, order volume, warehouse and more. Optimize scheduling to balance order distribution and ensure customer satisfaction.

Predictive and Prescriptive Analytics

Anticipate challenges and opportunities and provide timely information with predictive and prescriptive analytics, enabling leaders to create dynamic workflows for agile supply chains.

Manual Allocation and Scheduling

Dista's flexible scheduling algorithm enables manual order allocation in case of selective instances.

Chapter 5

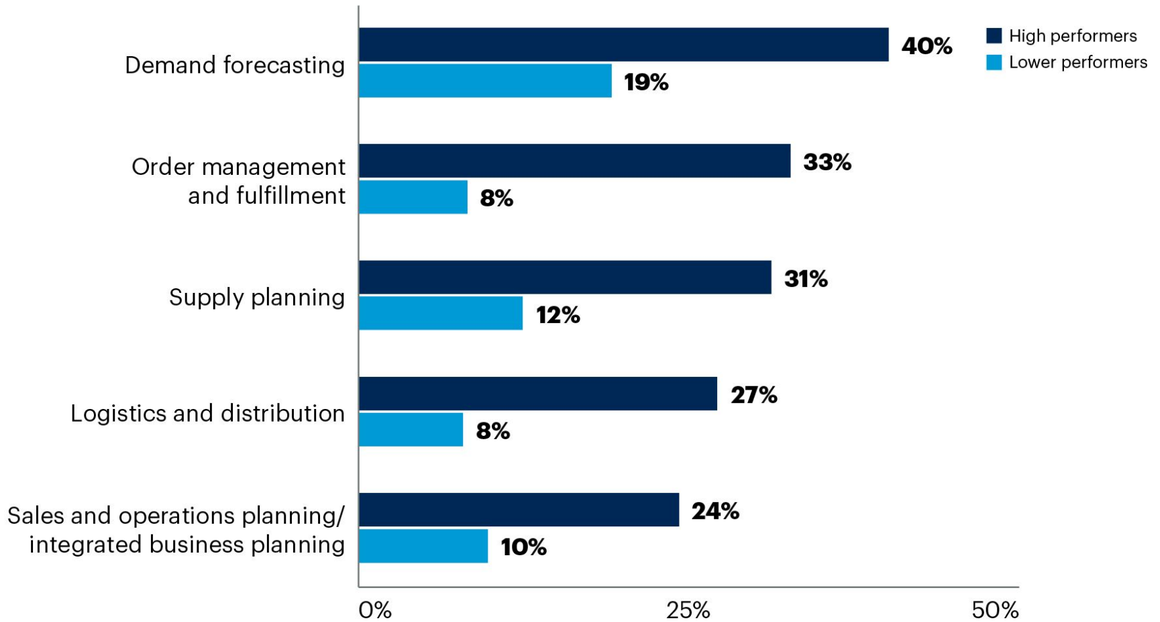
How Location Intelligence Helps Supply Chain Network Optimization

Enterprises leveraging advanced technology and AI tools create a seamless and sustainable supply chain network.

The **Gartner** survey states high-performing organizations are far ahead in automating and/or optimizing processes that use supply chain data using AI/ML.

Top Five Processes Utilizing Supply Chain Data to Automate and/or Optimize Decisions Using AI/ML

Percentage of Respondents



n = 119 high performers; 569 lower performers

Q. For each of the following use cases/processes what is the highest degree to which your organization currently uses supply chain data?

Source: 2023 Gartner Future of Supply Chain Survey

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Gartner

Key Benefits

64% of supply chain leaders will most likely invest in tools offering end-to-end visibility, according to 2023 Alcott Global survey of over 300 supply chain leaders. [3]

End-to-End Visibility

Integrate your system with the right tools to get visibility of your supply chain network from inventory tracking to sales forecasting.

Improve Last Mile Delivery

Design the most efficient routes for vehicles using multiple business constraints such as distance, delivery time, number of vehicles, and traffic for seamless last mile deliveries.

Boost Supply Chain Agility

Use geospatial analytics tools to derive data-driven insights and address dynamic customer demand patterns. Improve collaboration between multiple stakeholders to minimize delays or disruptions.

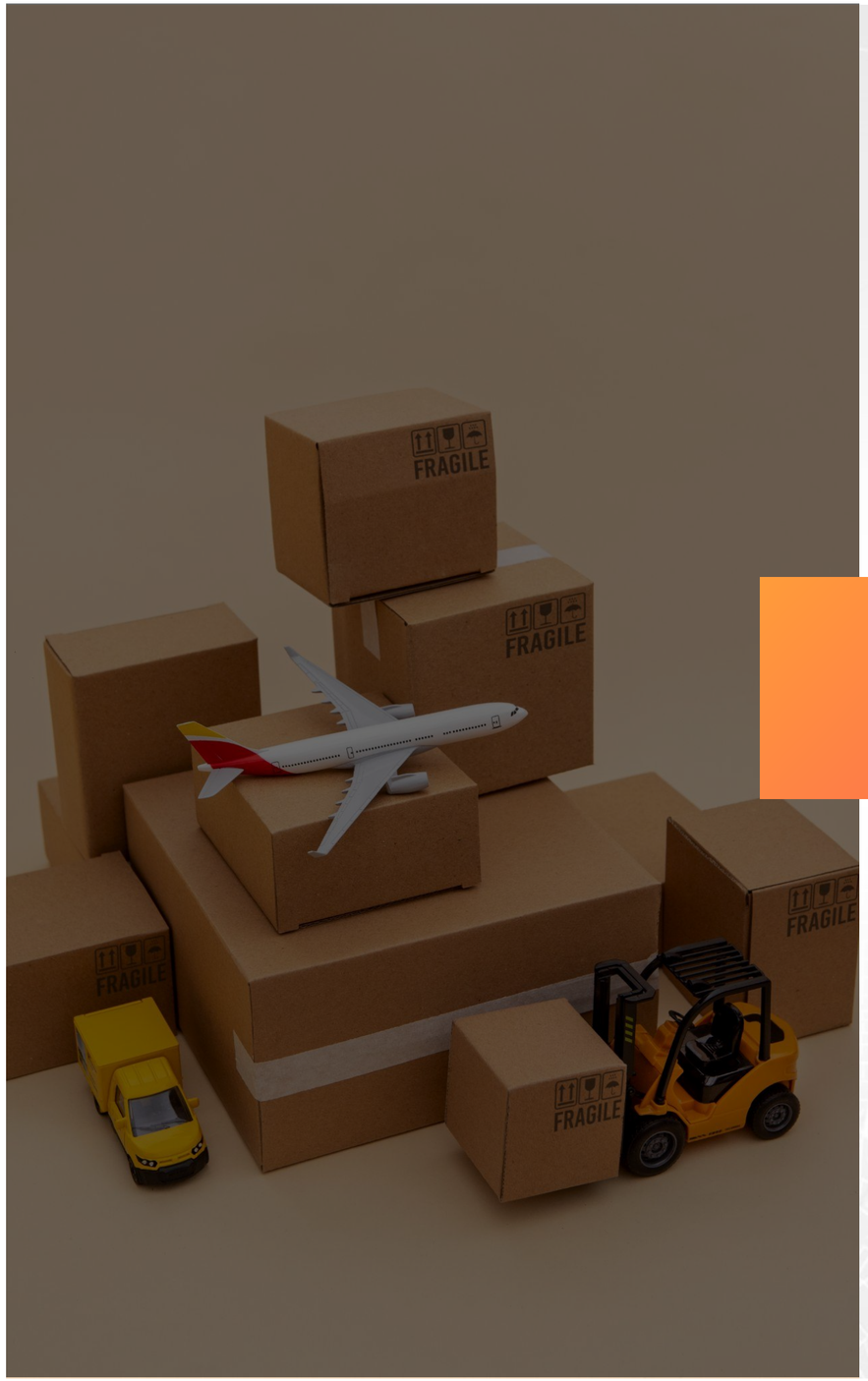
Increase Cost Efficiency

Optimize and reduce fuel and transportation costs with route planning. Build a sophisticated network design by selecting the most efficient warehouse and DCs for the optimal flow of goods.

Make Informed Decisions

Make smarter and faster decisions with flexible network design and respond to evolving market conditions using data-packed insights.

[3] Alcott Global



Chapter 6

Leverage Dista to Build a Future-Proof and Resilient Supply Chain

Enterprises are working towards creating leaner and greener supply chains. It’s critical to enhance your existing tech stack by harnessing the power of location intelligence and geospatial analysis to design future-proof and resilient supply chain operations.

Dista helps several leading enterprises across industries create a strong network design that is more **intelligent, connected, and responsive.**

Our robust product suite has helped global enterprises:

- **Improve end-to-end last mile visibility**
- **Gain actionable insights with spatial analysis**
- **Reduce costs and mitigate risks**
- **Improves FADR**

Dista’s Location Intelligence Framework

Visualize

- Visualize supply chain and add contextual geospatial insights
- Find gaps in the network design and make improvements

Strategize

- Use What-if analysis to run multiple simulations to find optimal placement for facilities
- Plan inventory by analyzing demand patterns using spatial analysis
- Optimize network design to include possible disruptions

Operationalize

- Consider 150+ variables to design and plan optimal routes
- Run AI/ML-powered scheduling algorithms to sequence and balance order distribution
- Utilize optimal vehicles for transportation. Enable real-time tracking to improve network design visibility

Resources

What is Supply Chain Network Optimization? How Does it Work?

Explore

E-Commerce Platform Leverages Dista Insight to Improve Supply Chain Network Design

Explore

7 Best Practices for Supply Chain Network Optimization

Explore

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Download Brochure

The ‘Dista’ Platform

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Visit **www.dista.ai** and take the first step towards becoming a **location-intelligent** organization.

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