
Optilogic
Top 10 Supply Chain Design Use Cases
Companies are increasingly turning to supply chain design technology to test the impact and performance of potential supply chain changes. Here's a snapshot of the most common use cases driving adoption.

Supply Chain Design: An Essential Practice for Post-COVID Resilience

Disruptive events of the past three years have demonstrated the fragility of supply chains in dramatic fashion. With an ever-changing landscape of factors influencing your supply chain, being able to intelligently evaluate strategic and systemic changes is imperative. Supply chain design does this by creating digital models of the future supply chain to test the impact and performance of multiple alternatives.

Not only are supply chains broken, but they were actually designed to be fragile by optimizing them for low cost and acceptable service, while ignoring risk. Optilogic Cosmic Frog is the only supply chain design solution that allows companies to design supply chains that consider cost, service, and risk--to make more informed decisions beyond just cost.

> Supply chain design is the practice of creating digital models of the future supply chain to test the impact and performance of multiple alternatives.

With Cosmic Frog, you get a proactive view of risk and the opportunity to proactively assess the cost, service, and risk components of potential design changes. You have the ability to answer all the supply chain what-if questions that arise amid today's disruptions and opportunities.

In this guide we explore some of the most common use cases for supply chain design and how you can get started answering your own "what if..." questions today.

Top 10 Use Cases for Supply Chain Design	

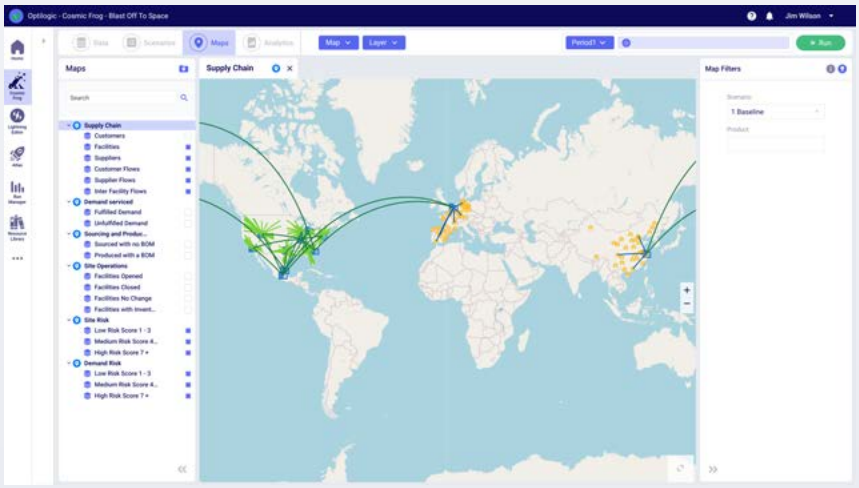
Your First Step: Creating a Baseline Scenario

It's difficult to measure the impact of a new network design without knowing where you're starting. This may be the first time you see your supply chain come to life outside of spreadsheets or a scribbled drawing on the whiteboard.

You can now visualize your supply chain by seeing all of your nodes and flows on the map. You will see the locations of your customers, distribution centers, plants, and factories, as well as business rules that govern flows between those nodes. You can automatically calculate and quantify important metrics for this baseline supply chain including total cost, revenue and profit. The baseline scenario confirms existing flow and business relationships in the model, aligns cost calculations with reality, and provides a starting point for key metrics.

Optilogic offers tools to help you get started quickly with your baseline. Use the technology filters in Cosmic Frog to filter on the required data elements for building your baseline. Upload data directly from spreadsheets, an ETL tool or other options. The baseline scenario is automatically created, so you only need to click "Run." Use pre-built template maps and dashboards that are native to Cosmic Frog or build your own.

Use the baseline to start brainstorming questions like "What if we outsource production? What if we consolidate our distribution footprint? What if we expand to a new region?" You can create this baseline model against which you'll measure potential future scenarios in Cosmic Frog using either optimization, simulation, or intelligent greenfield. Cosmic Frog's "Fixed with Tolerance" constraint in optimization facilitates locking in baseline flows.



If you choose to use simulation, simply describe your network, detail the existing flow relationships and costs, and add your historical order file to view your baseline results.

Greenfield Analysis

When planning for new facilities or market expansion, reducing transportation expenses and emissions without sacrificing customer service is a tricky problem to solve. Greenfield analysis is an essential tool for any supply chain network and is commonly used as a fast method for narrowing down site locations prior to traditional network design.

If you're asking questions like these, greenfield may be right for you:

- Where should we place our distribution centers to minimize transportation costs?
- Which locations would make our supply chain least vulnerable to potential disruptions?
- How do we achieve these new initiatives without sacrificing customer service?

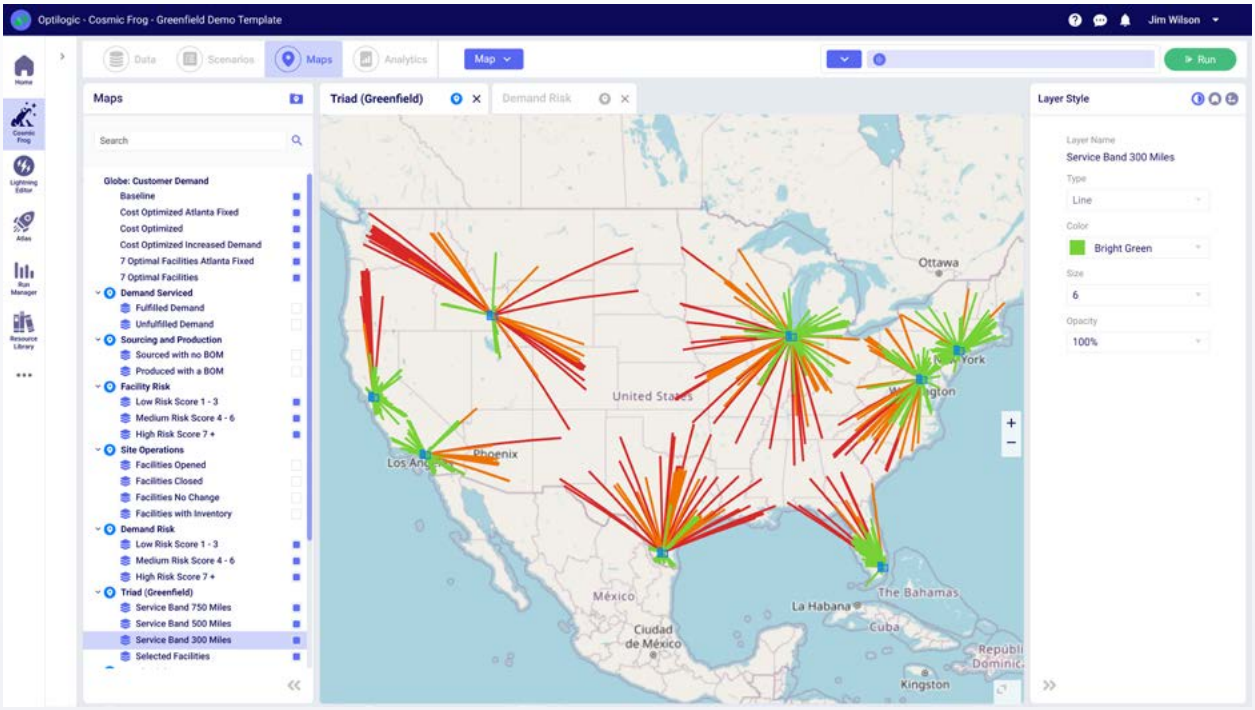
Optilogic's Intelligent Greenfield Analysis (GFA) offers capabilities above and beyond traditional greenfield analysis tools. You can:

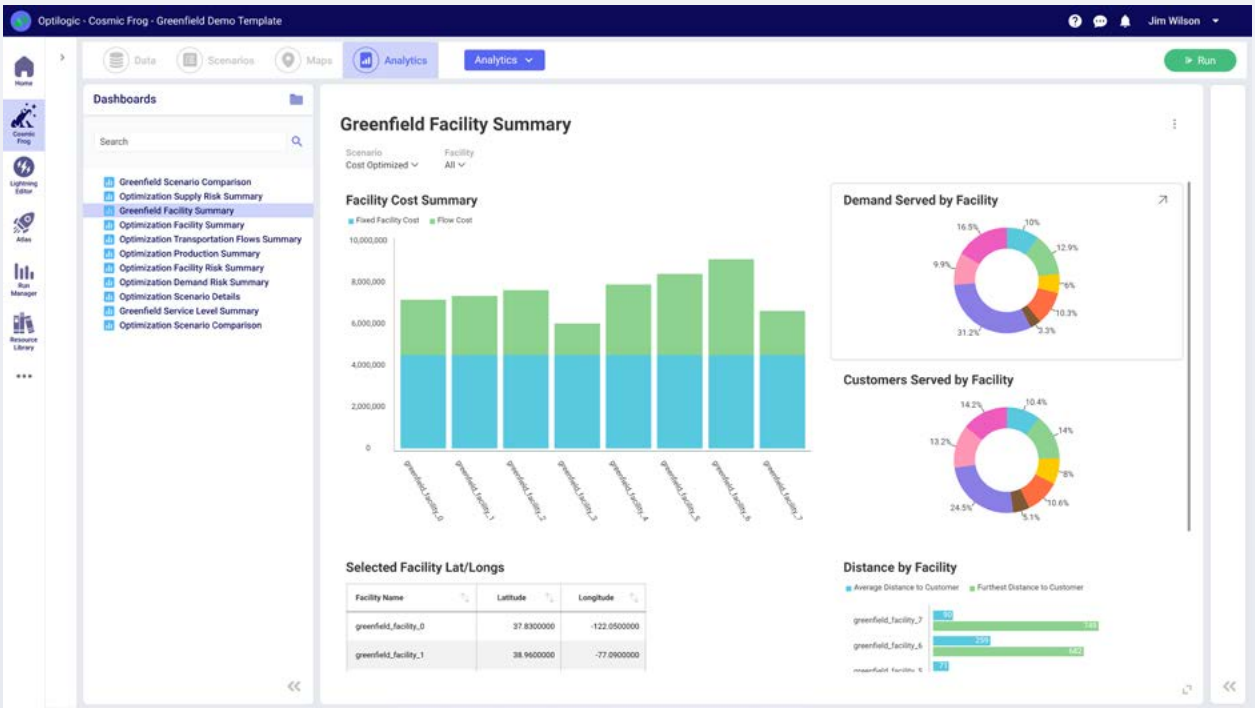
- **Model and trade off fixed facility and transport cost**: You may specify a fixed opening cost for new facilities as well as a per distance transportation cost. This allows the GFA engine to find the optimal number of DCs to minimize your total cost. If transportation costs are relatively low, GFA will open fewer DCs. If transportation is the main cost driver, GFA will open more DCs to reduce the average distance to customer.
- **Consider multiple service level bands**: You may specify a certain portion of customer demand to be served within a certain range.
- **Get a risk rating on every greenfield scenario run**: Cosmic Frog's risk engine assigns an OptiRisk score for potential site locations to help you make smart decisions that increase supply chain resilience.
- **Choose brownfield analysis**: Brownfield models existing facilities to help you determine where to open new additional DCs.
- **Set capacity constraints for both existing and candidate locations**
- **Define the number of facilities to return**: This way you can understand the optimum and specific number of facilities around the optimum by exploring the curve (see image below).
- **Rapidly autogenerate many candidate locations**

With Cosmic Frog Intelligent Greenfield, you can start with hundreds of potential location candidates, and by applying parameters, rapidly narrow down to a set of five to 10 for detailed consideration. Even better, you'll need only the following data tables:

- Customer location
- Customer demand

Cosmic Frog uses this information to map out the ideal location for production and warehousing facilities and distribution centers.





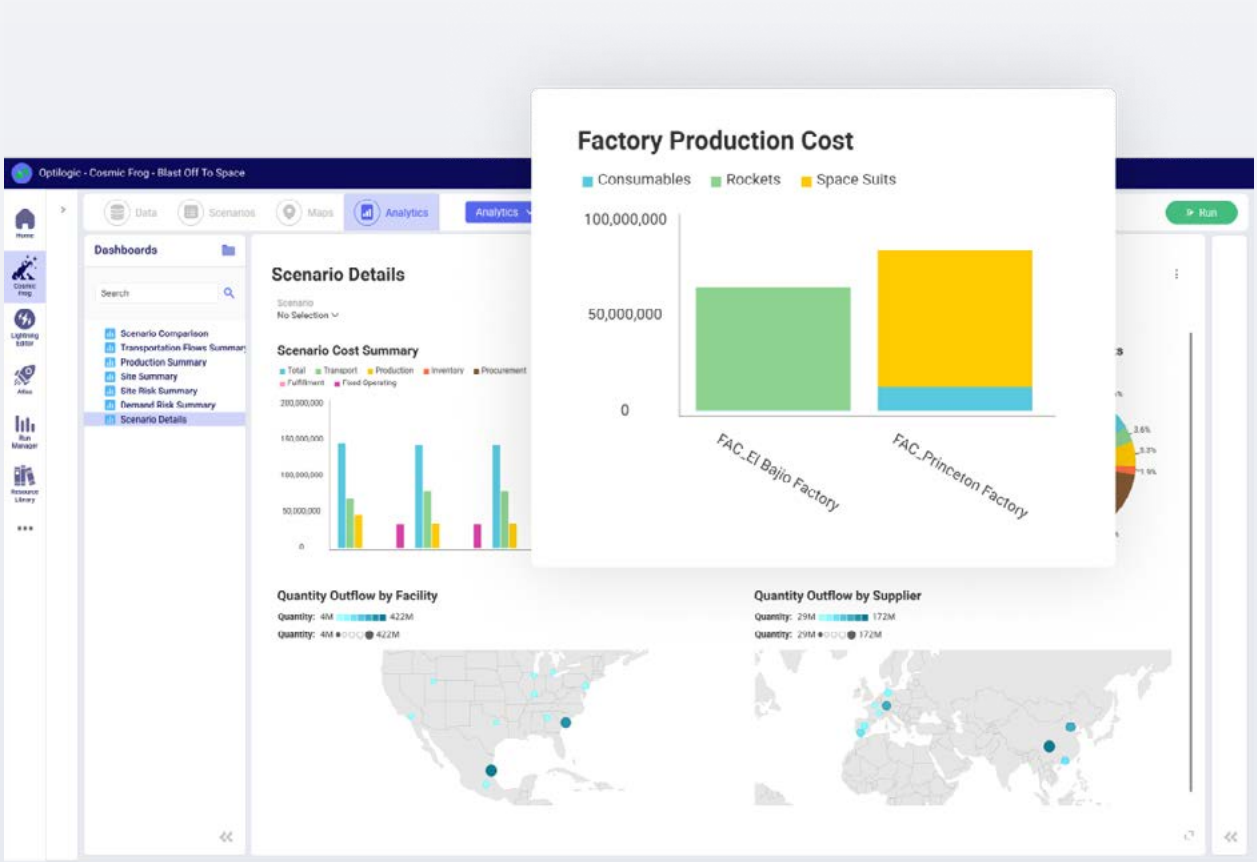
Sourcing Optimization

When evaluating the inbound aspects of your supply chain network design, you have multiple options for material sourcing. Some of the questions you might be asking include:

- What are the cost impacts of the different suppliers?
- What are the lead times and risks associated with them?
- What type of transportation will be cost effective and most reliable?

Sourcing optimization is a critical and complex component of your supply chain operation because it's the first half of your production equation. It takes a multitude of factors into consideration including inbound materials, suppliers, transportation, and inventory implications.

When it comes to sourcing optimization, Optilogic's Cosmic Frog allows you to look at your supply chain network holistically. You can look beyond just finding the cheapest sourcing option and see how different scenarios will impact your supply chain design at a larger scope with total cost and resiliency. By combining and incorporating cost, simulation, and risk into your decision making, Cosmic Frog can help you identify the best possible sourcing solution within a single platform.



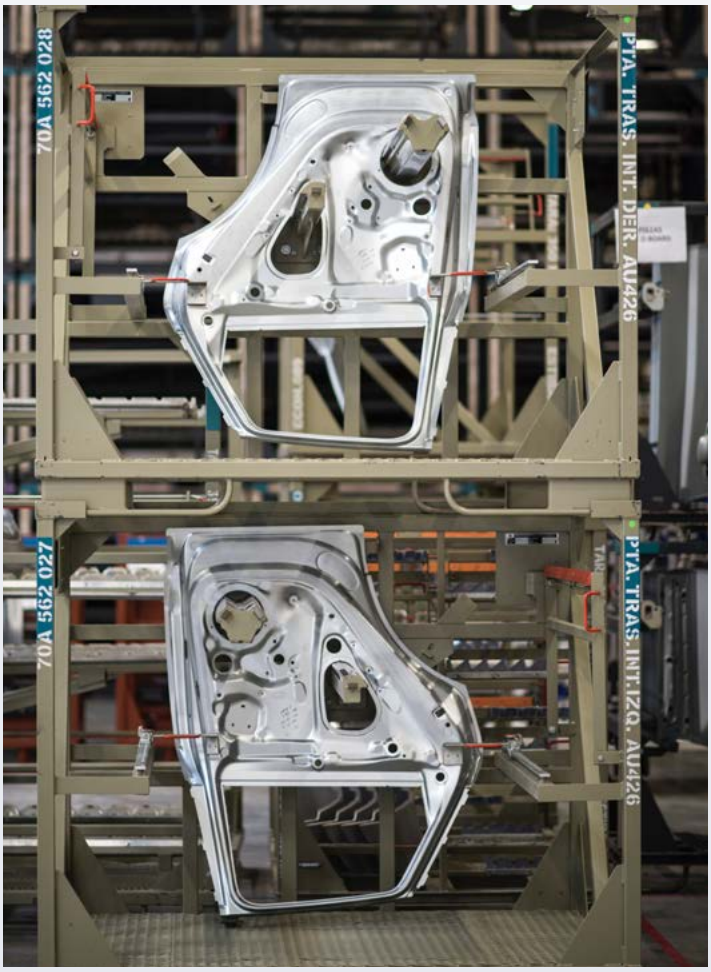
Production Capacity Planning

You've designed your network plan for next month and are not expecting very high demand for a specific product. However, customers surprise you and ask for more products than your plants are capable of making. What are you going to do about the excess demand?

As part of your production capacity planning, it's critical to put strategies in place for:

- What products to make
- When to make them
- What production lines to use to make them
- Where to produce the products geographically

This means you need strategic network design to determine facility locations and capacity requirements to avoid capacity shortage and underutilization. Tactical, shorter-term planning is also essential to maximize your production capacity as well as determine how you're going to utilize any excess inventory that doesn't fit in your warehouses.



Optilogic's Cosmic Frog platform can give you more confidence in your production strategy by creating more effective production planning models. Simply enter data regarding your facilities, production lines, and production processes into Cosmic Frog to establish your baseline, then create a variety of what-if scenarios. For example, strategically when and where you should build new facilities and production lines or tactically how you can optimize existing production capacity and utilized outsourced or variable capacity for peaks in demand.

It's important to build your network not only for the capacity of today but consider how your network is evolving over time. Cosmic Frog provides a risk rating with every scenario run, so that you can understand your current production capacity needs while simultaneously forecasting future requirements and risk factors.

Inventory Strategy and Policy Setting

Managing the flow of products from manufacturing to your customers' hands is a delicate balance in your supply chain design. It requires maintaining efficient product flow, understanding transportation costs, and upholding great customer service.

Whether your company is experiencing structural changes or expecting longer lead time from suppliers, questions you should be asking to prepare for disruptions to your inventory circulation include:

- Where and how much inventory should be stocked?
- How frequently should it be replenished?
- What type of service do we want to provide to customers?
- Which mode of transportation would be best for our strategy?

Establishing a proactive inventory strategy is critical because it drives the entire performance of your supply chain. Without setting solid business policies, such as how replenishment orders are placed and fulfilled, service will suffer and impact the overall cost of operations as a result.

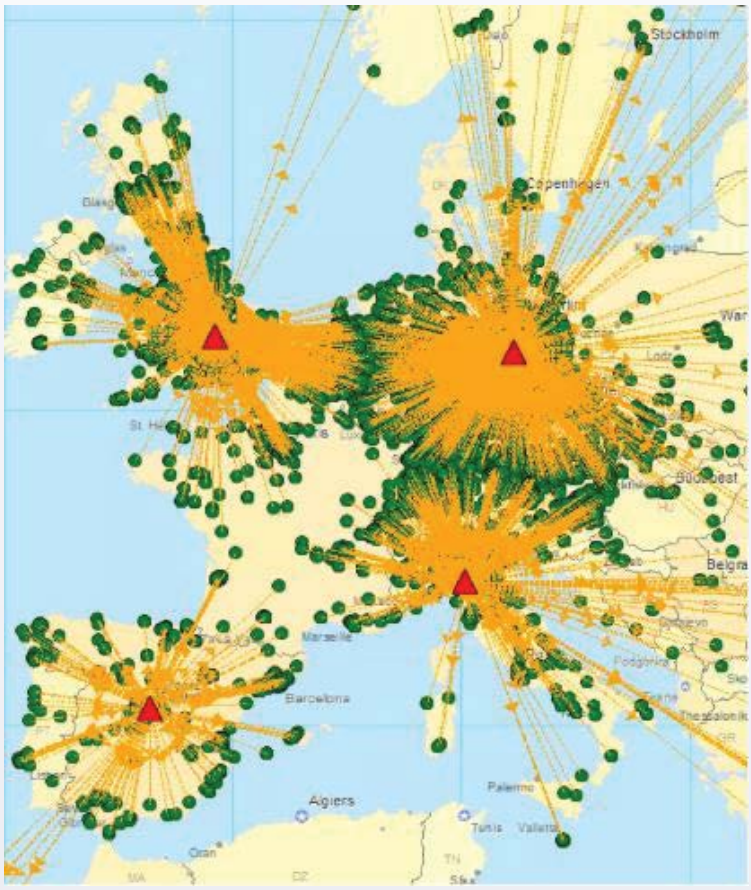
Optilogic's Cosmic Frog platform makes creating a strong inventory strategy easier. It allows you to look beyond safety stock to see how your policies are impacting the inventory within your supply chain wholistically including in-transit and work-in-progress inventory. Plus, Cosmic Frog gives you the ability to simulate and test multiple policies to better understand the cost, service, and risk tradeoffs associated with them.

Download: The Ultimate Guide to Inventory Modeling that Captures Volatility

Distribution and Logistics Strategy

Your company is considering expanding its infrastructure while streamlining operations, and you're tasked with recommending strategic changes to supply chain design. Important questions you need to consider at the start of this project include:

- How many distribution centers should you include in your supply chain?
- Where should those distribution centers be located?
- What is the best mode of transportation for your supply chain?



Distribution logistics is one of the biggest contributors to supply chain costs and, in many cases, absorbs anywhere from six to eight percent of a company's revenue. By finding the most efficient methods of distribution and logistics, you are more likely to produce higher profits.

Optilogic's Cosmic Frog can help you find best distribution and logistics design for your supply chain network. In addition to its powerful Intelligent Greenfield Analysis tool, the platform allows you to include a variety of factors such as variable unit cost, fixed cost per shipment, fixed operating cost, and more. As a result, you're able to run more detailed scenarios and make better informed distribution and logistics decisions for your supply chain that minimize cost and risk while maintaining target service levels.

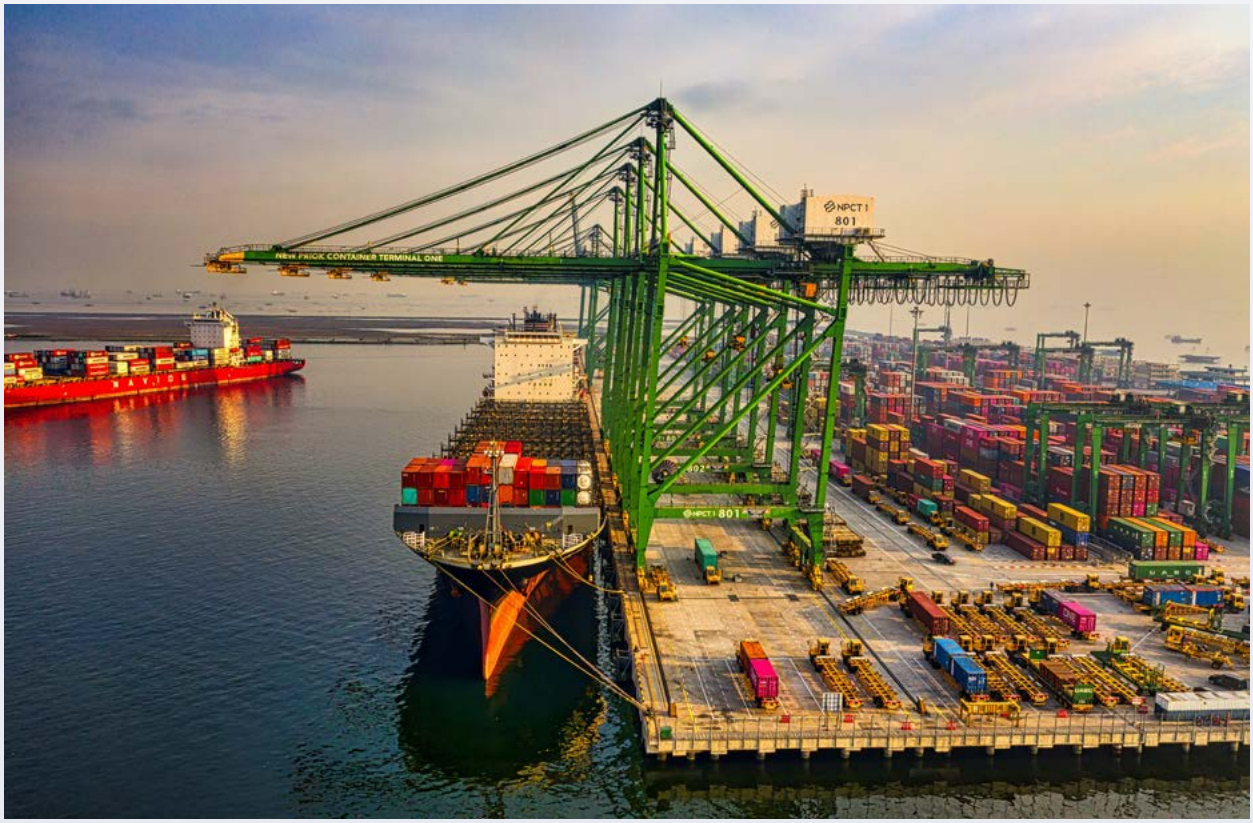
Product Flow Analysis

Disruptions to supply chain networks can happen at any time. To prepare for potential interruptions in getting products to your customers, there are important questions you should be asking:

- How does product flow within the network?
- What inbound ports should be included in your design?
- How should product flow from ports to your distribution centers?
- Are there ways to reroute or consolidate certain products?

Analyzing product flow within your supply chain is essential because it allows you to identify all the products and their locations within the network. Knowing the movement of products within your operations allows you to determine their landing costs, create better cost-to-serve modeling, and optimize your overall design.

Optilogic's Cosmic Frog platform gives you the ability to map out locations and nodes within the network, see how your products are positioned and the directions they're moving. You can also look at existing product flows and run what-if scenarios to determine the potential impact to finances, customer service, and risk if those are changed or modified.



Cost-to-Serve Analysis

With ever-changing customer preferences and escalating service expectations, it crucial to understand the relationship between service to customers and profitability. Whether your company is considering introducing a new product to its product mix, expanding its servicing warehouses, or reducing specific channels, there are important questions you should be asking:

- Which of our products and customers are the most profitable?
- What products are already being offered in the marketplace?
- What is the true cost to meet the needs of our customers?

> Cost-to-serve modeling allows companies to quantify and analyze the profitability of specific products and customers

Cost-to-serve modeling is essential to your supply chain design because it allows companies to quantify and analyze the profitability of specific products and customers. Identifying unprofitable products and customers is only part of the equation; there are various cost drivers to consider across your entire supply chain, from your suppliers to customer service territories.

Optilogic's Cosmic Frog offers more flexibility with cost-to-serve solutions by giving you the ability to enter granular data associated with each intermediate node in your supply chain network. As a result, you have a more comprehensive picture and can calculate the landed costs for each distinguishing factor and flow between the origin of the product all the way to your customers' hands.

Risk Management and Resilience

Your supply chain network design is an interconnected web and even one disruption could cause issues throughout multiple facets of your operation. The key is assessing potential risks and their potential impact during the supply chain design process.

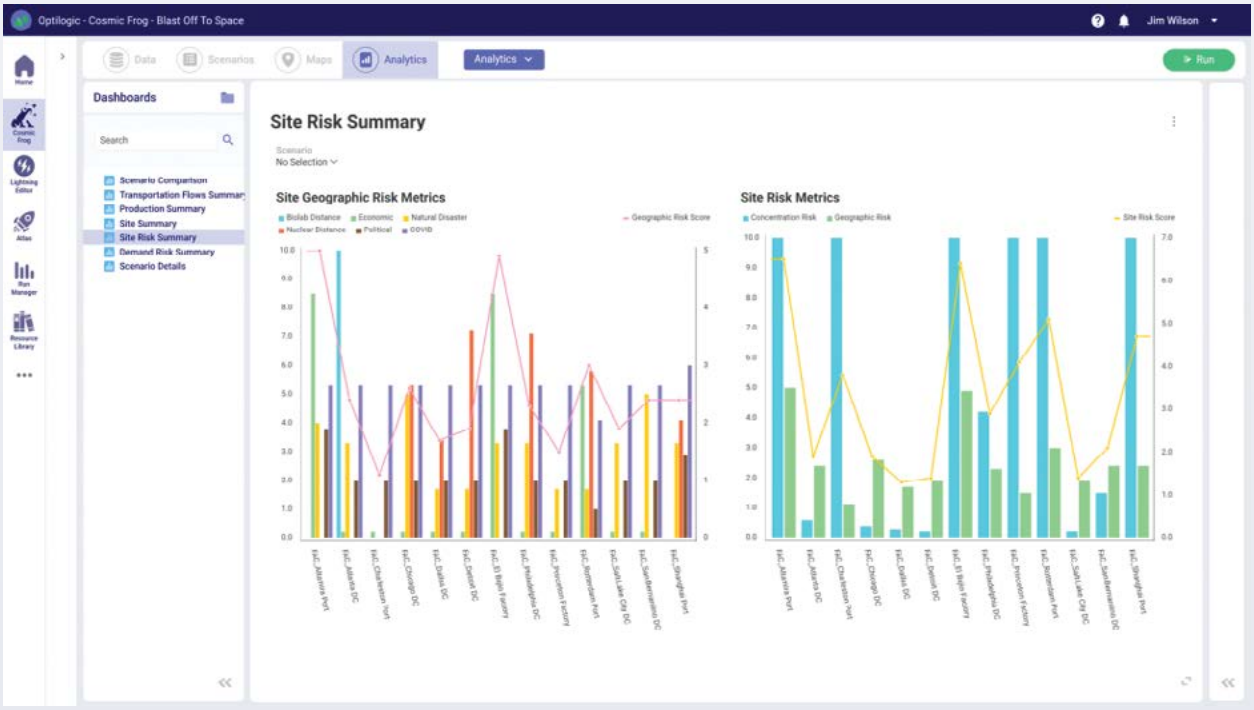
Before making any decisions about the design of your company's supply chain, you need to consider if the solutions you're exploring are based on the tradeoffs between finances, service, and risk.

Optilogic's Cosmic Frog platform includes a risk rating engine that provides an Opti-Risk score for every scenario you run. This allows you to not only identify the risks throughout various scenarios but quantify what those risks might mean to your business now and further down the line.

Cosmic Frog looks at risk in four categories:

- Customer risk
- Supplier risk
- Facility risk
- Network risk

These categories are structured to consider external risks such as natural disasters and economic stability, as well as inherent risks in the structure of the supply chain including number of sources, number of stocking locations, transportation times, and capacity.

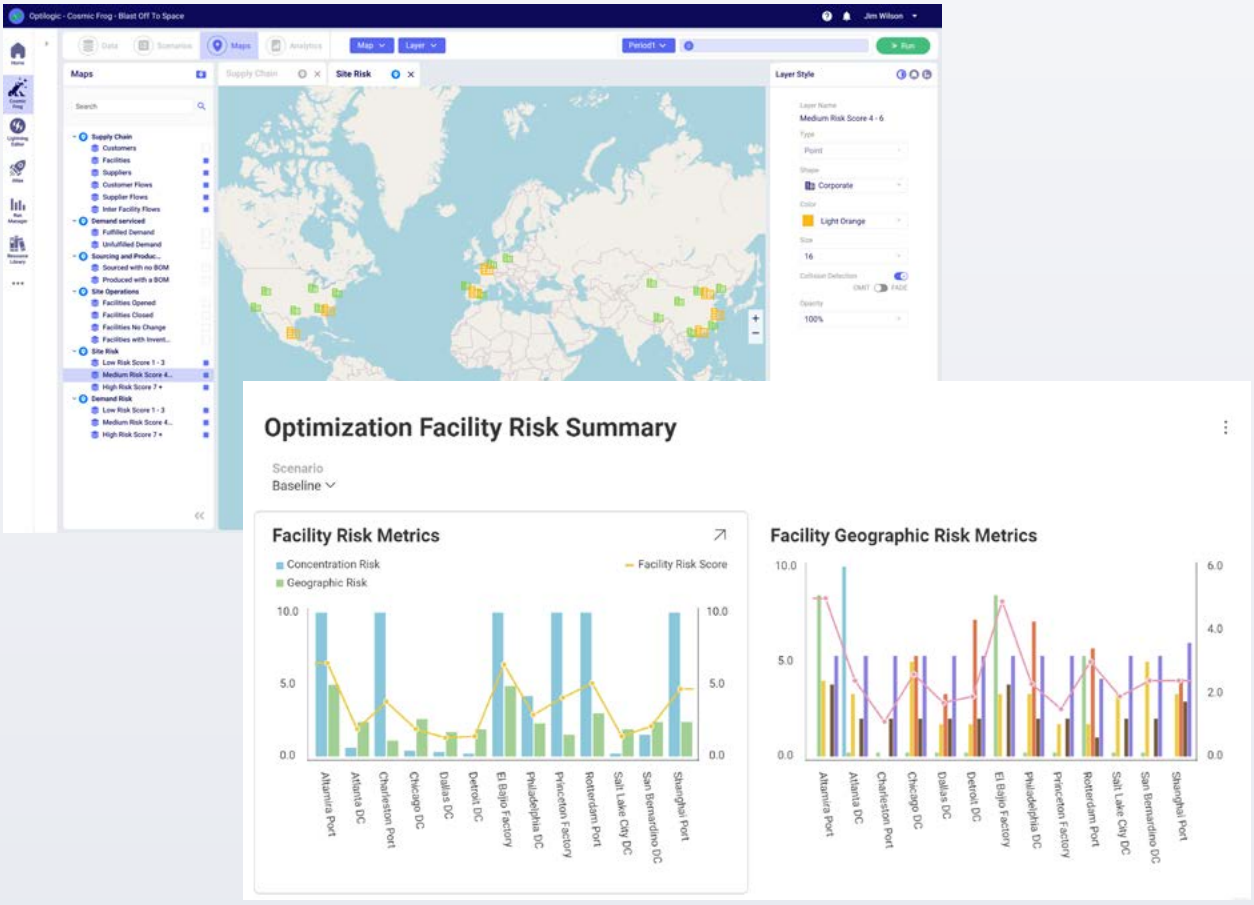


Use Scenario Planning to Quantify Risk and Improve Resilience

Say you're trying to make some critical decisions about the facilities in your network. How many facilities do I need? Where should they be located? How much volume of each product should I stock in each location?

When you're using Cosmic Frog to run scenarios for risk management, you're not just comparing scenarios based on cost or service alone. You're looking at financials, service, and risk and how those three relate to each other. What parts of your supply chain design are risky? What's causing this risk score?

Run different scenarios and simulate what would happen if those risky events or disruptions were to occur and understand the impact it would have on your operations. That way, you can be better prepared with contingency plans and back-up playbooks.



CapEx Planning and Merger and Acquisition Analysis

Your company recently forecasted an increase in demand for various products and is considering implementing additional manufacturing capabilities. Before moving forward with a big investment such as buying new facilities and equipment, you should be asking questions like these:

- What manufacturing enhancements could be made to existing facilities?
- Where will the increased inventory be stored?
- How will our service levels be affected?
- How does this affect any recent mergers or acquisitions?

It's important to evaluate the potential impacts to finances, service, and risk associated with capital expenditures (capex) as these decisions regularly involve larger investments. Given the amount of time capex planning changes take to implement, they also tend to affect the larger scope of your supply chain design.

Optilogic's Cosmic Frog platform requires specific input data regarding facilities, transportation, and more, so that you can better evaluate the financial impacts, see how service to your customers will be affected, and the risks associated with any capex planning decisions and scenarios.

Merger and acquisition (M&A) analysis

If your company is considering a merger or acquisition, it's vital to look at the overlapping footprint in your networks to combine them in the most effective manner.

Cosmic Frog gives you the ability to bring various supply chain designs from multiple companies into one unified data structure to easily identify synergistic opportunities. Additionally, you will be able to assess the financial, service, and risk impacts with every design scenario output.

GHG Modeling

Whether it's brutal storms knocking out power grids, wildfires rapidly spreading across state lines, or extreme temperatures causing major issues with infrastructure, the effects of climate change can significantly disrupt any supply chain design.

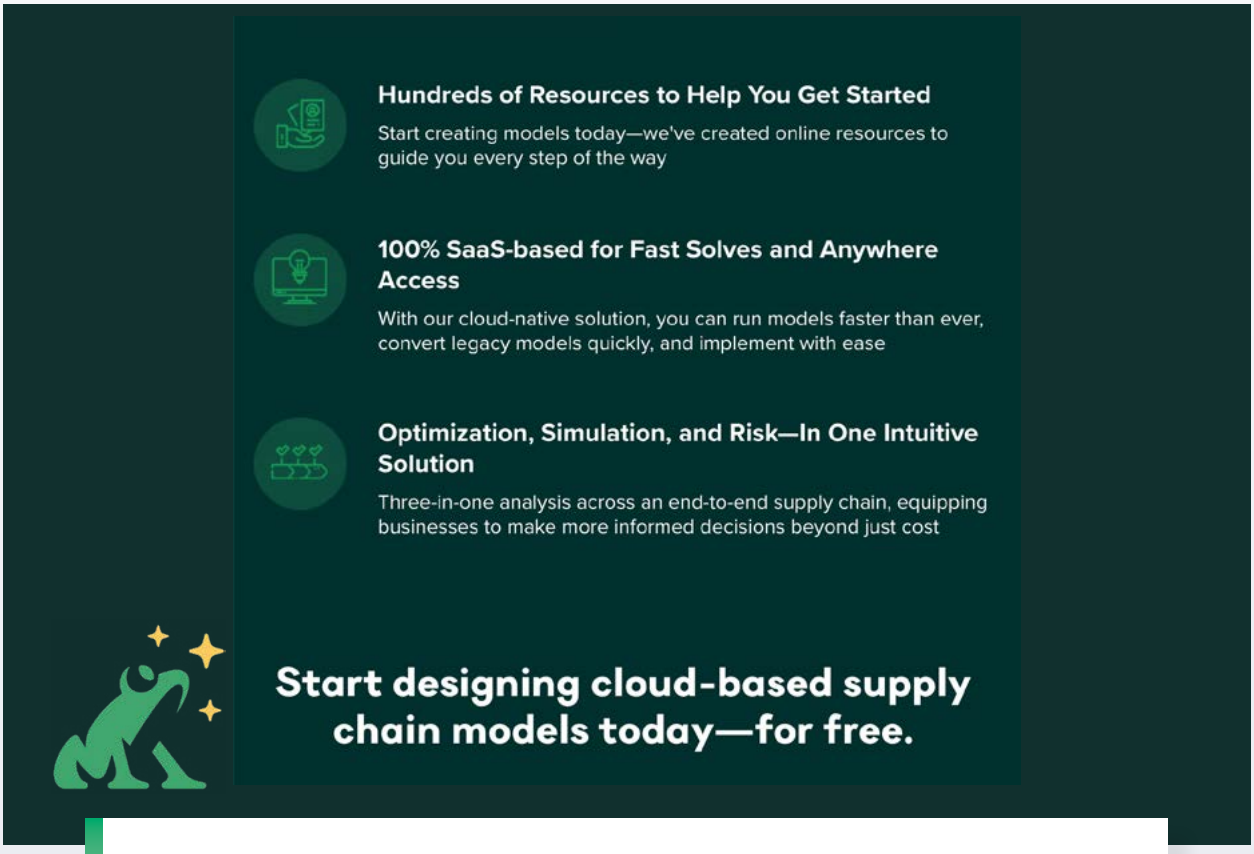
While it isn't easy to predict the impacts of climate events, it is important to calculate, report, and apportion how your current supply chain network is contributing to carbon emissions and greenhouse gases (GHG).

GHG modeling can be used to explore different emission cap levels, sequentially optimize your design to find the most profitable network with the lowest emissions or give you the necessary data to quantify your environmental ratings to customers and shareholders.

Optilogic's Cosmic Frog supports CO2 and greenhouse gases modeling by giving you the ability to include all the emissions associated with the major elements of your network design including transportation, supply, and manufacturing. This means Cosmic Frog is the only product on the market that enables financial, service, risk rating and emissions to be quantified and balanced for each scenario that you explore.

Cosmic Frog: Supply Chain Design that Balances Cost, Service, and Risk

Post-COVID uncertainty demands a new level of supply chain design technology. Cosmic Frog is the only supply chain design solution that offers optimization, simulation, and risk analysis across an end-to-end supply chain in a single platform, equipping businesses to make more informed decisions beyond just cost.



Talk to Us about how Cosmic Frog could work for your business (we love a challenge!) or **Create Your Free Account** to test out Cosmic Frog today.