

Spotlight on Spare Parts

How Probabilistic Forecasting
is Transforming the Spare Parts
Supply Chain





Rising Customer Expectations Are Reshaping the Spare Parts Industry

As technological advancements transform nearly every industry, customer expectations for speed and convenience are reaching unprecedented levels.

Today's customers demand same-day support and immediate product availability. Any delay can result in customer frustration, negative reviews, and even lost business to a competitor.

To align inventory with increasingly unpredictable demand, forward-thinking businesses are implementing sophisticated demand forecasting solutions. This strategic shift is especially critical for manufacturers and distributors managing extensive product portfolios and aftermarket parts inventories.

With growing demand volatility, frequent supply chain disruptions, and increasing service expectations, is your company struggling with inaccurate forecasts that lead to excess inventory costs or missed sales opportunities?

The Downsides of Conventional Forecasting

Conventional forecasting methods rely on a top-down approach, using broad demand projections based on aggregated historical data or simple year-over-year percentage increases.

The problem? They prioritize simplicity over accuracy.

Projections rely on past trends in aggregate, but this smoothing process filters out critical demand signals. While an overall forecast may only be off by a few percentage points, those small errors can compound—resulting in a staggering 40-50% discrepancy for specific weeks, distribution centers, or SKUs, leading to costly miscalculations in inventory and replenishment planning.

By harnessing the power of machine learning, automation, and predictive analytics, companies can ensure products are available exactly when needed—without overstocking or incurring unnecessary costs.

Traditional Inventory Approaches Create Stock-outs and Waste



Rough approximations and gut instinct

Lost margin



One-size-fits-all logic

Excess inventory



Ineffective for slow-moving items

Obsolescence



Unique Industry Challenges

The real world is unpredictable, and organizations must be ready for anything. Nowhere is this more evident than in spare parts supply chain management—where traditional forecasting tools often fail to address unique, high-stakes challenges, particularly the notorious “long tail” problem. Key obstacles in spare parts management include:

- **Unpredictable long-tail demand:** Slow-moving products make forecasting complex due to inconsistent demand patterns.
- **Complex distribution networks:** Short response times and geographically dispersed customers demand seamless logistics.
- **Inventory and capital constraints:** Managing vast SKU-location combinations ties up significant working capital, increasing financial strain.
- **Frequent product introductions:** Model updates and product launches add layers of complexity to demand planning and inventory optimization.



SYMPTOMS OF A LONG TAIL



Growing SKUs



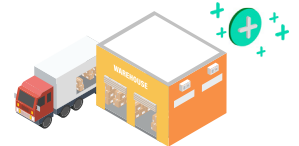
Product variations
(such as colors and sizes)



Items considered not
forecastable



Seasonality/
regionality



Increasing number of
distribution centers



Replacement
parts



Global business
expansion

Rethinking Forecasting: The Power of Bottom-Up Demand Modeling

Unlike top-down forecasting methods, bottom-up demand modeling breaks demand into a series of internal and external factors—known as the demand stream—and analyzes their individual impact.



By analyzing demand drivers at a granular, daily level for each SKU-location, this approach leverages machine learning automation to incorporate key external factors, such as new product launches, promotions, end-of-aisle displays, and price changes.

The result? A more precise, dynamic forecast that enables businesses to anticipate demand shifts with unmatched accuracy—reducing risks, optimizing inventory, and improving overall supply chain efficiency.

A Closer Look at Advanced Demand Forecasting

Here's how ToolsGroup revolutionizes bottom-up demand forecasting with cutting-edge technology and intelligent automation:



- **Demand modeling** incorporates both internal and external factors—such as market trends, returns, and substitutions—to deliver more accurate forecasts, even for slow-moving inventory.



- **Machine learning** enhances forecasting precision, effectively modeling highly seasonal demand patterns and predicting new product performance with confidence.



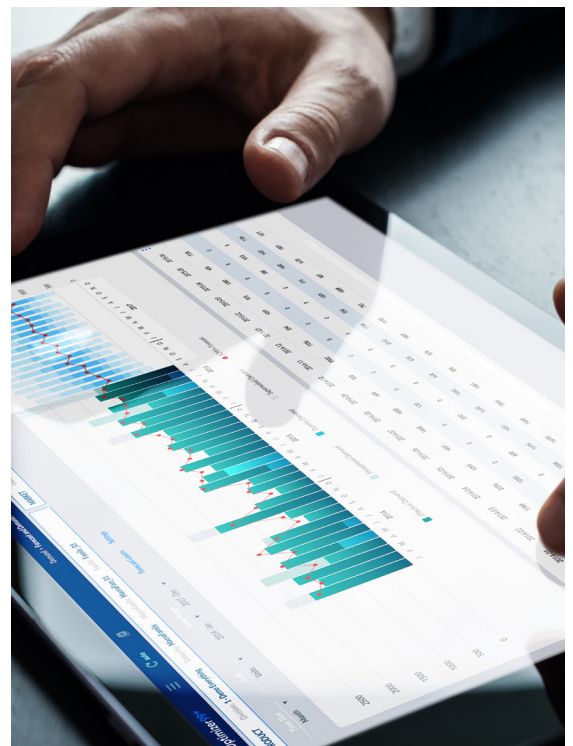
- **Demand collaboration** unifies data from multiple sources—including sales teams and distributors—within a web-based consensus forecasting platform for greater accuracy.



- **Rough-cut capacity planning** streamlines the entire replenishment process with intelligent fair allocation logic, ensuring optimal inventory distribution.



- **S&OP integration** bridges the gap between tactical planning and operational execution, creating a seamless, data-driven supply chain strategy.



Taking Demand Forecasting to the Next Level: Probabilistic Forecasting

While traditional demand forecasting is essential, probabilistic forecasting goes a step further—providing a more nuanced, data-driven approach to uncertainty. Instead of offering a single demand estimate, it delivers a range of possible outcomes with probabilities, helping businesses plan with greater confidence.

Unlike conventional methods that simply average demand, probabilistic forecasting identifies the most likely outcome while also quantifying potential deviations—acknowledging that forecasts aren't perfect and showing exactly by how much they could vary.

But it doesn't stop at historical data. Probabilistic forecasting also considers how an item was purchased—factoring in frequency, order quantities, and locations—to build a probability distribution that more accurately reflects real-world demand fluctuations.

Powered by machine learning and AI, this advanced forecasting technique filters out noise, extracting meaningful demand signals and analyzing multiple variables to predict a spectrum of possible demand scenarios.

This approach is especially powerful for fast-moving goods, where seemingly stable demand patterns can reveal hidden volatility.



Key Features of ToolsGroup's Probabilistic Planning Capabilities

01

Probabilistic Demand Modeling & Forecasting

ToolsGroup provides a range of possible demand outcomes along with their probability, offering more precise forecasting for inventory optimization and reliable sales and operations planning. Our demand sensing insights help fine-tune the statistical forecast, delivering demand plans that optimize each SKU against target service levels.

02

Demand Planning

ToolsGroup seamlessly integrates both bottom-up and top-down planning approaches. Our demand planning tool offers accurate forecast to optimize your inventory management, helping you focus on key areas that matter most, like identifying demand drivers and managing the impact of seasonality.

03

Demand Collaboration Hub

ToolsGroup's Demand Collaboration Hub aggregates data from multiple sources into one user-friendly platform. It allows both internal and external users, even those with limited experience, to easily collaborate and participate in the demand planning and forecasting process.

04

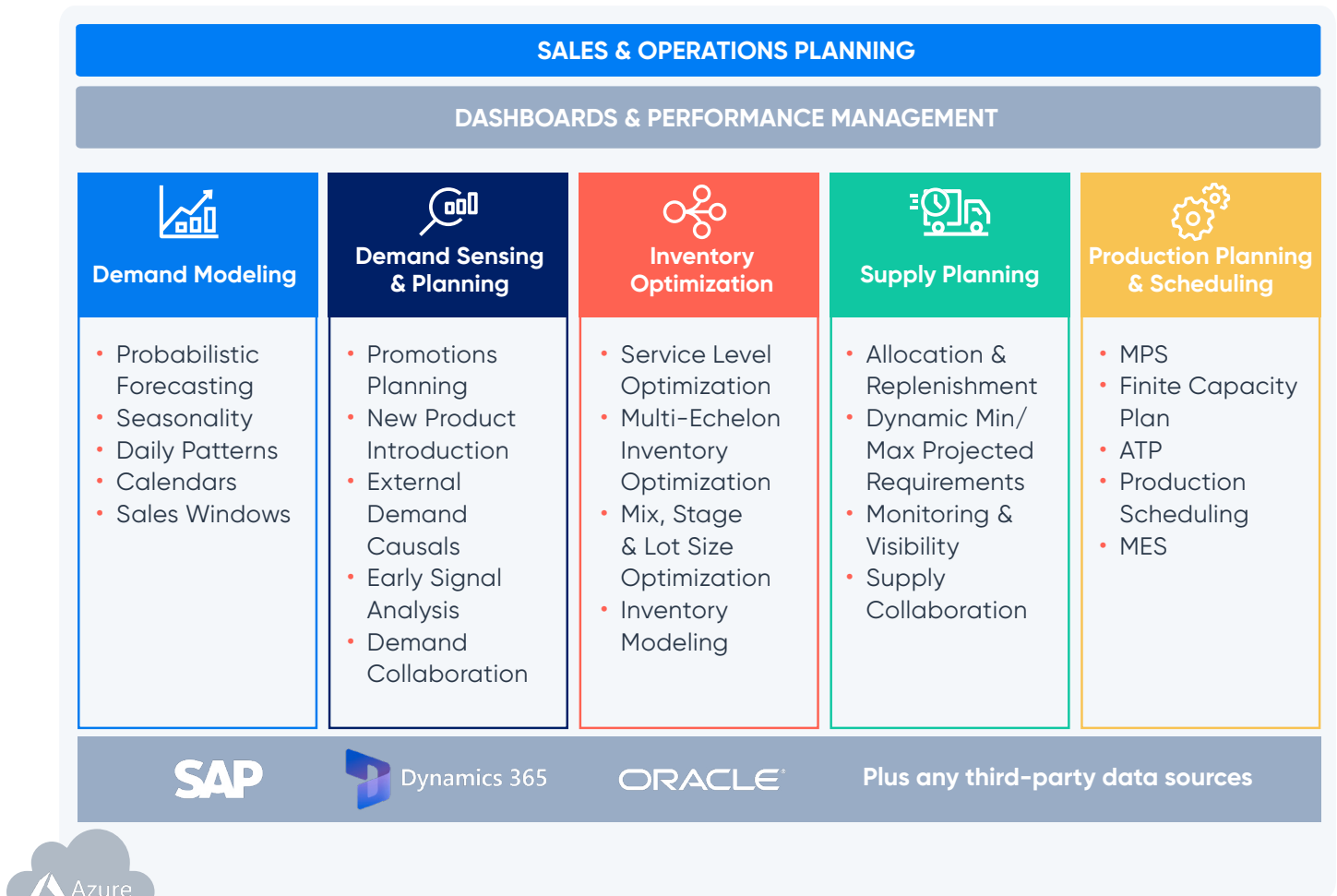
Promotions, Seasonality & New Product Introductions

Our demand forecasting tool uses machine learning to reliably support operational planning for new product launches, seasonal demand, and promotions, helping you make data-driven decisions.



Accelerating Performance: Shifting From First to Fifth Gear with ToolsGroup

Supply Chain Planning Solutions for Aftermarket Parts



Within three years, ToolsGroup helped us reduce our spare parts stock by 30% and we increased our service level from **87% to 97%**. Even during seasonal demand peaks we are now always able to achieve this exceptional service level."

- Thomas Schuhmann, GM Business Development and Sales Direct Markets
Mitsubishi Electric Europe B.V.

Overcoming Supply Chain Complexity: *Lennox's* Transformation with ToolsGroup

The Challenge:

Lennox Residential Heating and Cooling needed to transition to a hub-and-spoke distribution model across 55 shipping and 161 selling locations—a shift that required precise inventory management and seamless logistics.

The Goal:

Improve service levels and optimize inventory to free up working capital while ensuring balanced inventory allocation across a rapidly evolving supply chain.

The Results:

By implementing **ToolsGroup's SO99+** solution, Lennox dynamically optimized its inventory mix, establishing stocking targets that balance service levels and inventory costs. Machine learning played a crucial role in modeling highly variable seasonal demand, analyzing hundreds of thousands of SKU-locations to identify clusters with similar seasonality patterns. Forecast accuracy was significantly improved during peak periods.

16%

Improvement in service levels

25%

Increase in inventory turns



Industry Recognition: ToolsGroup Leads the Way

Don't just take our word for it—ToolsGroup has been recognized as [Leader in the IDC MarketScape: Worldwide Supply Chain Planning for Spare Parts/MRO Industries 2024](#) Vendor Assessment (Doc ID #US51541424, December 2024).

ToolsGroup earned the **#1 ranking** in current capabilities for Spare Parts/MRO supply chain planning and was named an overall leader in the category, solidifying its position as the go-to solution for intelligent, data-driven supply chain optimization.



ToolsGroup SO99+ helped us stay profitable during a global economic downturn, freeing up capital to invest in long-term growth."

– Simon Thomas, Supply Chain Manager
AGR Europe

Ready to Transform Your Supply Chain?

Identify Risks and Unlock Growth Opportunities

Ready to take the next step but unsure where to begin?

Many companies face challenges in pinpointing their supply chain planning issues and struggle to quantify improvement opportunities.

The ToolsGroup consulting team is here to support you every step of the way. Using our proprietary modeling methodology, we help identify risks, uncover hidden opportunities, and ensure a seamless transformation. From defining data requirements to translating insights into action, we'll guide you through the entire process to ensure lasting, meaningful success.



Quickly Explore Opportunities Across 3 Stocking Scenarios:

Can you reduce stock without affecting service?

Optimize inventory while maintaining equal service level

+ Same Service Level

Can you improve service without affecting total inventory costs?

Optimize overall service level performance while maintaining equal amount of total on-hand inventory (in cost)

+ Same \$ Investment

What would it take to reach a desired service level target?

Optimize inventory targets with aggregate service level targets set by customer

+ Future Service Levels