

# SAS® Forecast Analyst Workbench



## What does SAS® Forecast Analyst Workbench do?

It provides an analytics-based framework for creating a demand-driven statistical forecast that automates and manages information exchange between everyone involved in the sales and operations planning/integrated business planning (S&OP/IBP) process. The solution provides strong what-if analysis for demand sensing and shaping and enables development of a consensus forecast to support the S&OP/IBP process.

## Why is SAS® Forecast Analyst Workbench important?

Too many supply chain management (SCM) and enterprise resource planning (ERP) systems are focused on workflow, resulting in inaccurate forecasts that lead to under- or over-stocks. SAS Forecast Analyst Workbench provides accurate forecasts with robust demand forecasting and planning capabilities that can improve cost efficiencies while helping you better serve customers.

## For whom is SAS® Forecast Analyst Workbench designed?

It's designed for forecast analysts and business planners responsible for creating large-scale statistical baseline demand forecasts for hundreds of thousands of products that provide input into the consensus forecasting process.

Traditional workflow-based ERP/SCM solutions don't emphasize analytics and often result in inaccurate consensus forecasts. Such solutions are driven solely by domain knowledge and guesswork, and involve a resource-intensive, time-consuming process.

Today's demand volatility and thin profit margins force companies to ensure supply/demand balancing. To do it, they must:

- Integrate historical and real-time consumption data for accurate forecasts.
- Use scenario analysis to understand the effects sales promotions and other marketing decisions have on demand.
- Import and consolidate forecasts from sales, marketing, finance and demand planning - and use technology to create a consensus demand forecast.
- Use business intelligence to disseminate results across the organization.

SAS Forecast Analyst Workbench is an analytics-based demand forecasting and planning solution that can help lower costs and improve customer satisfaction.

## Key Benefits

- **Obtain accurate forecasts across your product hierarchy.** Our high-performance forecasting model repository includes all core modeling techniques and methods across classifications. Add unlimited custom algorithms and methods. Use statistics and business rules to compare models so you can choose the best fit.
- **Sense and shape demand - don't just react.** Use what-if scenario analysis to evaluate sales history and plan for future events - new products, locations, channel introduction, etc. Improve the overall forecast with consumption-based forecasting using multitiered causal analysis (MTCA) that combines POS/syndicated scanner data with shipment history. Then develop an optimal marketing investment strategy.
- **Get better results by generating forecasts faster.** The faster you move from forecast development to execution, the more accurate the forecast. An integrated forecasting suite means data moves seamlessly among applications and users, streamlining collaboration. Advanced data visualization augments data discovery and exploration to deliver rapid insights from huge data volumes. Even nontechnical users can quickly identify areas of opportunity or concern.
- **Reduce finished-goods inventory and stock-outs.** Advanced forecasting methods in our patented statistical forecasting engine deliver forecasts across an entire product portfolio that reflect business realities. Keep the right products at the right places and times so you can tighten safety stock levels and on-hand finished goods inventory.
- **Support life cycle planning for global supply chains with accurate, long-term forecasts.** To compensate for times when you lack data or have insufficient data, SAS applies data mining, clustering and machine learning based on product profiles that rely on demand curves of similar (or "as like") products.

## Overview

SAS Forecast Analyst Workbench provides an analytics-based process for creating a demand-driven, statistical forecast. It automates and manages information exchanges between everyone involved in the forecasting process. Combining automation, analytics and workflow, it senses demand signals and shapes and predicts future demand. As a result, you get unbiased, highly accurate demand forecasts.

## Large-scale, automatic forecasting

Our patented forecasting engine evaluates and synthesizes various models based on your requirements. The resulting forecast depicts your business at every level of your corporate/product hierarchy and accounts for complex supply chain networks with comprehensive business rules.

This business/product hierarchy is created on the fly - automatically assessing every level of the hierarchy to determine the most appropriate model based on statistics,

business rules and forecasts. The model repository has more than 200 methods to choose from, plus it can accommodate custom-developed algorithms. It's also scalable, giving users the choice to run in batch or through the GUI.

Exception reporting lets users focus on inaccurately forecasted items. In turn, they can efficiently forecast hundreds of thousands of products concurrently. You can also integrate consumer demand (e.g., POS and syndicated scanner data), then model it and forecast it automatically using award-winning data access tools.

## Configurable workflows

Using a systematic workflow, you can forecast the values for new products. This structured process uses data, analytics and domain knowledge to increase forecasting accuracy and significantly reduce forecasting time. By making faster business decisions, you can respond with agility to changing demand and other market factors.

## Product lifecycle analysis

Product lifecycle analysis lets you manage phases - including introduction, extension, retirement and replacement - through a point-and-click user interface. Use the tool to plan for new products ahead of season, or for product retirement. Easily add new product forecasts to the product hierarchy. Due to tight integration with the workbench, data moves seamlessly among applications. Advanced machine learning techniques automatically estimate demand for new products.

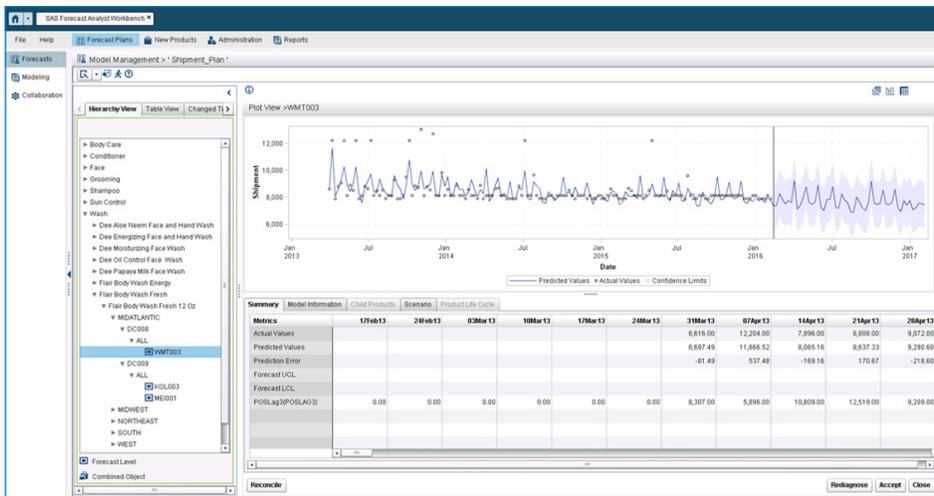
## Integrated forecasting for new products

SAS' patent-pending structured judgment methodology provides an objective basis for predicting new product demand. You can integrate new product forecasts with the planning process. This helps automate selection of analogous products (like items), and facilitates review and clustering of past new product introductions to generate statistical forecasts. Use this approach to overcome demand forecasting challenges for new products, such as lack of product history or an uncertain product life cycle. You can manually override the statistical forecasts if needed. Data visualizations of past new product introductions give a better sense of risks and uncertainties.

## What-if analysis, scenario planning

Scenario analysis allows you to evaluate exceptions to your sales history and plan for future events, including new products, locations and channels. Conduct what-if analysis using statistical models to find the optimal forecasting scenario based on available investment strategies.

Scenario building allows you to simulate and test supply and production capacity constraints on marketing or promotional efforts. It provides feedback from that process to help you understand constraints and develop an optimal production plan.



SAS Forecast Analyst Workbench helps you shape demand using what-if analysis.

## Event modeling console

Our high-performance forecasting, event modeling console is an easy-to-use environment that includes predefined holidays with pulse, ramp-up/down, level shift, and temporary event modeling approaches. These statistically measure the impact of sales promotions, marketing events and other activities. You can statistically model events to determine sales increases associated with these types of activities. And create custom events to calculate the effect of specific sales promotions and marketing activities – even how natural disasters will affect sales.

## Multitiered causal analysis (MTCA)

MTCA links a series of quantitative methods to measure the effect of sales and marketing strategies on consumer demand. It then evaluates various what-if scenarios to shape and predict future demand. The result is that demand and supply are linked through the data using analytics rather than judgment. Manufacturers can use a series of causal models to measure the effect of demand on each level of the supply chain (e.g., wholesalers and distributors). MTCA uses data and in-depth causal analytics to:

- Measure effects of your marketing mix on consumer demand at the retail level.
- Link retail demand to shipments from manufacturers to retailers.
- Let manufacturers perform what-if analysis to predict future demand and help them choose an optimal strategy for producing the highest volume and ROI.

## Monitoring, tracking and reporting

The dashboard provides enterprisewide access to web-enabled reports that monitor and track forecast performance and interaction with the workbenches. It also includes alerts to identify issues related to forecast performance exception reports, and iterative reviews of the consensus forecast.

## Key Features

### Large-scale, automatic forecasting

- Interactive point-and-click interface.
- Project setup wizards.
- High-performance hierarchical statistical engine.
- Graphical engine.
- Statistical engine to provide various statistical calculations (e.g., MAPE, MAD).
- Filter generator.

### What-if analysis and scenario planning

- Plug-in provided for the applications dashboard.
- What-if planning capabilities using model parameter estimates.
- Ability to change model parameter estimates to determine the effects on forecast scenarios.

### Patented event modeling console

- Interactive Java GUI.
- Predefined holiday events.
- Automatic date realignment for moving holidays.
- Customer event creator.
- Four event types:
  - Pulse.
  - Ramp-up/down.
  - Level shift.
  - Temporary.

### Patented model repository

- Model repository with predefined models, including time-series methods, causal methods, intermittent-demand function methods and open model repository.
- Ability to add custom models.
- Option to choose from all model families:
  - Basic time series, including moving averaging and exponential smoothing
    - Holt's Two-Parameter ES.
    - Winter's Three-Parameter ES: additive, multiplicative, linear trend and dampened trend.
  - ARIMA:
    - Nonseasonal and seasonal.
  - ARIMAX.
  - Dynamic regression.
  - Unobserved component models (UCM).
  - Weighted combined models (also known as Bayesian models).

### Multitiered causal analysis (MTCA)

- MTCA links demand to supply using a process of nesting causal models together with data and analytics to measure the push/pull effects of your business.

## SAS® Visual Analytics integration

Using SAS Visual Analytics, you can visually explore vast amounts of data to quickly uncover insights and relationships that may lead to new areas of discovery. So you can:

- Analyze demand signals.
- Explore sales volumes, trends and influencers, and assess the most significant factors affecting demand.
- Review and analyze point of sale and syndicated scanner data.
- View the forecast value added (FVA) – the value that each manual touch point or override adds to (or removes from) the forecast accuracy.

## SAS® Demand-Driven Planning and Optimization suite integration

SAS Forecast Analyst Workbench is integrated with the SAS Demand-Driven Planning and Optimization suite, which includes our world-class forecasting capabilities (along with the supporting SAS Collaborative Planning Workbench).

SAS Forecast Analyst Workbench can serve as the primary forecasting front end and input source for SAS Inventory Optimization Workbench. So inventory analysts can easily collaborate with their forecasting counterparts to develop the best inventory distribution plan the organization can support.

[TO LEARN MORE »](#)

To learn more about SAS Forecast Analyst Workbench, get system requirements, view screenshots and see other related material, please visit [sas.com/forecast-analyst-workbench](http://sas.com/forecast-analyst-workbench).

## Key Features (continued)

### SAS® Visual Analytics integration

- Specifically designed for analytic workloads using the SAS® LASR™ Analytic Server.
- Optimized for distributed computing environments to apply the parallel processing capabilities of many nodes (in essence creating a SAS supercomputing environment).
- Designed from the ground up to be integrated with Hadoop for performance optimization and scalability.
- Visual data exploration – visually and interactively explore data to gain insights and discover patterns and trends for further analysis. Incorporation of analytics presents more meaningful views of information to help you make fact-based decisions.
- Web-based, interactive data exploration mode for any business user.

### Integration with the SAS® Demand-Driven Planning and Optimization suite

- **SAS Demand Signal Analytics:** An integrated repository of demand information offers tools to explore and analyze information regarding sales, products, stores, territories, promotions, inventory, price, performance and operations.
- **New Product Forecasting Workbench, structured decision making:** Combines business judgment with statistics with our patent-pending structured judgment method, which suggests future demand of new products based on surrogate products. The structured analogy approach requires two types of data – product attributes (prior and new products) and historical sales (prior products). Attributes can include:
  - o Product type (toy, music, clothing, shirts, etc.).
  - o Season of introduction (summer or winter item, etc.).
  - o Financial (such as target or competitor price).
  - o Target market demographic (gender, age, income, postal code, etc.).
  - o Physical characteristics (style, color, size, etc.).
- **SAS Collaborative Planning Workbench:** Forecast input, review, comparison and override, all facilitated with a configurable workflow and approval process integrated with email.
- **SAS Inventory Optimization Workbench:** Multiechelon inventory optimization and optimal replenishment planning include supply sensing and shaping using what-if analysis.

To contact your local SAS office, please visit: [sas.com/offices](http://sas.com/offices)

