

CT Global Solutions & SAS®

# EasyForecast™

Generate large numbers of trustworthy forecasts  
– quickly and automatically

Using SAS Visual Forecasting

## SAS® Visual Forecasting: What is it?

SAS® Visual Forecasting is one of the main solutions within CT Global's **EasyForecast™**. It provides a visual and interactive environment for an open forecasting ecosystem to quickly and automatically produce many reliable forecasts. The SAS® Viya visual environment makes forecasting a breeze for business users and analysts alike. Data Scientists will find this SAS tool very powerful, but you don't need to be a Data Scientist to use Visual Forecasting successfully.

### Examples of Time Series Forecasting Models

- > ARIMA
- > Neural Network
- > Hierarchical
- > Seasonal
- > Unobserved Components
- > Exponential Smoothing
- > Intermittent Demand

#### Machine Learning & Artificial Intelligence

- Perfect for advanced predictive modeling capabilities and complexity
- Use for targeted promotions, price optimization, product placement etc.
- Scientifically identify the strongest causal variables to inject into the forecast
- Integrate models from Python, R, Java and Lua within a single solution

#### Predictive Modeling

- Build on interactive data exploration and discovery with predictive models
- Identify business drivers (Causal Factors) of revenues, demand, lost sales etc; segment by customer, product, location, etc.

#### Demand & Supply Planning

- Ideal tool when demand forecasts and supply decisions have a disproportionately positive impact on business and financial success
- Improve productivity & collaboration with the Consensus Workbench
- Options include Replenishment, Merchandise Assortment Planning, Location Planning, Size/pack optimization etc.

#### Forecasting

- Create accurate scalable forecasts for millions of products, locations & categories
- Dramatically reduce the manual effort associated with Excel
- Integrate to Demand & Supply Planning

#### Data Exploration & Visualization

- Logical starting point for your analytics journey
- Ideal for customers with limited analytics knowledge, Excel and business intelligence skills

### How Visual Forecasting is used?

- Sales Analysis
- Competitive Analysis
- Price and Promotion Evaluation
- Inventory Visibility
- Supply Chain Metrics
- Customer Intelligence
- Profit, Revenue Management
- Financial Management
- New Product Introduction Product Placement

# What You Can Do with SAS® Visual Forecasting:

## Large-scale time series analysis & forecasting in a distributed environment.

- Automatically generate large quantities of statistically based forecasts in a distributed, in-memory environment.
- Use scripting language to enable distributed, in-memory time series analysis.
- Shuffle the data so that each time series is copied into the memory of a single computing node.
- Execute each time series on one thread of a node, and for each node execute the compiled script for each of its assigned time series.
- Automatically take code optimized for one type of machine to a different machines Users do not have to write code for this purpose.

## Neural network/machine learning modeling strategy nodes.

- Use the panel series neural network framework for generating features and training a neural network.
- Use a multistage (neural network/regression + time series) framework to create a forecasting methodology that combines signals from different types of models.
- Apply the multistage (neural network/regression + time series) framework to create a forecasting methodology that combines signals from different types of models.
- Address problems that have both time series characteristics and nonlinear relationships between dependent and independent variables using stacked model (neural network + time series) forecasting.

## Flexible override facility.

- Customize adjustments to filters or groups of time series defined by attributes such as location, brand, category, size, color, sentiment, quality, etc.
- Define override specifications by filter and time period(s) for all-time series contained within a filter.
- Disaggregate the override using the optimization model.

## Time Series & forecast viewers

- Use prebuilt time series attributes.
- Include prebuilt forecasting attributes.
- Include envelope plots for viewing multiple series.
- Use faceted filters on description statistics, model properties and statistics of fit.

## Time series analysis

- Access many statistical techniques to create highly accurate time-series models:
  - Autocorrelation and cross-correlation analysis.
  - Seasonal decomposition and adjustment analysis.
  - Count series analysis.
  - Diagnostic tests for seasonality, stationarity, intermittency and tentative ARMA order selection.
  - Fourier analysis for real and complex time series.
  - Discrete Hilbert transform.
  - Pseudo Wigner-Ville distribution.
  - ARIMA models (dynamic regression and transfer functions).
  - Exponential smoothing models.
  - Unobserved component models.
  - State-space models.
  - Intermittent demand models with Croston's method.
- Create and run models automatically:
  - Time series model generation & selection.
- Select input variables and events and optimize parameters.

## Derived attributes

- Create predefined sets of derived attributes, including:
  - Time series attributes (min, max, mean, missing, etc.).
  - Forecasting attributes (model properties, statistics of fit).
  - Demand Classification attributes.
  - Volume/Volatility attributes.
- Use faceted search in the viewer to locate and use different attributes

## External segmentation & demand classification

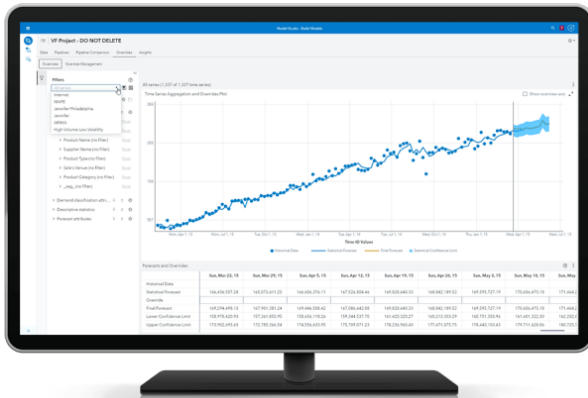
- Support for 1,000 segments.
- Utilize predefined segments in time series.
- Use a prebuilt segmentation template based on Demand Classification.

## Hierarchical reconciliation

- Create individual models and forecasts for each series in the hierarchy.
- Reconcile forecasts at multiple levels of the hierarchy.


# When is SAS Visual Forecasting the Best Option for Your Analytics Needs?

SAS® Visual Forecasting is the ideal tool when your forecasting process is manually intensive, Excel based, and very difficult to scale. An improved process with SAS frees up analysts to do analysis and work with business users rather than chasing data and spreadsheets. SAS® Visual Forecasting is also critical when your demand plans and other forecasts lack needed accuracy. Experience shows that a small improvement in forecast accuracy can have a disproportionate impact on business and financial results. Users will learn that SAS Visual Forecasting enables them to quickly develop accurate forecasts in an interactive and visual environment – saving time and creating value across the company.



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## The Power of the PARTNER

 **CT Global Solutions** is a strategic SAS® partner that helps turn your data into profits. A Gold SAS® alliance partner for 18 years, CT Global has demonstrated domain expertise in analytics, cost and profit management, financial management, demand planning and decision optimization. CT Global puts SAS® to work and amplifies its value to MAKE EVERY DECISION COUNT.

**SAS®** is the leader in analytics. Through innovative software and services, SAS empowers and inspires customers around the world to transform data into intelligence. SAS gives you THE POWER TO KNOW®. 92 of the top 100 companies on the 2018 Fortune Global 1000® use SAS customers, [see their stories here](#).



To talk with a CT Global about Demand Planning, please contact us at [info@ctglobalsolutions.com](mailto:info@ctglobalsolutions.com)

