

*Fri, May 25, 2012  
8:00am - 4:45pm*

**Boston, MA**

**Modeling  
& METRICS  
*in* SAP  
APO**



**One Day Add-on Workshop May 25, 2012.**  
**Presented by Mark Chockalingam Ph.D.**

# Overview

**S**AP APO is a powerful tool that can help you create better demand forecasts and finished goods plans, when properly implemented together with appropriate training for the planning professionals. APO DP facilitates creating a Statistical Model using a menu of statistical algorithms and automatic model selection procedures.

The main focus of the workshop is Statistical modeling and forecasting in SAP APO. The workshop will also cover data analysis and graphical review in APO.

Please bring your laptops with access to your APO DP environment so you can test a couple of models on the fly.

In this workshop, you will also learn the mechanics behind the Forecast Error metrics available in the System. Most of these error metrics are familiar to demand planners however, APO DP defines them with its own unique formula that is different from conventional calculations. So it is critical for planners to know how they are being calculated and how to use them to diagnose forecast quality.

Though APO DP engine creates six different error metrics, you only need to look at a couple of them to accurately assess the quality of the forecast. We illustrate with examples the calculations of MAPE, RMSE and MPE and the pros and cons of using each. We then explain the concept of Tracking Signal that is being used by the exponential smoothing models in APO. We also show you how to leverage the error measures to define and use Univariate Forecast Alerts. The final tool to compare among alternative forecast models is to use the Forecast Comparison Report.

On completion of the course, you will have better insights into the modeling methodology and also learn how to take advantage of the exception management practices built into APO DP. Learn how to leverage

- Forecasting exception alerts
- Forecast Model comparisons

## Who Should Attend?

Demand Planners, Forecast Analysts & Managers, Analysts in the Supply Chain, Director of IT, Inventory and Operations Planners, Product Managers, IT Business Analysts, IT Managers, APO support professionals, Director of ERP applications, Director of Supply chain applications, IT Business Managers

## This workshop will help you answer the following questions:

- *How do I leverage the power of the statistical models in APO DP?*
- *Are there products and customers that are better left to APO's automated modeling strategy?*
- *How do I adjust for Outliers and data shifts?*
- *Are there different modeling profiles I can leverage for a group of items?*
- *Is the MAPE calculated in APO DP really a MAPE?*
- *How do I assess the quality of my forecast?*
- *What is the difference between the various forecast error metrics in the software?*
- *Why are these measures different from the classic MAPE calculations?*
- *How do I know if my forecast is biased?*
- *How do I set up forecast alerts in APO DP?*
- *How does outlier correction methodology affect the computation of errors and model quality?*

## Outline

Statistical Modeling in APO DP – Forecast Profiles – Data Analysis and Graphical Review of Models

Holt Winter Models – Moving Average models – exponential smoothing – Automatic Models – Croston's Models for intermittent demand

Forecast Error Metrics – Model Diagnostics – MAPE – RMSE

Forecast Management through Exception – Univariate forecast alerts – Forecast Comparison Report.

# Agenda

## **8:15am - 10:15am** Statistical Modeling in APO DP

- Developing time series models in APO
- Forecast Profiles
- Completing data analysis in APO and graphical review of data
- Testing of alternate Models – Moving Averages, Smoothing, trend and seasonal models and mimicking the history approaches to develop forecasts.

## **10:15am** coffee break

## **10:30am - 12:15pm** Statistical Modeling continued

- Holt Winters Models
- Automatic Model Selection 1 - Strategy 50
- Automatic Model Selection 2 - Strategy 56
- Croston's Model - when to use and when not to use
- Forecast adjustments using APO DP.
- Impact of Outlier adjustments on Model
- Monitoring model performance and re-specification for improved results

## **12:15pm** Lunch

## **1:15pm - 3:00pm** Model Diagnostics

- Testing and measuring forecasting models in APO
- Adjustments and Exceptions Management
- Model Diagnostics through Forecast Error
- How to identify a biased Forecast?
- Which metric is the best indicator of Forecast quality?
- Forecast Errors
- Definition of Demand Forecast Errors
- Errors over time vs. Errors Across Products
- Demand Forecast Metrics Computations in APO
- Mechanics behind MAD, ET, MPE, MSE, MAPE and RMSE

## **3:00pm** coffee break

## **3:15pm - 4:45pm** Additional Considerations

- What is Tracking Signal?
- Comparison of alternative Forecast Models
- Forecast Modeling through Exception
- Univariate Forecast Alerts
- Forecast comparison Report
- Summary and Conclusion

# Credentials



## ABOUT US

Demand Planning, LLC is a consulting boutique comprised of seasoned experts with real-world supply chain experience and subject-matter expertise in demand forecasting, S&OP, Customer planning, and supply chain strategy.

We provide process and strategy consulting services to customers across a variety of industries: pharmaceuticals, CPG, High-Tech, Foods and Beverage, Quick Service Restaurants and Utilities.

Through our knowledge portal Demand Planning.Net, we offer a full menu of training programs through in-person and online courses in Demand Forecast Modeling, S&OP, Industry Forecasting, collaborative Forecasting using POS data.

Demand Planning.Net, also offers a variety of informational articles and downloadable calculation templates, and a unique Demand Planning discussion forum.



**MARK CHOCKALINGAM**  
Dr. Mark Chockalingam is the President and Founder of Demand Planning LLC

Dr. Mark Chockalingam is Managing Principal, Demand Planning, LLC. Mark specializes in demand forecasting, Sales and Operations Planning, Customer Planning and supply chain strategy. Mark has helped consulting clients in CPG, Pharmaceuticals, Chemicals and Retail to implement best practices to sharpen complex supply chains and help them be more customer-focused. He has worked on high profile projects with companies such as Abbott, FMC, Procter and Gamble, Au Bon Pain, Teva Pharmaceuticals, and Miller SAB, Wyeth etc.

Mark has a Ph. D. in Finance from Arizona State University, an MBA from the University of Toledo and is a member of the Institute of Chartered Accountants of India.

## SAMPLE LIST OF CLIENTS

Abbott Labs	Celanese AG	Hershey's	KNEX	Newell Rubbermaid	SAB Miller
AVON	Clorox	Hewlett Packard	Kraft Foods	Nomacorc	Sappi Fine Paper
Avery Dennison	Eastman Kodak	Honeywell	Labatt Foods	NSTAR Electric	Skyworks Solutions
Ahold USA	F. Schumaker	Hypertherm, Inc.	Labatt USA	NTN USA	Sunovion
BAE Systems	FMC Corporation	IMP Aerospace	Lifetime Products	Optos Inc.	Teva Pharmaceuticals
BASF	Glatfelter paper	John Deere	Limited Brands	OSRAM Sylvania	Texas Instruments
Cabot Creamery	Grace Foods	Johnson & Johnson	McCain Foods	Pacific Cycles	US Navy
Campbell Soup	Harley Davidson	Juhayana	New Balance	Pizza Hut	Pfizer

September 2011

## Modeling & Metrics in SAP APO

"Exceeded my expectations. I will take home in-valuable learning from this one day session.

Awesome!!! Can't say it loud enough. Perfect class for me, excellent timing."

*Sr Systems Analyst at NORDAM*

"Mark is a great teacher - great interaction, very knowledgeable. I learned a LOT!"

*Demand Planner at Novozymes*

"This workshop is the first external Demand Planning event that I could actually qualify as a training. That I have attended.

This workshop have given me a starting point to enhance my use of APO for my Demand Planning Forecasting."

*Demand Planner Manager at Yaskawa*

"Smaller class allowed for great interaction hugely helpful -looking forward to taking back to my work.

Allowed for much greater understanding of SAP and its modeling capabilities!"

*Demand Plan Analyst at Cargill*