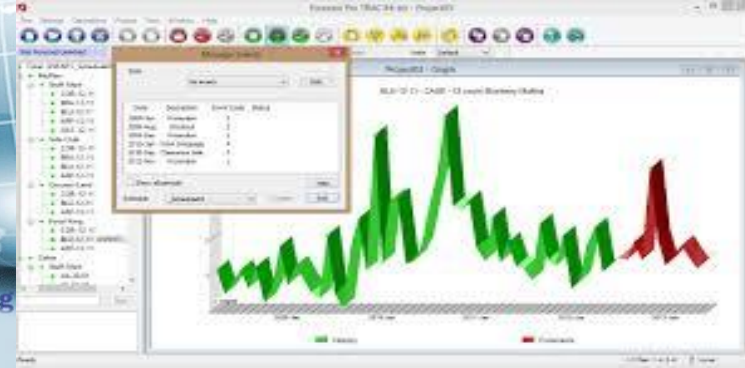




# Demand Planning LLC

**Best in Class Consulting & Solutions**


Sales Forecasting • S&OP • Big Data • Business Planning



# Demand Planning LLC

## Introduction To the Forecasting Solution offered by DPLLC

- 
- A light gray world map is visible in the background of the slide, showing the outlines of continents and countries.
- Subject Matter Experts in Planning with experience across multiple industries
    - Bring the best out of diverse industries
    - Outsourced Planning Services for SMB clients
  - SCM Process Consulting, Technology implementation, Process Audit, Re-Design and Support. Our Domain Expertise include
    - Demand Planning and Sales Forecasting
    - Sales & Operations planning (S&OP)
    - Inventory Optimization
    - Supply and Replenishment Planning

- 
- A light gray world map is visible in the background of the slide, showing the outlines of continents and countries.
- Our transformation projects included –
    - Usability Consulting to re-engineer SCM Solutions
    - Deep Expertise in SCM applications and many other advanced Planning tools
    - Built Custom Software for SMB Clients to meet their unique needs
  - Clients range from small companies to Fortune 500 Clients
  - Founded in 2004 with offices in the USA, India, China and UK.

# Partial List of Clients – F&B



# Partial List of Clients – Pharma and Chemicals



United Phosphorus Limited





# Partial List of Clients – Aerospace, Technology etc.



AVON



# Recent Client Projects

- 
- A faint, light gray world map is visible in the background of the slide, showing the outlines of continents and countries.
- Multi-National Industrial Client based out of Indiana
    - Process diagnostics to identify key building blocks required for a 'to be planning process'
    - Backed up the findings by data analytics
    - Final recommendations are blend of top down and bottom up approach
    - Continuous engagement to make 'rubber meets the road' happen. Roll Out 2017
  - Pharmaceutical Client based in Chicago
    - Global planning process to incorporate Point of Sales in different countries
    - Pilot for Turkey, India, China and Mexico
    - Global Rollout 2017

# Recent Client Projects

- 
- A faint, light gray world map is visible in the background of the slide, showing the outlines of continents and countries.
- Distribution company based in Puerto-Rico
    - Design a Customer based forecasting process
    - Customer Segmentation and Integration of Sales Planning
    - Roll-out a Monthly Demand Consensus and S&OP process in April 2016
    - On-going monthly process support
  
  - Industrial Client based in Chicago
    - Config Re-design and Model Tuning Roll-out 2012
    - Continued Process and system support
    - Exception Management and Demand Sensing Roll-out 2015



# Our Competencies

## Best Practices Consulting

- Demand Planning, and Key Account Planning
- Enable a Holistic Demand Consensus Process
- Integrated Sales & Operations Planning
- Process changes for Demand Planning, Replenishment and Distribution planning

## Supply Chain Optimization

- Order to Cash Process Transformation
- Inventory Optimization and Analytics
- ABC classification and production strategies
- Production Planning and Scheduling

## Training and Support

- Concepts Training on DP, SCM and S&OP
- DP Advanced Concepts – Statistical Modeling, LCP, Causal Modeling, Proportional Forecasting
- Monthly On-going Support



# Demand Planning LLC

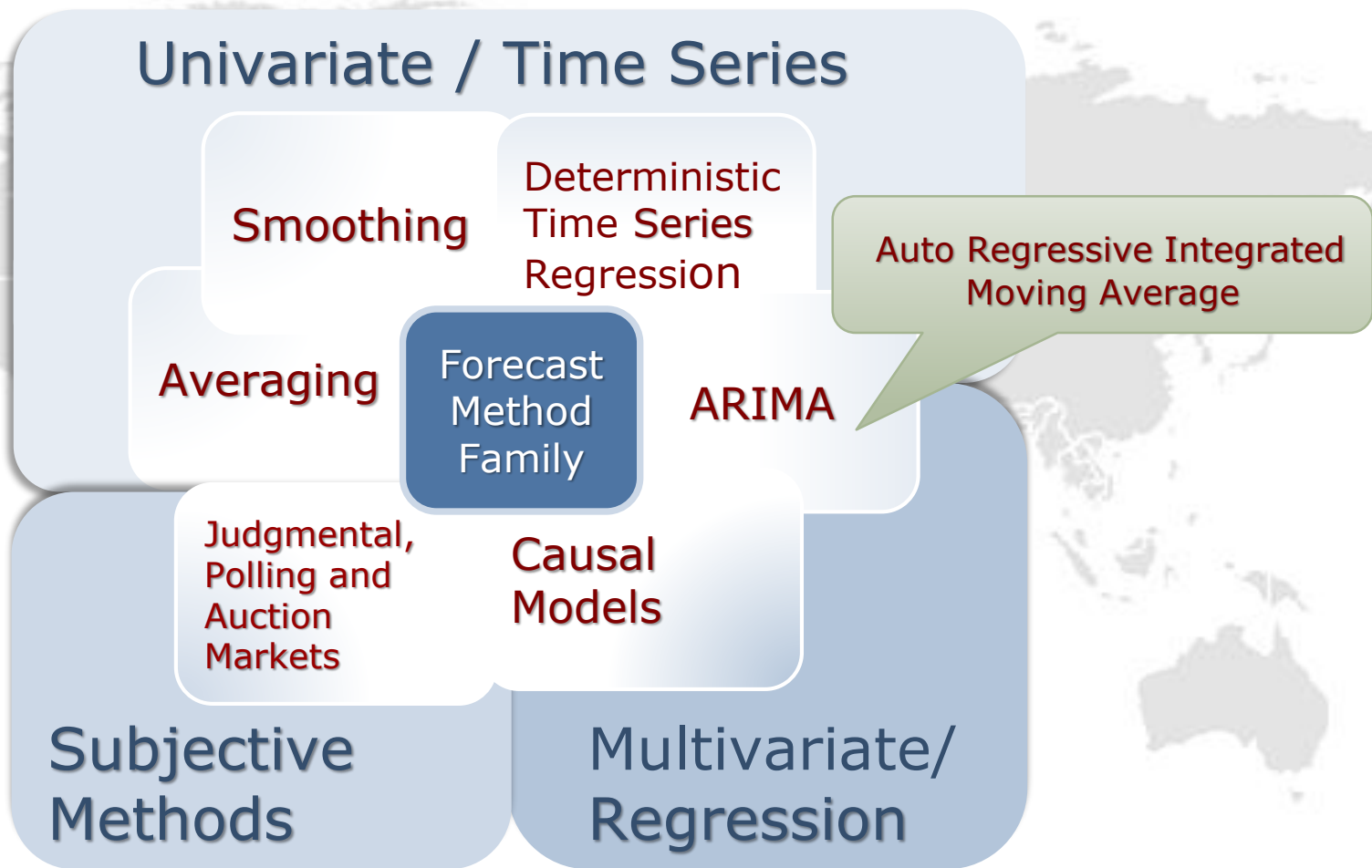
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## Forecasting Solution by Demand Planning LLC

# Family of Forecast Models



# Forecasting Methodologies

The presented solution has a variety of models and also has an expert selection algorithm that optimally picks the best model for a given set of data and assumptions.

## Expert Selection Techniques

- Simple Moving Averages
- Discrete data models (Poisson or negative binomial)
- Croston's Intermittent data model
- Exponential Smoothing – Alpha, Beta, Gamma and Phi
- Box-Jenkins

## Other techniques

- Event Modeling
- Forecasting by analogy
- Bass diffusion model

# Modeling

From quick overview of the presented solution we know about this different in-built models

Name of the model	Options	Details
Exponential Smoothing	Auto	
	Simple	
	Holt	
	Winters	
	Custom	
Box-Jenkins	Auto	
	Custom	
Discrete	For slow moving	
Intermittent	This is Croston's model	
Very Simple Models	Simple Moving Average	No Change
	Same as last year	Plus Increment
		Plus Percent
		Plus Delta Percent
		Plus Delta Increment
Fixed Forecast Value		
Fixed Value After		
Curve Fit	Auto	
	Straight Line	
	Quadratic	
	Exponential	
	Growth Curve	
Bass Diffusion	New Product Forecasting	
By Analogy	Looks Like	
Event Model	Based on events	



# Forecasting Solution Overview – Demo Data



Stat Forecast Unlocked    2012 1 through 2014 12 Holdout 0    Reset    Units

- ◆ X1
- ◆ X2
- ◆ X3
- ◆ X4
- ◆ G 150 \TOPDOWN
  - ◆ Z1
    - ◆ Z10
    - ◆ Z2
    - ◆ Z3
    - ◆ Z4
    - ◆ Z5
    - ◆ Z6
    - ◆ Z7
    - ◆ Z8
    - ◆ Z9
  - ◆ Z11
  - ◆ Z24
  - ◆ Z32

SKU\_Depot\_Level\_Actuals - Graph

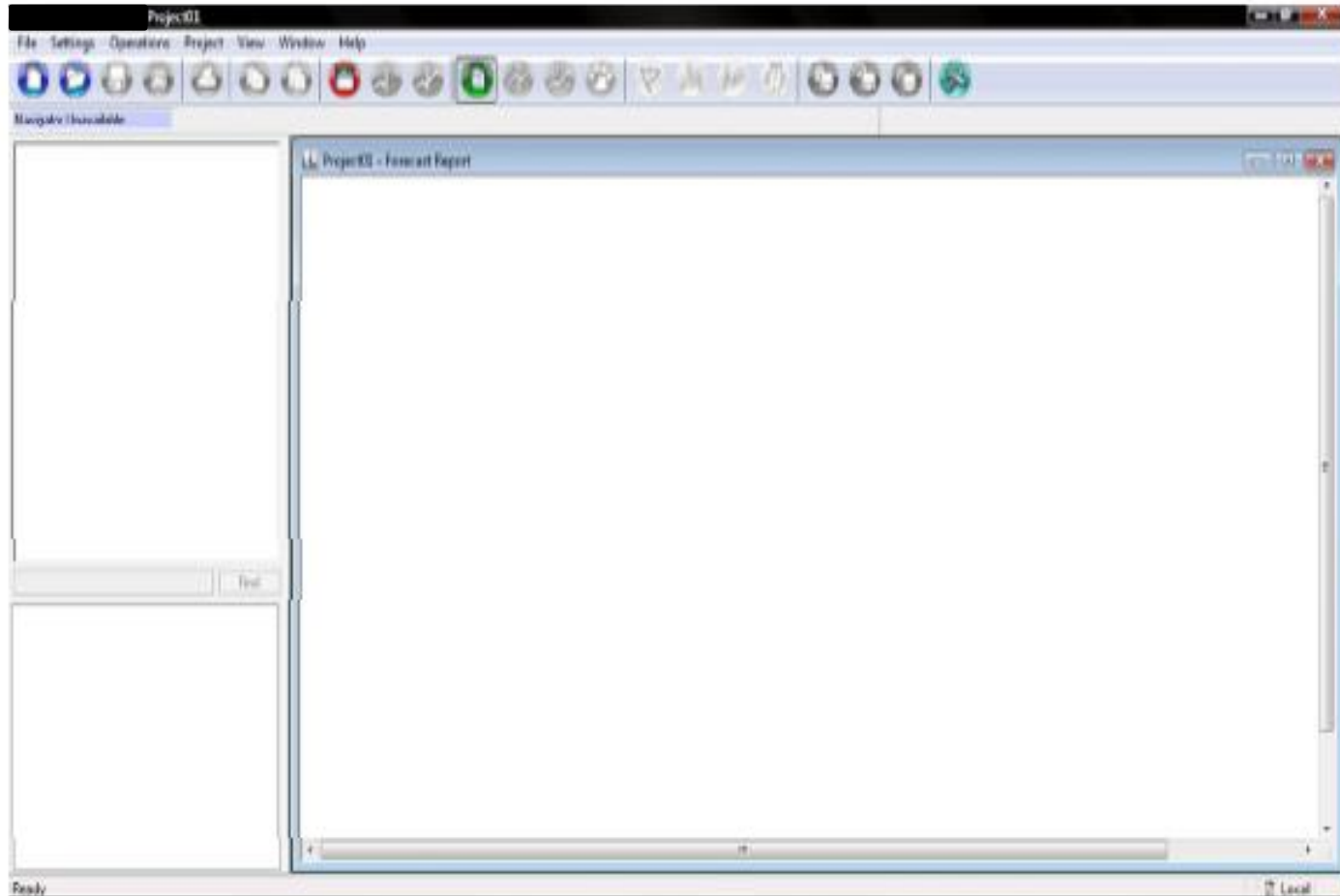
G 150 - destination\_sku

SKU\_Depot\_Level\_Actuals - Forecast Report

Date	2.5 Lower	Forecast	Quarterly	Annual	97.5 Upper
2015-Jan	288,357	357,601			426,846
2015-Feb	229,275	300,820			372,365
2015-Mar	230,663	304,437	962,858		378,211
2015-Apr	191,577	267,514			343,452
2015-May	202,932	280,973			359,014
2015-Jun	204,354	284,443	832,931		364,532
2015-Jul	175,745	257,832			339,918
2015-Aug	216,195	300,231			384,268
2015-Sep	228,158	314,100	872,163		400,042
2015-Oct	172,406	260,212			348,018

# User Interface – Demo 1

menu bar →  
toolbar →  
dialog bar →



Navigator →

← Forecast  
Report  
window

Hot List →

status bar →

# DEMO Data Complexity

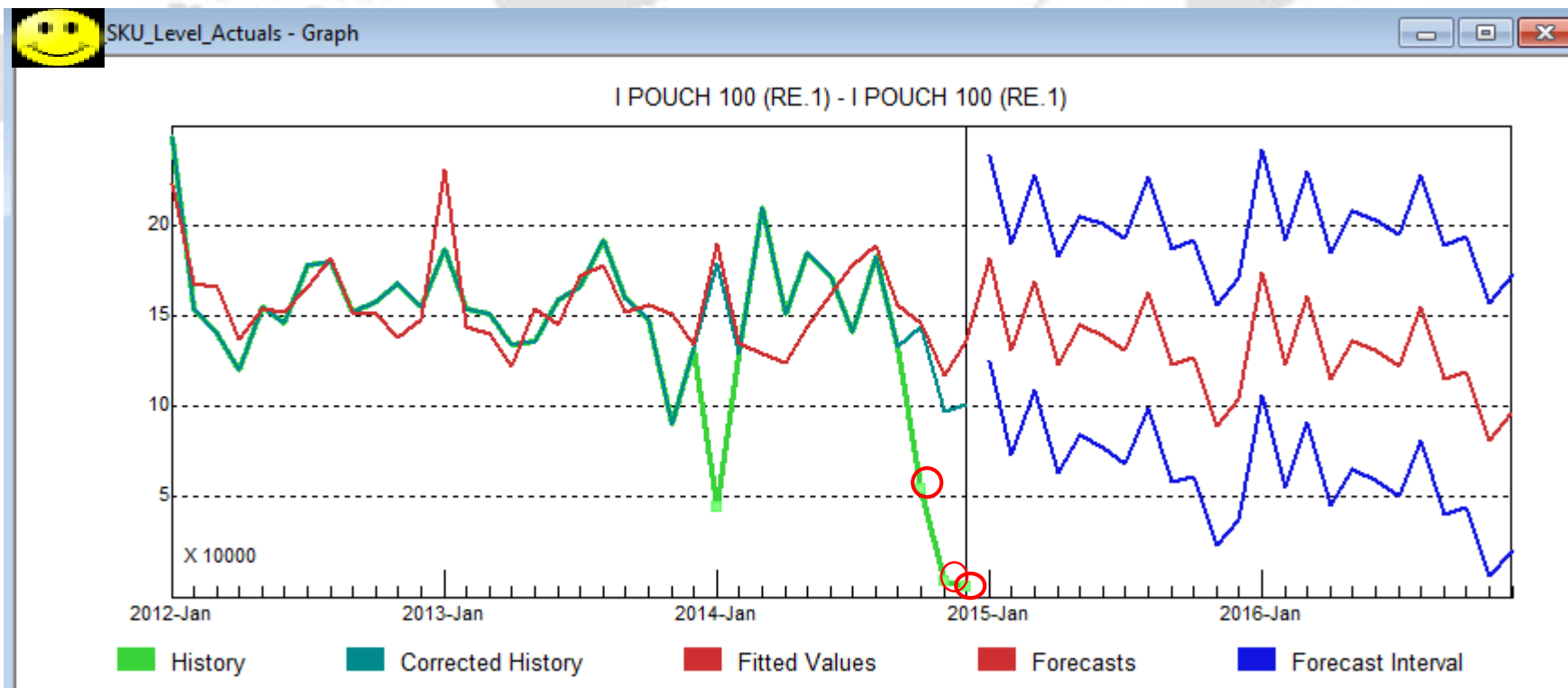
- SKUs have transitioned from one form to another
- Different weight and different package and perhaps different offering Prices
- Transition could have caused a “lull” in shipments with gaps in the data
- Data has to be intelligently mapped and tool settings have to be leveraged to identify these data anomalies.

# Stat Modeling Illustrations

Using the demo dataset

# Tuned stat model – Demo 2

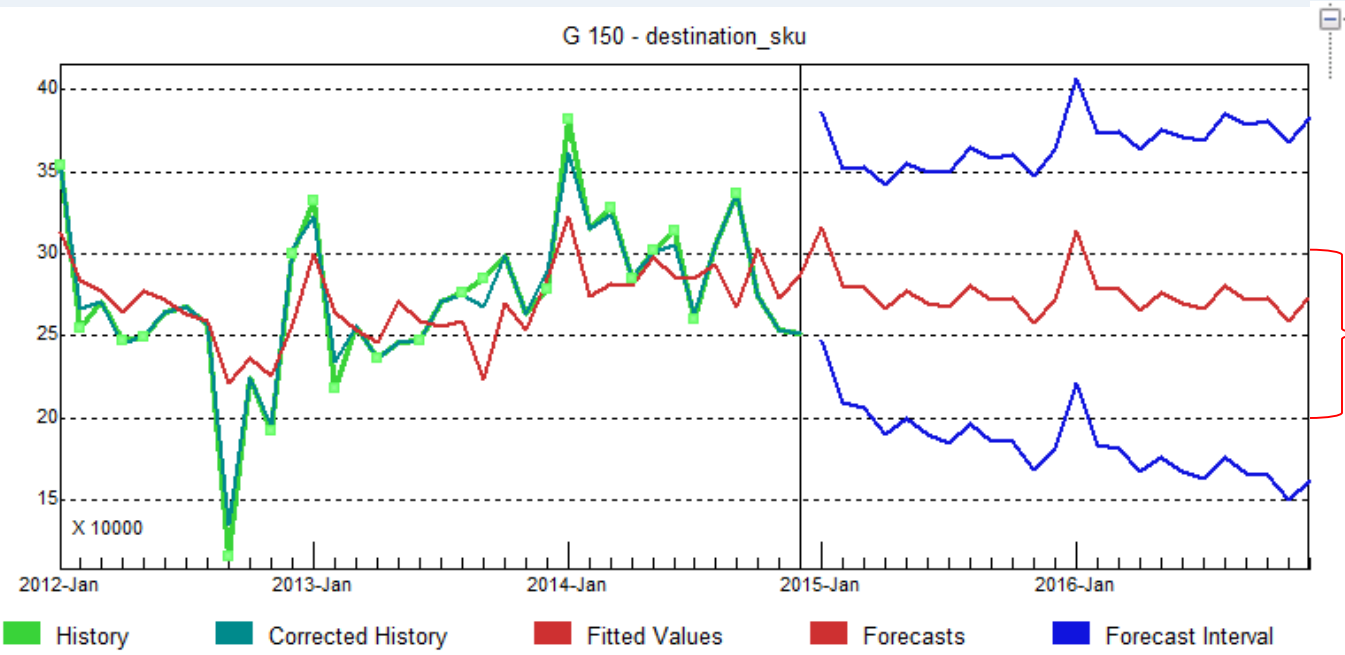
- Decreasing trend in recent past.
  - Exhibited by *low actuals for October, November and December 2014*
- Tweaked stat settings to come up with better level in future horizon



Custom model with linear trend and additive seasonality applied MAPE: 12.5%

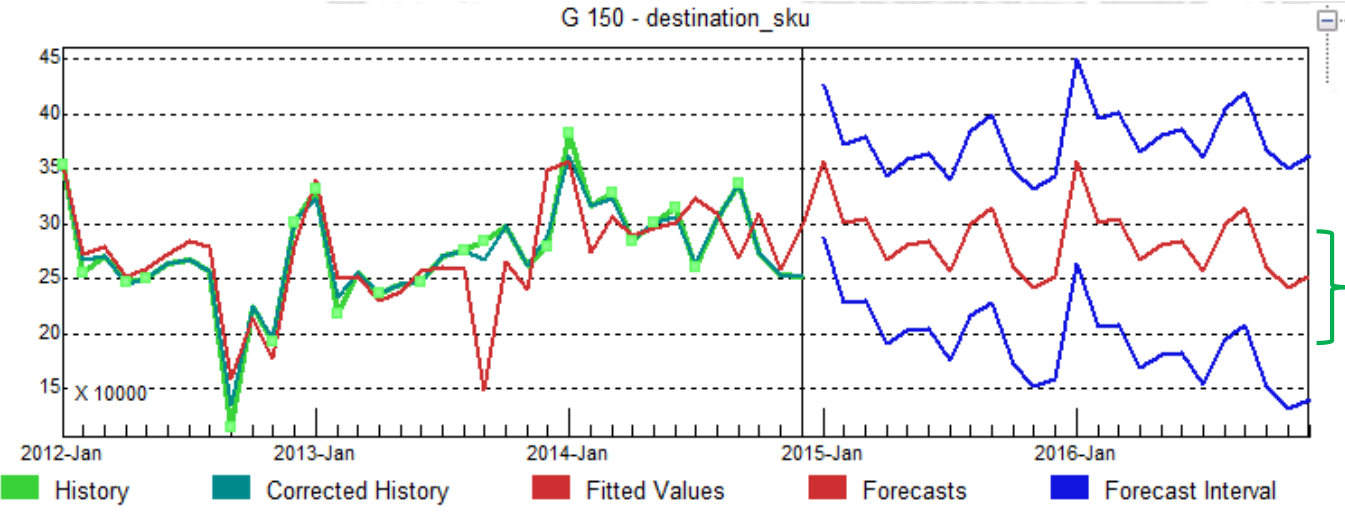


# Top down Vs. Bottom up



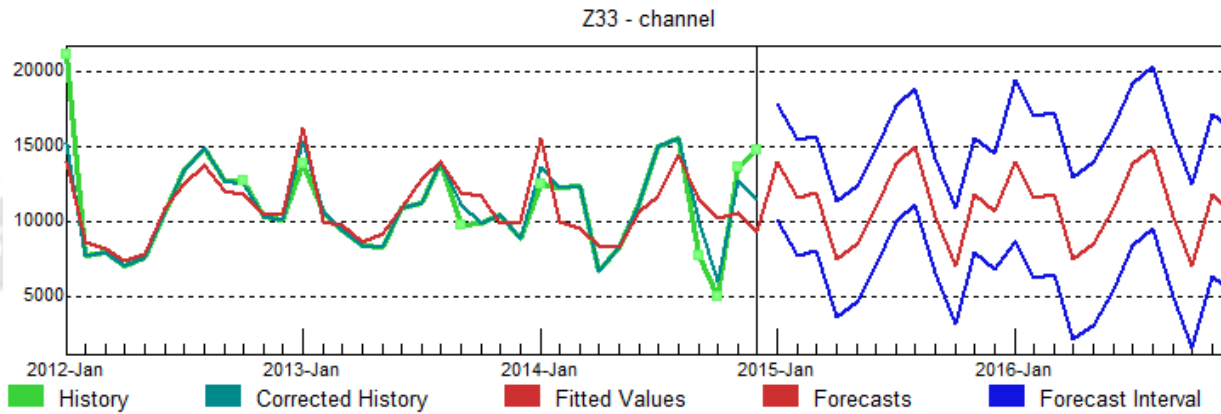
At SKU level:  
Model developed  
at depot level

Understating the  
seasonal peaks?



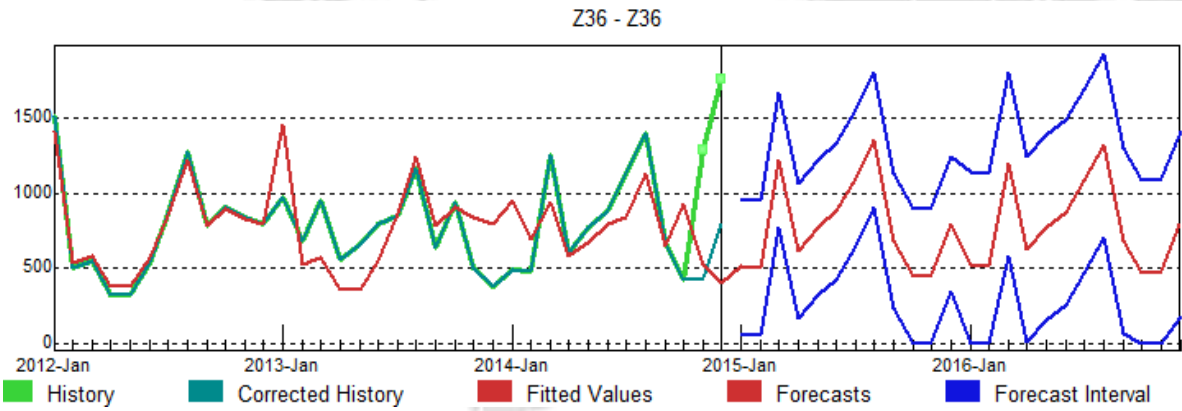
At SKU level: Model  
developed at SKU  
level reflecting the  
seasonal peaks

# X5 – H24 – Demo 3



At SKU- Channel level: Model developed at depot level

August Seasonality?

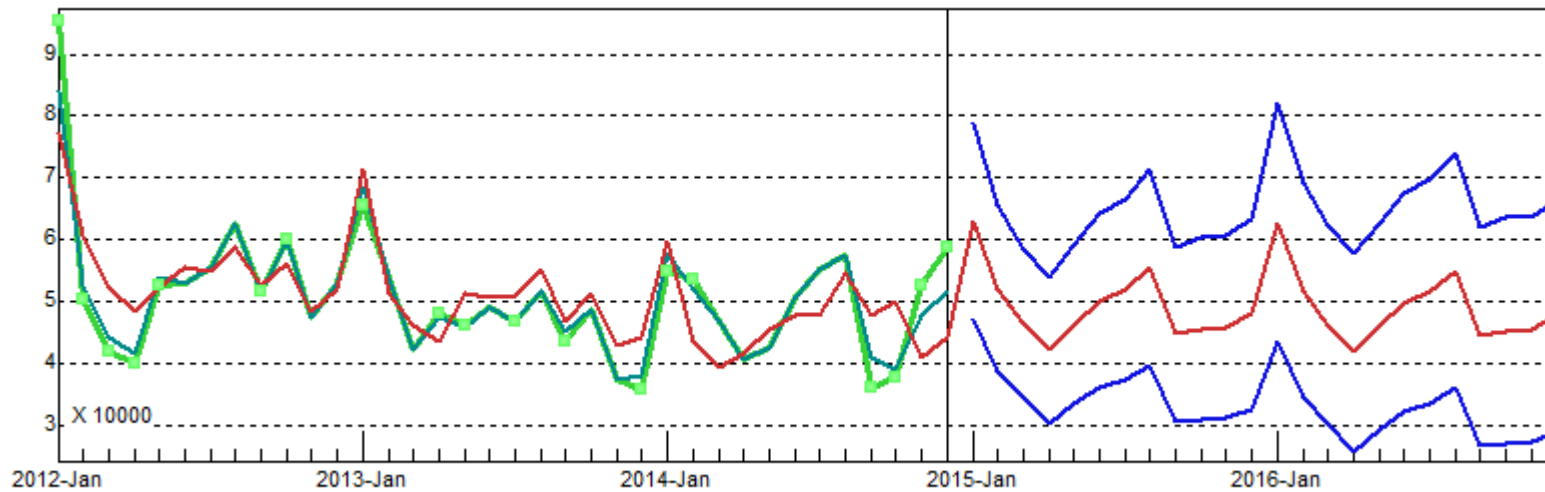


At SKU – Depot level: Model developed at depot level

March and August Peaks?

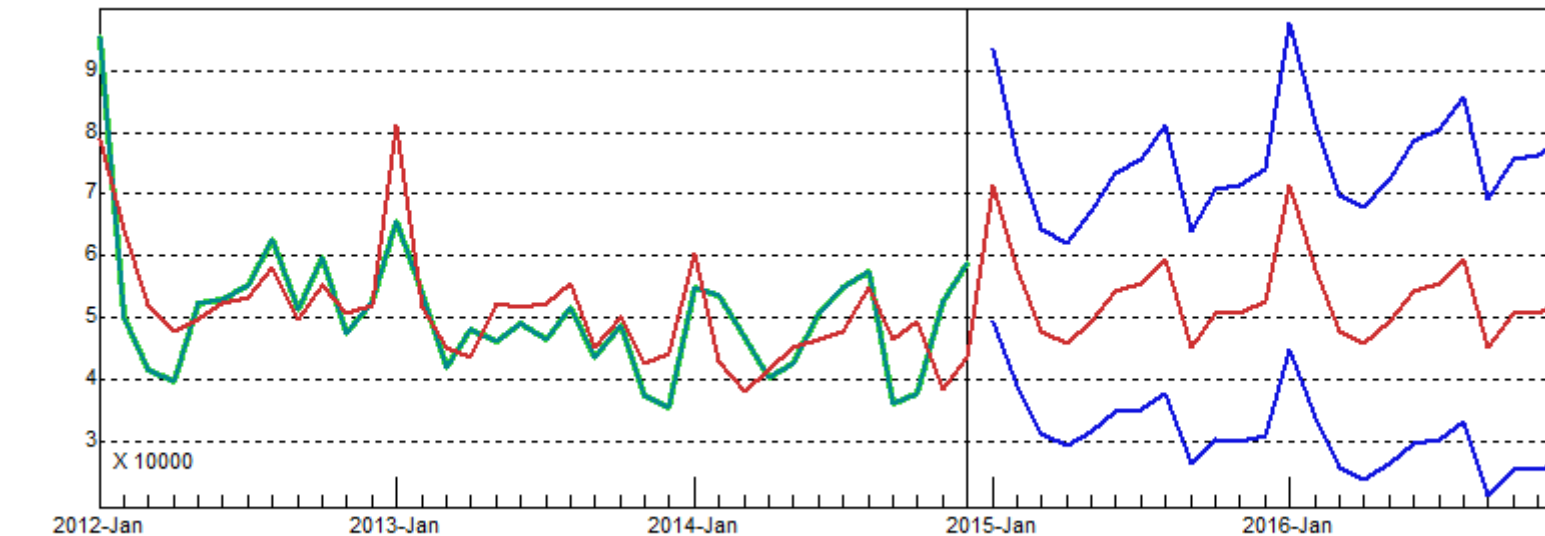
# SKU Level vs. SKU – Depot level

H 24 - destination\_sku



Depot level forecast, viewing at SKU level  
MAPE:  
9.5%

H 24 - H 24



SKU level forecast, MAPE:  
12.6%

■ History    
 ■ Corrected History    
 ■ Fitted Values    
 ■ Forecasts    
 ■ Forecast Interval

# Implementation Approach

Assuming Good Data and personnel  
Availability

# Implementation Approach

- ✓ 4-6 Weeks process – Diagnostic, Tool implementation, User Training and roll out
- ✓ DPLLC will set up the structure, data files, models and reports
- ✓ Tune the models to get best STAT forecasts
- ✓ Set-up the Projects
- ✓ Training for client planners
- ✓ On-going support for the tool, models, forecasts at an additional minimal cost
- ✓ Client Resources
  - Needed for Diagnostics and Data analysis through several interview sessions and phone calls
  - Training Day



# Why Implement the presented Solution



- Best in class statistical algorithms
- Flexibility to accommodate a variety of data and business situations.
- Exception reports for
  - Forecast Reporting in S&OP
  - Error reports for Performance measurement
  - Delta reports to measure forecast stability
- Affordable and easy to use
  - Does not need an army to implement it
  - With good data, it can be implemented in a short time

# Why Demand Planning LLC?

- Leveraging the tool for an Efficient Process!
- Leveraging the tool
  - Best Practices in data analysis
  - Subject Matter Experts in Demand Management
  - Training on stat algorithms
  - User features for exception management
- Efficient Process
  - A tool without a process is of little value
  - Our value added service will be bringing the flavors of your business into the tool
  - This will help your team to operate in a monthly cycle
  - Templates to share with stake holders



# Testimonials

# Textile Industry client



"Your objective diagnosis & suggestions have been a titanic help. I look forward to us working with you again after some fundamentals are in place. It's good that these improvements are occurring now because they provide me a chance to learn through practical experience. Also, your Demand Planning Net forums are tremendously helpful because it's like talking to an interactive textbook."

- Headquartered in California, US
- Makes Towels and Linens
- Project Done - Demand & S&OP Diagnostics

- Jeyur Patel, Group Vice President

# Industrial Controls Client

A faint world map is visible in the background of the slide.

**Honeywell**

"Demand Planning LLC has an amazing ability to morph into employees of the company and tackle challenges head on. As a team they delivered on their commitments and institutionalized a new Statistical forecast process that fit within the business constraints. Demand Planning LLC has an uncanny ability to spot problems before they occur and gave world class training in terms of demand planning and statistical forecasting. A Must Hire if you are struggling with end to end SAP/APO Statistical forecasting processes & methods."

- Headquartered in New Jersey, US
- Into multiple industries and product lines
- Project Done – Demand Planning in SAP APO & Demand Process Improvement

- Project Leader



# Industrial Controls Client

A light gray world map is visible in the background of the slide.

**Honeywell**

"I like the facts of the system, processes reconfiguration and redesign, supported by the hands-on training. Secondly, benchmarking against best practices in the industry is really helpful to gauge our processes against. I liked the outcome of the training for my business and how it expanded the capabilities of my team; Great job, guys! "

- Headquartered in New Jersey, US
- Into multiple industries and product lines
- Project Done – Demand Planning in SAP APO & Demand Process Improvement

- Demand Manager

# Food and Beverage Client



"Mark & his team from Demand Planning LLC did a phenomenal job when they came onsite to help us with our statistical model tuning in SAP. We are now implementing the stat models in our forecasting process, and on our way to increased forecast accuracy. Additionally, we did have some SAP APO system limitations and Mark still managed to find a work around solution to enable the lifecycle planning process for our company. He is an expert in this field, and very resourceful. Our company will be using him for future logistics projects due to the great success we have had!"

- Headquartered in California, US
- US division of Swiss confectioner Lindt and Sprungli
- Project Done – Statistical Model Tuning in SAP APO

- Sales Forecast Analyst

# Recreation Products Client



"Demand Planning LLC provided a quick assessment of our SAP APO forecasting and modeling environment during the summer of 2012. Mark Chockalingam of Demand Planning LLC was able to pin-point several factors that were affecting our system performance. He provided some valuable diagnostic findings as take away for our next implementation in another region. Consulting provided by Demand Planning LLC provided a solid baseline for the team to further improve our process. Mark fine-tuned and implemented a seasonal model for our business. This reduced the number of System alerts by almost 60% and improved the quality of the baseline statistical forecasts across the entire business. Mark was able to engage the entire team of planners in this effort and get them excited about statistical modeling.

Coleman was quite pleased with the results from this project and the value received for the investment. We look forward to working with them on future SAP demand planning projects whenever the need arises."

- Jay Schroeder, Senior  
Director S&OP

- Headquartered in Colorado, US
- Specializes in Camping Gear
- Project Done – SAP APO DP Diagnostics

# Food & Consumer products Client



"Mark Chockalingam, President of Demand Planning LLC, provided a quick diagnostic of our Sales and Operations Planning process and delivered a cross- functional one day facilitation workshop to key stakeholders including Marketing, Sales , Supply Chain, Operations and IT. The participants' evaluation indicated that the workshop was informative and provided very good concepts that can be developed for action.

Using the data analysis and the interviews, the diagnostic highlighted the major issues in our process and provided us with recommendations for improving our forecasting accuracy. The senior management has implemented several of Mark's recommendations in making the process changes.

We are very pleased with the value received from this investment."

- Headquartered in Jamaica
- Manufacturer/Distributor of foods and consumer products
- Project Done – S&OP Process

- Naomi Holness, Sr. HR  
Business Partner – Domestic  
foods

# More Testimonials

- Please visit these links for more testimonials-

- [http://demandplanning.net/testimonials\\_clients.htm](http://demandplanning.net/testimonials_clients.htm)
- <http://demandplanning.net/testimonials.htm>



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# Discussion







# Appendix



# Client specific Case Studies

# Case Study -1 S&OP Process Re-design for Global Aerospace Manufacturing and Repair Company

- Process Challenges-
  - Drop- ins
  - Cuts and Backorders
  - Inventory Availability Issues
  - Customer Service Issues
  - Significant (unpredicted) volatility in manufacturing planning and deployment
  - The organization is on a reactionary mode, chasing product shorts and excess inventory!
- Planning Challenges-
  - Lack of an integrated planning process
  - Lack of streamlined communication
- Bottom Line Effects –
  - Customer Service Issues
  - Raw material availability
  - Obsolescence and excess inventory
  - Supply chain expediting costs

# Case Study 1 continued.....

- DPLLC designed a monthly process to engage Sales, Marketing and the Supply Chain
- Developed a Score-card to measure
  - Accuracy with Drill-downs on major issues
  - Fill Rates
  - Inventory
  - Sales to Targets
  - Schedule Adherence
- Recommendations to improve the DP models – project was limited to S&OP design
- Monthly Review of
  - Demand and Supply Balancing
  - Market opportunities
  - Supply challenges
  - Post-mortem and root cause analysis for major supply issues.

## Case Study – 2 Demand Modeling and Planning Redesign for Industrial Controls company with Global operations

- Industrial Controls Company with Global operations
- Project Summary –
  - Goal was to improve the quality of the demand plans through Sales and Planning engagement and Statistical models
  - The Project revolved around three building blocks;
    - process diagnostics and recommendations to understand the lay of the land,
    - exception planning to focus on the key 20% of the products which make up 80% of the revenue
    - Enable the many functionalities of SAP APO to improve planner productivity

# Case Study 2 continued.....

- Broad overview of problems –
  - Only one statistical model used for 10,000+ SKU's.
  - A generic model was run at the lowest level in weekly buckets producing the ubiquitous straight line.
  - Demand Planning was getting Sales inputs in monthly buckets while the Planning platform allowed only weekly buckets
  - Planners went through an elaborate excel process to reallocate and develop weekly plans.
  - Process was severely handicapped by system limitations

# Case Study 2 continued.....

- **Process Work by DPLLC-**

- Sales Alignment with Planners
- Product Portfolio Management including SKU rationalization
- Leveraged the master data structure to incorporate the segmentation logic so planners can use this as a selection criterion. This enabled planning by exception
- Stat Model Tuning: Run both weekly and monthly models, weekly for the better splits and monthly which will project accurate long-term patterns.

- **Final Deliverables –**

- Aligned the business process to solution requirements,
- Revised planning books to conform to DP Consensus Process which provided more clarity and reduced clutter, facilitated consensus and reconciliation
- Fined-tuned Statistical models
- Provided capability to model in monthly buckets
- Provided training to customize the models and track the forecast quality using various forecast metrics available in APO
- Introduced new key figures to evaluate quality of stat model and leverage all types of stat models
- Right level of custom stat models and related sequential back ground jobs



## Case Study- 3 Demand Process Redesign and system re-implementation for Health Food division of a major Food company

- Produces Middle Eastern-style food products, including hummus, eggplant dip, baba ghanoush, and Mediterranean salsa
- Shortcomings-
  - Short planning horizon
  - Flat lined forecasts for long-term planning
  - Inability to create decent statistical baselines
  - Statistical models were not reflective of trends and seasonality
- Project Objectives-
  - Leverage additional tool functionality for effective demand planning in weekly buckets for monthly cycle
  - Enable exception management capabilities in SAP APO
  - Provide long-term plans for Sales and Customer engagement
  - Deliver content reflective of both business and tool scenarios

# Case Study 3 continued.....

- **This project was a major re-design and re-implementation**
  1. **Diagnostic-**
    - Understand current consensus process
    - Diagnostic of the Data flow from ERP systems into the APS
    - Information flow
    - Re-alignment of History
    - CVC analysis and rebuild
  2. **Statistical Modeling-**
    - Segmentation
    - Exception Planning
    - Master Forecast Profiles
    - Custom Statistical Modeling
    - Demand Planner Training
  3. **Process Roll-out**
    - Consensus Process based on Exceptions
    - Implementation of Demand Sensing signals in SAP APO through intelligent macros
    - Early warning signals through Demand Sensing
    - Process Sequencing and Monthly calendar