Demand Management at SAP: Going beyond Statistics

ASUG Fall Focus
Tod Stenger
09/26/2013
Agenda

Demand Management Overview
Demand Signal Management
APO Demand Planning
Demand Sensing
Roadmap and Wrap-Up
Demand Management Overview
Opportunities limited due to unavailability of a holistic Demand Management.

- Limited demand signal visibility
- Poor forecast performance
- Too Much Aggregation, Not Timely
- Not Automated, Trial & Error, Wrong Level of Aggregation
- Disparate Collaboration, Lack of Context
- Lack of internal collaboration
- Unable to understand impacts to performance
- Disconnected from S&OP
Market Challenges Further Limit Opportunity

Focus on Demand Driven processes | Inability to spot market and consumer trends

Disjointed communication, planning and execution processes | Data is exploding, SKU Proliferation

| 12% | Lower order fulfillment lead time for organizations that are driven by comprehensive demand signals
Source: SAP Performance Benchmarking

| 23% | Lower inventory carrying costs where forecasts are dynamic and updated frequently
Source: SAP Performance Benchmarking

| 20% | Higher availability of real-time/predictive insights with big data solution approach
Source: SAP Performance Benchmarking
SAP is Rethinking the Supply Chain
SAP Supply Chain Management Solution Strategy

Results Focused
Not just focused on forecast accuracy

Shift from Statistics
Leverage demand planners as co-ordinaters and analysts
Automated statistical models

Collaboration
Provide highly collaborative processes and accessibility
Integrate information from multiple organizations

Usability
Easily identify problems
Easy consumption of big data

Reach beyond the enterprise
Use external demand signals as part of the demand management process
How to Achieve – Technology View

**In-Memory**
Instantaneous access to information, decisions on the fly

**Big Data**
Data volume for enterprise applications is doubling every 18 months

**Cloud**
Address time to value, deployment option, collaboration and networking

**Mobility**
Action anywhere on any device, continuous collaboration & decisions making

**Analysis**
Moving from optimization to analysis centric, past to predictive

**Socially Networked**
Social networks customer and ecosystem sentiments, communities increasingly influence access knowledge sharing & collaboration
SAP Supply Chain Management Solutions

Supply Chain Monitoring

Sales & Operations Business Planning
- Sales & Operations Planning
- Inventory & Service Level Optimization
- Supply Chain Scenario Planning

Demand Driven Supply Chain
- Demand Management
- Collaborative Response Management
- Manufacturing & Supply Planning

Logistics & Order Fulfillment
- Transportation Management
- Warehouse Management
- Track & Trace

Service Supply Chain
- Service Parts Management
Capture Demand Signals
Incorporate external and internal information to feed demand planning

Analyze Demand
Identify problems and focus efforts

Demand Response
Feed downstream processes to deliver results

Sense Demand
Daily forecasting based on pattern recognition

Collaborative Demand Planning
Integrate demand signals and generate a consensus demand plan
Capture Demand signals

**Downstream Demand Capture**

- Minimum latency processing of Demand Signals, to capture demand intelligence at the shelf while the information is fresh and actionable.

**Intelligent Demand Mapping**

- Fast intelligent rules-based cleansing and harmonization of data.

**Incorporate Multiple Demand Signals**

- Incorporation of all relevant sources of information: internal and external demand signals, syndicated data, and web sentiment

**Connect with Partners**

- Rich and growing set of adapters for partners and retailer data acquisition

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**Layers of Demand Capture**

- Manufacturer
- Wholesale Level
- Retail Level
- Consumer Level

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Analyze Demand

Focus on areas of need
- Poor statistical or judgemental forecast (top 10 list)
- High demand variability
- Segmentation (ABC/XYZ) for further analysis

Real time reporting
- Forecast accuracy

Expand to downstream demand analysis
- Real-time insights into down-stream demand and market development

Incorporate Predictive Analytics
- Predictive analytics to improve performance by pro-actively avoiding stock-outs and lost sales
Sense Demand

Move to more granular forecasting

- Daily level forecasts on shorter horizons (4-6 weeks)

Pattern based forecasting

- Incorporate short term demand patterns into the forecast
- Adjust automatically for forecast bias

Impact downstream processes

- Drive improved deployment and short-term distribution planning
- Feed inventory planning process
Collaborative Demand Planning

**Consolidate and collaborate**
- Consolidate internal and external demand streams with statistical forecasting to enhance the demand plan
- Provides collaboration tools to enable all relevant enterprise areas to reach a consensus demand plan

**Robust Statistics**
- Comprehensive statistical models
- Automatic model selection routines
- Outlier and Event tools

**Adjust and document**
- Multiple avenues for adjusting the demand plan
- Notes functionality to document assumptions and decisions
Demand Response

**Insight to Action**

- Make insights from Demand Management actionable
- Drive improved Inventory Levels
- Drive improved Customer Service Levels
- Move to Demand Pull strategies

**Feed Downstream Processes**

- Enterprise Inventory Optimization (reduce inventory)
- Deployment (right inventory, improve customer service)
- Kitting and packaging (reduce inventory)
- Short term production planning (reduce inventory)
- Vendor Managed Inventory

**Feed Upstream Processes**

- Channel Management (improve customer service)
- Promotion Planning (focus promotions at the right markets)
- S&OP
- Sales planning (focus sales efforts)
A good forecast leads, through either direct recommendations or informal conversation, to robust actions — actions that will be worth taking, no matter how the realities of the future unfold.
SAP Components for Demand Management (Simplified)

Long Term

S&OP

Forecast

S&OP Demand Plan

APO

Medium Term

Forecast

Forecast

Short Term

Downstream demand signals

Social Media

Demand Signal Mgmt

Master Data, Delivered orders

Forecast adjustments

Enterprise Demand Sensing

Master Data, Delivered orders, Open orders

Short-Term Forecast

ECC

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Demand Signal Management
SAP DSiM powered by HANA

How can Demand Signal Management be a game changer in your business?

SAP’s Demand Signal Management supports...

- Capture Actual Demand Signals in near Real Time
- Quickly Spot Market Trends and Deviations
- Respond Faster to Demand Fluctuations

Leverages high speed in-memory data base

Key Business benefits

- Near Real time insights down to retail store level
- Increase sales
- Gain Market share
- Decrease costs by market and demand insight
- Performance improvements in planning & execution
SAP Demand Signal Management is Relevant for Your Line of Business

Sales

- Daily visibility into sales performance on store level
- Increase profitability, revenue and market success
- Reduce loss of sales
- Increase promotion and price effectiveness

Supply Chain

- Improve forecast accuracy
- Reduce out-of-stock during promotions
- Reduce transit and warehousing costs

Marketing

- Reduce failure of new product launches
- Defend your customer base
- Improve market insights by using holistic information of the market
- Adapt your marketing strategies on newly defined segments
Be first to market with products consumers want:
High impact strategies supported by SAP DSiM

- Track daily store sales, price and promotions for new products
- Track stock availability daily
- Match consumer sentiments to sales

- Monitor market trends, market size
- Compare market units
- Analyse competitor daily with POS
- Identify root causes for market share declines (e.g. new competitor product)
Maximize brand and promotion investments:
High impact Strategies supported by SAP DSiM

- More precise forecasts using demand data (direct POS, syndicated, internal)
- Enables customers to optimize promotion tactics (e.g. Analyze historic sales and promotions)
- Ensure performance of the participating stores and products while the promotion is still running
- Ensure On-Shelf-Availability during promotion execution
- Insights in promotion performance with sell-in and sell-out data
**Optimize supply to meet demand:**
High impact Strategies supported by SAP DSiM

<table>
<thead>
<tr>
<th>Out of Stock Reduction</th>
<th>Sales Force Optimization</th>
<th>Forecast Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>■ Quickly identify stores with out-of-stock and take mitigating action</td>
<td>■ Use POS insights for visit planning</td>
<td>■ Increase forecast accuracy by including high granular POS data in the Demand Planning process</td>
</tr>
<tr>
<td>■ Monitor Inventory levels across your network and reduce carrying costs</td>
<td>■ Prioritize store visits on DSiM insights (e.g. lost sales)</td>
<td></td>
</tr>
<tr>
<td>■ Benchmark stores, store groups, regions, to allocate sales force capacity in the right way</td>
<td></td>
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</tbody>
</table>

- *Out of Stock Reduction*
- *Sales Force Optimization*
- *Forecast Accuracy*
Demo – Demand Signal Management
APO Demand Planning
Demand Management: Collaborative Demand Planning

Advanced baseline forecast generation, best fit approaches and manage demand allocation
Demo – POS Data in APO
Current APO Roadmap – Demand Planning related

Solution Enhancements

• With EhP2 (2012)
  – Planner’s Home Page
  – Alert monitoring re-design
  – ABC/XYZ analysis (segmentation)
  – Outliers and Events

• With EhP3 (2013)
  – Side Panels and Collaboration enhancement

• Excel based planning interface (TBD)
  – Spreadsheet Interface for Planning (Design thinking project)

• With EhP4 (Planned)
  – Demand Planning (re-design)
  – Supply Network Planning (re-design)
Use Side Panel Technology for delivering additional context related data and information

**Solution Enhancements**
- Show additional data like master data detail information, notes, document flow, KPIs,…

**Key Benefits**
- Minimal configuration for existing and new transactions
- Provide planner with additional necessary data and information
Enterprise Demand Sensing
EDS identifies optimal blend of inputs to calculate demand

**Adjustments**
- Open order correction
- Predicted future bias correction

**Disaggregation**
- Forecast patterns
- Shipment patterns
- Open order patterns

**Output**
- Optimal blend by lag patterns

Algorithm determines optimal weighting with pattern recognition of each input to determine sensed demand

- Daily outputs for execution systems
- Aggregated weekly or monthly values for planning and reporting
- Pattern Prediction
- Back-feed for improved SC Planning
High level Forecasts are of limited use in Execution

Weekly forecast of 40 units

East Coast DC

Daily Replenishment Schedule w/ updated forecast

West Coast DC

Weekly forecast of 40 units

East Daily Demand Trend

West Daily Demand Trend

Mon   Tue   Wed   Thur   Fri
Demand Sensing Captures Buying Patterns
Improves Deployment, Feeds Information for Improvement

Weekly forecast of 40 units

East Coast DC

West Coast DC

Sales trends are picked up with Demand Sensing and updates short term forecast.
Integration With ERP Systems – and Processes

- Short-term operational forecast populated into your Advanced Planning System to plan:
  - Kitting / Packing / Finishing
  - Deployment Planning
  - Order Fulfillment Prep
SAP Enterprise Demand Sensing (EDS™)

...brings significant benefits!

What does it do? | What does that bring me? | Why do I care?

- Intelligent, pattern based forecast disaggregation
- Incorporate current and additional supply chain information: recent orders, trends, other information
- Adjust for forecast bias using self-tuning algorithms
SAP Enterprise Demand Sensing (EDS™)
...brings significant benefits!

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- Intelligent, pattern based forecast disaggregation
- Incorporate current and additional supply chain information: recent orders, trends, other information
- Adjust for forecast bias using self-tuning algorithms

- Significantly improved forecast accuracy
- Responsive demand-driven supply chain
SAP Enterprise Demand Sensing (EDS™)
...brings significant benefits!

What does it do? What does that bring me? Why do I care?

- Intelligent, pattern based forecast disaggregation
  - Significantly improved forecast accuracy
  - Responsive demand-driven supply chain

- Incorporate current and additional supply chain information, recent orders, trends, other information
  - Higher customer service levels
  - Lower expediting costs and effort
  - Lower Inventory levels

- Adjust for forecast bias using self-tuning algorithms
User-centered design focuses on simplicity and productivity, not features and functions

Supply chain centered architecture
Unified view of results from different analytic apps (no portals)
Action-oriented design around users’ needs

Ease scenario creation and reapplication by capturing “deltas”
Allow user to filter and configure workspace
Cross-browser support

Ease of editing inputs and outputs
Quick editing for advanced users, option for “wizards” to guide less advanced users

Embed data visualization and collaboration in context of analysis
Highlight significant changes in output data
Welcome back, Eric! Please select a Supply Chain to begin.

My Recent Activity

<table>
<thead>
<tr>
<th>Name</th>
<th>Type</th>
<th>View</th>
<th>Last Viewed</th>
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<tbody>
<tr>
<td>EDS Demonstration</td>
<td>Supply Chain</td>
<td>Demand Sensing</td>
<td>Jun 13, 2013 at 12:58 PM</td>
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<tr>
<td>EDS Demonstration</td>
<td>Supply Chain</td>
<td>Forecast Accuracy</td>
<td>Jun 11, 2013 at 03:02 PM</td>
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<td>Supply Chain</td>
<td>Forecast Accuracy</td>
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Notifications

- [Link](https://web-ui.cloudlive.smartops.com/sops/SolutionSuiteUi.html#home)
### Demand Stream

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<tr>
<th>Item</th>
<th>Location</th>
<th>Customer</th>
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<tbody>
<tr>
<td>Bicycles</td>
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<td>Bicycles</td>
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<td>Candy</td>
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### Inputs

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<tr>
<th>Sales</th>
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### Sensing MAPE

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<th>Original MAPE</th>
<th>△ MAPE Change</th>
<th>Forecast</th>
<th>Sensed Demand</th>
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**Supply Chain Name:** EDS Demonstration  
**Date:** August 21, 2012
## EDS Demonstration

**Supply Chain Name:** EDS Demonstration  
**Date:** August 21, 2012

### Filters
- **Items:** Custom
- **Locations:** All
- **Customers:** All
- **Attribute1:** All
- **Attribute2:** All
- **Market Category:** All
- **Scheduler:** All

### Demand Stream

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<tr>
<th>ITEM</th>
<th>LOCATION</th>
<th>CUSTOMER</th>
<th>SALES FORECAST</th>
<th>SENSING MAPE</th>
<th>ORIGINAL MAPE</th>
<th>MAPE CHANGE</th>
<th>Sensed Demand</th>
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<td>46%</td>
<td>117%</td>
<td>-71%</td>
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</tr>
</tbody>
</table>

View 10 per page
Forecast Data

- **Item**: Bicycles
- **Location Code**: LA
- **Customer**: BigBoxRetailer

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<tr>
<th>Characteristic</th>
<th>Value</th>
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<tr>
<td>Total Forecast</td>
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<tr>
<td>Total Sensed Demand</td>
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<td>Original MAPE</td>
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<td>Sensing MAPE</td>
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<table>
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<th>Forecast</th>
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Totals
- Sensed Demand: 1,491.6
- Forecast: 2,290.4
Integration With ERP Systems – and Processes
Sales and Forecast Data

**Daily**

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<thead>
<tr>
<th>ITEM CODE</th>
<th>Compute</th>
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<tr>
<td>LOCATION</td>
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<tr>
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<td>CUSTOMER CODE</td>
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**Weekly**

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<tr>
<th>CHARACTERISTIC</th>
<th>VA</th>
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<td>TOTAL SALES</td>
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<tr>
<td>TOTAL FORECAST</td>
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<td>TOTAL SENSED DEMAND</td>
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**Graph**

- **Sales**
- **Forecast**
- **Sensed Demand**

**Table**

<table>
<thead>
<tr>
<th>DATE</th>
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## Demand Stream Filters

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</table>
Roadmap and Wrap-up
We Continue to Invest in Our Demand Management Roadmap

Strategic Drivers

- APO-DP on HANA
- Demand Signal Mgmt
- Forecast Analytics

- Demand Sensing/ Shaping (EDS)
- APO/EDS integration
- Predictive Analytics

- APO DP Usability
- Demand Sensing – POS
- Demand Signals – Multi-Channel, EDS Integration

Subject to change
Demand Management

Align Stakeholders, Manage Process and Performance
- Demand Inputs
- Collaboration and Consensus Building
- Activity and Performance Tracking

Automate Forecast Generation & Allocations
- Statistical Modeling – Baseline Forecasting
- Automated Model Select & Best Fit Approaches
- Demand Classification & Allocations

Perform Demand sensing and shaping activities
- Deeper level of demand capture
- Market research data, social sentiments
- Detailed demand analysis and insights
- Use Demand Sensing algorithms to enhance short term forecasting
- Closely support trade promotion planning to shape demand
Thank you

Contact information:

F name MI. L name
Title
Address
Phone number
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### The Grid

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