

# Aspen Collaborative Demand Manager

*A world-class enterprise solution for forecasting market demand*

*Aspen Collaborative Demand Manager combines historical and real-time data to generate the most accurate forecasts and manage these forecasts through changes in the business environment. The end result is maximized profitability and increased customer service satisfaction.*

- Comprehensive and accurate forecast of market demand
- Collaborative environment increases agility to meet demand changes, enabling a truly dynamic supply chain
- 5-10% one time inventory reduction
- 5-10% ongoing inventory reduction
- 5-10% increase on Return on Assets (ROA)
- 10-20% increase in asset utilization

## ||||||| The Challenge: Keeping up with a Complex, Changing World

Process manufacturers need accurate demand forecasts to maintain customer service levels and efficiently manage production assets. Traditional demand management solutions rely solely on statistical forecasts. Unfortunately, this method of forecasting does not support today's more dynamic business environment nor does it consider the complexities of the process industry value chain. Generating demand forecasts—without systematic collaboration with marketing and sales—creates inaccurate projections resulting in increased stock-outs, excess inventories, and flawed purchasing decisions.

## ||||||| The AspenTech Solution: Dynamic Forecasting for Pinpoint Accuracy across the Supply Chain

*Aspen Collaborative Demand Manager* is a powerful solution that synergistically addresses two primary business functions: demand planning and collaborative forecasting. The resultant consensus demand plan serves as a primary input into downstream functions such as production and distribution planning and detailed scheduling. An accurate demand plan at the appropriate level drives greater efficiency in the supply chain, decreases costs, and increases customer satisfaction.

## ||||||| Unprecedented Supply Chain Complexity in the Process Industries

Process companies today are faced with unprecedented supply chain complexity. *Aspen Collaborative Demand Manager*, developed exclusively for the process industries, accurately predicts volatile market demand for industries such as chemicals, polymers, specialty chemicals, process consumer packaged goods (CPG), petroleum, and more.

*Aspen Collaborative Demand Manager* supports historical data conditioning, forecast generation, forecast reconciliation with firm orders, review of forecast accuracy, creation of an annual budget, and comparisons of actual versus year-to-date projections all through an intuitive interface. Forecasts, sales history, budgets, and constrained forecasts can be aggregated to any brand, family, region, market, or custom grouping required by the business. *Aspen Collaborative Demand Manager* integrates easily with ERP and in-house systems as well as other AspenTech applications, simplifying deployment and reducing total cost of ownership.

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The collaboration capability of *Aspen Collaborative Demand Manager* allows for marketing, sales, and customer data to be incorporated into the process to improve forecast accuracy, which is essential in preventing organizations from unnecessarily increasing inventory levels and, ultimately, affecting profitability. An inaccurate forecast that is used as a basis for strategic decisions—such as the construction of a new production facility—will lower the return on capital employed (ROCE) and eventually erode shareholder value.

## ||||||| The Petroleum Market Perspective

In the petroleum market, the challenge of generating accurate forecasts is exacerbated by the unique requirements of the energy industry. Energy companies today are faced with unprecedented supply chain complexity with typical supply networks that must service hundreds of retail, wholesale, and aviation customers. The sum of these customer demands define the market and drive the entire supply chain, from primary distribution and refinery planning to crude procurement and trading.

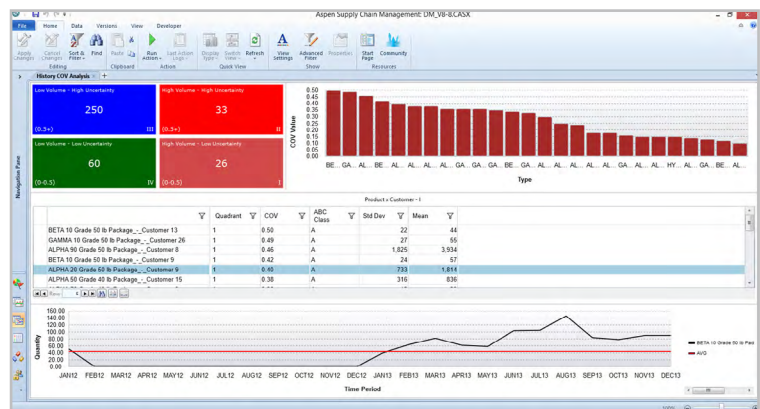
A typical market forecast expressed in monthly or weekly buckets, for example, is nearly useless in handling lumpy retail and aviation demand. Unlike solutions built for other industries, *Aspen Collaborative Demand Manager* is designed to forecast with daily granularity, and manages the differences in demand between different days of the week and holidays.

## ||||||| Historical Data Analysis

*Aspen Collaborative Demand Manager* uses raw sales history data from your ERP or third party system and translates it into historical demand patterns. The history data is maintained by customer order or shipment at the lowest level of detail available. It is completely data driven and thus is not limited to traditional pyramid-type hierarchical data structures. The result is a framework that is updated as your business changes; re-arranging territories or product families does not require programming changes, so your costs are lower. Product, customer, and location attributes are defined based on the specific needs of the business. Users can view, condition, aggregate, forecast, and drill-down history and forecast data by any one or multiple attributes.

The analysis process begins by scrubbing historical data to identify and remove statistical outliers. Afterwards, Pareto analysis can be performed by product or customer to allow you to incorporate ABC segmentation into the forecast generation and management.

Coefficient of Variance (COV) analysis can then be used to indicate which customers require close collaboration to arrive at an accurate forecast and which customers can be forecast based on history alone without any collaborative help. COV analysis classifies demand into four quadrants, each of which has a recommended forecasting methodology. Combined with the ABC Classifications, this function can help determine which customers / products you can get good statistical forecasts for, which you should be collaborating with, and which you should not carry any stock for.



Quickly identify the demand uncertainty that has the biggest impact on your bottom line. Use the power of Coefficient of Variance (COV) analysis to pinpoint the weakness in your forecasts and focus your demand planning efforts.

## Statistical Forecast Generation

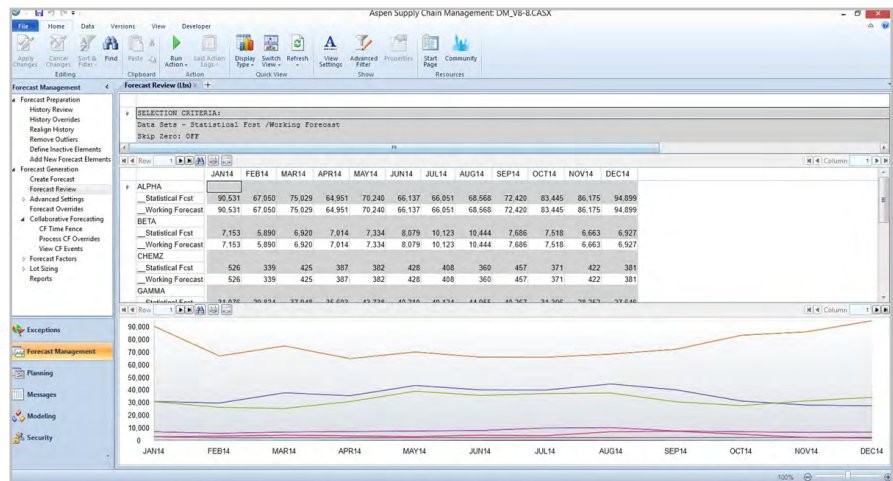
AspenTech offers the most comprehensive statistical forecasting methods available. Choose between 11 forecast models or allow *Aspen Collaborative Demand Manager* to automatically select the very best using the Optimal Forecast method.

The Optimal Forecast method selects the overall forecasting method that best fits your data using a complex scoring methodology to measure and compare the overall fit of various models. Based on the best score, the appropriate model is automatically selected for use. This comparison can also be done manually, allowing the user to override which method will be used.

Where forecast overrides are needed, *Aspen Collaborative Demand Manager* offers comprehensive tools to create overrides at

Powerful Statistical Forecasting Methods Including:

- Optimal
- Simple Seasonal
- Holt's
- Optimal Exponential Smoothing
- ARIMA
- Brown's
- Simple Exponential Smoothing
- Winters' Additive
- Winters' Multiplicative
- Damped Trend

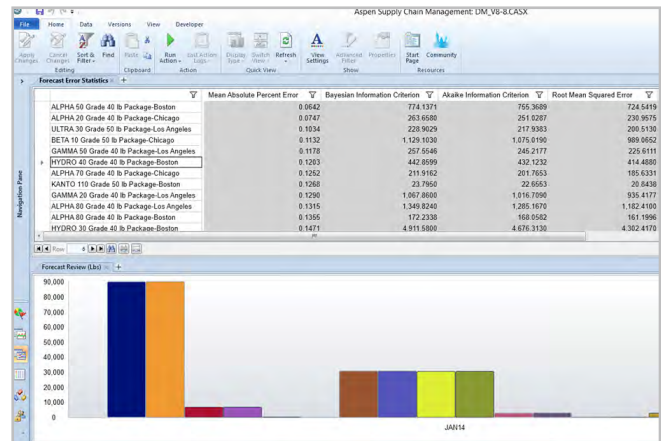


Forecast versions can be stored for various roles at any aggregation level for tracking and continuous improvement of the forecast.

any level with real-time roll-ups (aggregation) and force-downs (disaggregation). The tool also logs the overrides with time/date stamps, user name, and comments so that overrides can be stored and re-applied in future periods.

## Forecast Accuracy

Forecast accuracy helps you analyze how the forecast is performing versus actual history and is a key metric for most process manufacturing companies. *Aspen Collaborative Demand Manager* provides sophisticated forecast accuracy analysis tools that can report forecast error by product, customer, sales representative, or any other attribute. As the saying goes, "what gets measured gets improved". Improvements in forecast accuracy lead to more efficiently managed inventory, improvements in service levels, reduced stock-outs, and greater supply chain control and efficiency.



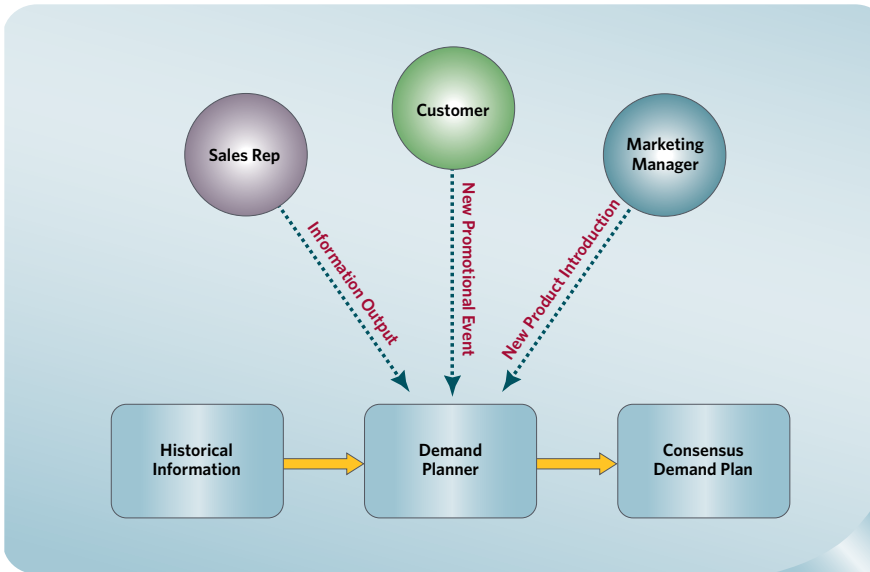
The Percent Error Graphs tell you at a glance where you have significant forecast error. Forecast accuracy information can also be viewed in a forecast error matrix, in tabular form, or graphically in forecast vs. actual and error charts.

# Aspen Collaborative Demand Manager

## Collaboration—The Next Level in Forecast Refinement

An integral part of the demand management process is collaboration with the appropriate stakeholders. Effective demand management incorporates a continuous improvement process that is enabled by collaboration.

*Aspen Collaborative Demand Manager* provides powerful collaborative functions that break down the silos between manufacturers, business units, customers, and marketing managers. Information flow to and from various stakeholders is vital to step changes in forecast accuracy. Now you have the ability to incorporate internal and external influences on the market to improve operations, customer service, and bottom-line profitability by more accurately predicting demand.



The collaboration component of the solution is a web-based application that solicits input and consensus from multiple stakeholders to further improve the statistically generated demand forecast. The web-based collaboration engine allows for multiple layers of roles and security levels to easily manage the access of various stakeholders. Sales account managers and product or regional managers have the ability to review volume and price information and make modifications to the forecast or events affecting their customers. For those most comfortable with spreadsheets, you can work offline with Excel and import your updated forecasts into *Aspen Collaborative Demand Manager*.

The Collaborative Process Improves Performance

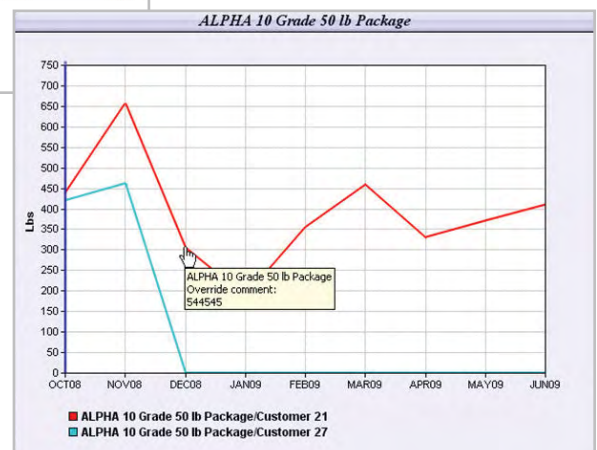
Submission was successful

	Total	MAR07	APR07	MAY07	JUN07
<b>GN RUL 85 RVP&gt;7.8 CONV NOOXY</b>					
Statistical Fcst	383,729	68,082	48,417	53,603	213,627
Working Forecast	383,729	68,082	48,417	53,603	213,627
Sales Rep Fcst	394,709	68,082	53,000	60,000	213,627
Override			53,000	60,000	
<b>GN RUL 85 RVP&gt;7.8 CONV ETHER 0-2.7</b>					
Statistical Fcst	120,269	23,969	33,492	35,295	27,517
Working Forecast	120,269	23,969	33,492	35,295	27,517
Sales Rep Fcst	120,269	23,969	33,492	35,295	27,517
Override					
<b>GN RUL 85 RVP&gt;7.8 CONV NOOXY</b>					
Statistical Fcst	423,571	128,038	122,052	124,692	48,790
Working Forecast	423,571	128,038	122,052	124,692	48,790
Sales Rep Fcst	423,571	128,038	122,052	124,692	48,790
Override					
<b>GN RUL 86 RVP&gt;7.8 CONV ETHER 0-2.7</b>					
Statistical Fcst	115,874	29,718	28,059	31,118	26,983
Working Forecast	115,874	29,718	28,059	31,118	26,983
Sales Rep Fcst	115,874	29,718	28,059	31,118	26,983
Override					

Comments:

Submit Download To Excel Printable Version Save Report...

Users in various roles have tabular and graphical visibility into demand information at any level of aggregation across product, customer, and location dimensions.



## |||||| Data Viewing and Forecast Overrides

Demand management constitutes the process of developing accurate and consistent projections of market demand—continuously updating these projections as circumstances change. Once forecasts are generated, the process is concerned with how to manage them, how to reconcile new information with the forecasts, and how to keep the forecasts up to date. Projected demand for different market and customer segments is consolidated and then reconciled with firm orders so that it can be used to support other business processes such as Sales & Operations Planning and Plant Scheduling.

As stakeholders analyze the true, up-to-date data—either through analysis or direct contact with the distribution channel—they have the knowledge base to create meaningful overrides. Overrides for forecast volume are stored for each role and then compared by the demand planner to reach consensus. The demand planner can easily create scenarios for evaluation to determine the impact of a forecast change on the business and results can be exported to Excel for further analysis or saved for later use.

Once forecast overrides have been made, they are easily visualized via color coded exception reporting. The demand manager can easily identify where overrides were made and at what level of granularity *Aspen Collaborative Demand Manager* provides all the tools necessary to create an audit trail and track each forecast override, including:

- Before and after comparison
- Comment log
- Date, time, and user id
- Level of aggregation

The screenshot displays the Aspen Supply Chain Management (DM\_V8-8-CASX) interface. The main window is titled 'Forecast Review (Lbs)' and shows a table of forecast data. The table has columns for months from JAN14 to JUL14 and an 'AU' column. The rows list various product packages under 'ALPHA' and 'BETA' categories. The 'Working Forecast' row is highlighted in green. The 'Forecast Overrides' window is open on the right, showing a log of changes. The log entry for 09/05/15 11:26:58 shows a 10% increase in demand for 'ALPHA 10 Grade 50 lb Package'.

	JAN14	FEB14	MAR14	APR14	MAY14	JUN14	JUL14	AU
ALPHA Working Forecast	1,144	1,022	1,022	1,022	1,022	1,022	1,022	
ALPHA 10 Grade Bulk Package	968	117	133	109	118	1,249	1,449	
ALPHA 110 Grade 40 lb Package	2,403	1,914	1,827	1,763	1,266	1,461	1,578	
ALPHA 20 Grade 40 lb Package	3,102	2,660	2,792	2,610	2,714	2,952	2,915	
ALPHA 20 Grade 50 lb Package	8,268	6,328	7,772	6,364	7,723	6,723	6,922	
ALPHA 30 Grade 40 lb Package	630	314	327	295	195	249	227	
ALPHA 30 Grade 50 lb Package	273	277	278	251	262	267	284	
ALPHA 40 Grade 40 lb Package	19,695	10,233	13,845	18,370	19,388	15,599	16,397	
ALPHA 40 Grade 50 lb Package	2,487	2,224	2,224	2,224	2,224	2,224	2,224	
ALPHA 50 Grade 40 lb Package	11,764	4,560	10,547	10,269	10,465	10,421	10,592	
ALPHA 50 Grade 50 lb Package	22,503	12,786	11,937	3,000	5,495	6,323	6,416	
ALPHA 60 Grade 40 lb Package	2,135	1,074	1,507	1,641	1,461	2,626	2,153	
ALPHA 60 Grade 50 lb Package	494	442	442	442	442	442	442	
ALPHA 70 Grade 40 lb Package	2,324	1,894	1,830	2,014	2,193	1,974	2,037	
ALPHA 70 Grade 50 lb Package	0	0	0	0	0	0	0	
ALPHA 80 Grade 40 lb Package	9,982	7,165	11,096	10,630	11,771	10,105	9,151	
ALPHA 80 Grade 50 lb Package	965	528	587	606	744	649	629	
ALPHA 90 Grade 40 lb Package	1,332	1,191	1,191	1,191	1,191	1,191	1,191	
ALPHA 90 Grade 50 lb Package	10,885	5,592	4,389	1,168	504	461	423	
BETA								

The new forecast can be viewed in graphical or tabular form facilitating easy analysis of the revised forecast.

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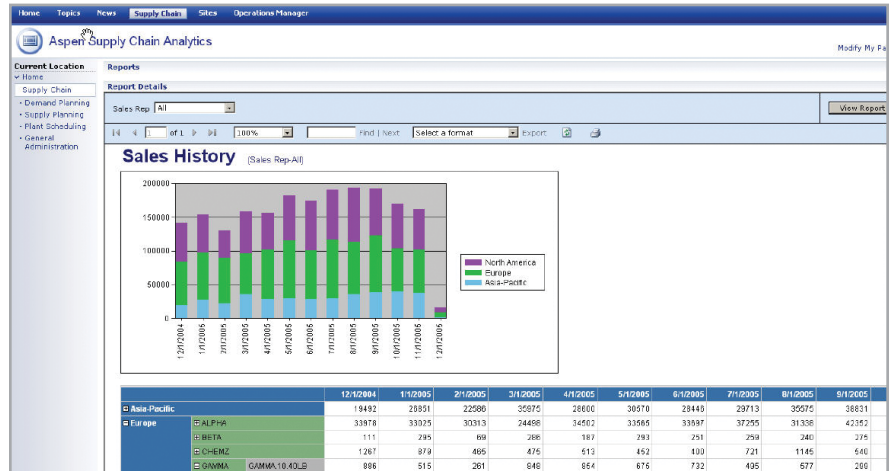
## Web-Based Reporting

Aspen Collaborative Demand Manager includes web-based Demand Analytics, which provide guided analysis and reports to users throughout the enterprise. Summary level reports connect to detailed demand reports, allowing you to quickly aggregate and disaggregate your specific views. The analysis capabilities can then be used to access data quickly and within a meaningful context.

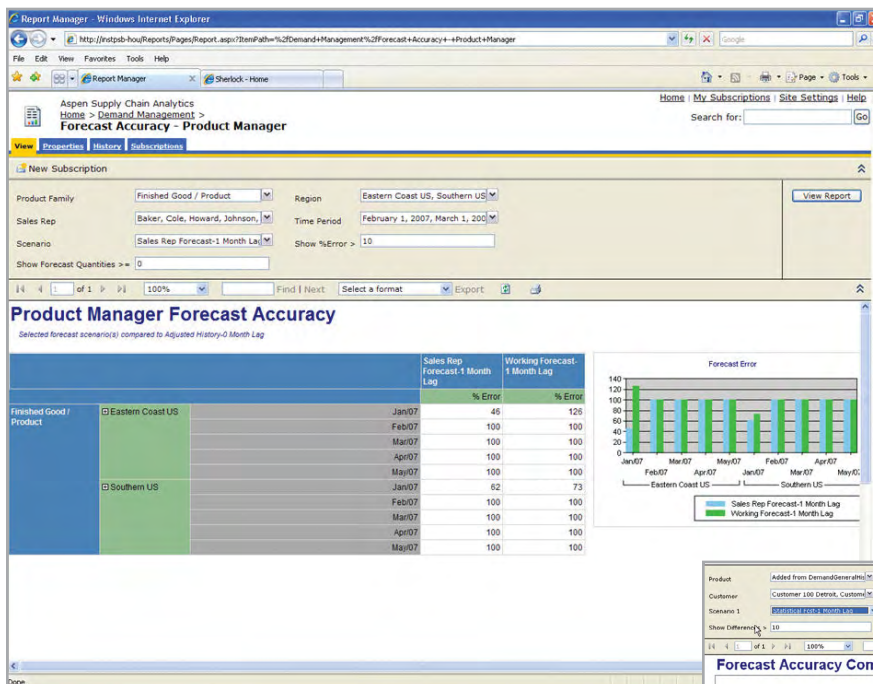
Demand Analytics offers a variety of pre-configured and user-defined reports, all built on the Aspen Supply Chain Connect database.

### Report Examples:

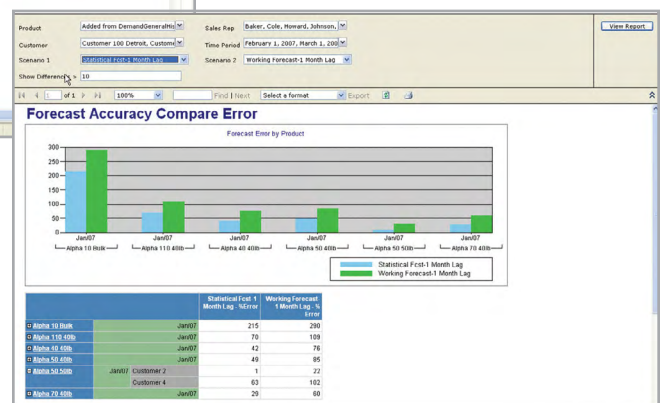
- Sales History Report
- Demand Plan Analysis Report to show working forecast
- Forecast Exception Report with drill-through capability to detailed report
- Forecast Accuracy Report
- Sales Override Tracking Report



Sales History Report graphically depicts past performance by region; associated data can be drilled down to actual products.



The comparison capabilities in Demand Analytics are especially useful for like-to-like data, such as Forecast Accuracy comparisons at different levels.



Function	Benefit
<b>Collaborative Forecasting</b> <ul style="list-style-type: none"><li>Stores inputs from marketing, sales, analysts, and planners for comparison against the consensus</li><li>Preserves and measures forecast inputs for each role</li></ul>	<ul style="list-style-type: none"><li>Improves demand forecast quality and accuracy</li><li>Enables web-based collaboration with internal and external stakeholders</li></ul>
<b>History Management</b> <ul style="list-style-type: none"><li>Provides superior data conditioning tools to identify statistical outliers for removal or special handling</li><li>Maps and re-aligns shipment history from actual history to a “current” view of the business</li></ul>	<ul style="list-style-type: none"><li>Updates sales history as your business changes in order to better project the desired demand pattern</li></ul>
<b>Understand Sales Trends</b> <ul style="list-style-type: none"><li>Industry leading user interface provides easy navigation and a Microsoft® look and feel</li><li>Provides ability to view/graph history with powerful and flexible data aggregation and “slice and dice” capability</li><li>Prioritizes forecast collaboration based on high-volume and most difficult to statistically forecast</li></ul>	<ul style="list-style-type: none"><li>Enables users to quickly access advanced functions and customize their view according to their business needs</li><li>Improves forecast alignment through built-in data model and aggregation techniques</li><li>Decreases future demand uncertainty by constraining the forecast against production and distribution capabilities</li></ul>
<b>Sales &amp; Operations Planning Tools</b> <ul style="list-style-type: none"><li>Generates forecasts using a world-class statistical forecasting engine with 11 embedded forecasting models, as well as the “optimal” algorithm</li><li>Easy color coded visualization of forecast overrides</li><li>Integrated S&amp;OP with constrained forecasts communicated to Marketing and Distribution Schedulers</li></ul>	<ul style="list-style-type: none"><li>Speeds the creation of an optimal forecast</li><li>Right sizes inventories by generating accurate demand forecasts based on statistical methods augmented with real-time collaborative data</li><li>Improves visibility, speed, and flexibility, enabling the user to quickly identify, analyze and adjust forecast exceptions to provide more accurate forecasts</li></ul>
<b>Scenario Analysis</b> <ul style="list-style-type: none"><li>Executes demand scenarios such as increase in sales by a certain percentage</li></ul>	<ul style="list-style-type: none"><li>Allows insight and evaluation of the impact on the business as a whole</li></ul>
<b>Reporting</b> <ul style="list-style-type: none"><li>Provides reports in graphical and tabular formats that are easily customizable</li><li>Delivers enterprise-wide access to data and analysis through web-based Demand Analytics during the demand planning process</li></ul>	<ul style="list-style-type: none"><li>Improves decision-making capability and enterprise-wide collaboration</li><li>Increases visibility into the demand forecast and scenarios at desired level of detail</li></ul>

### ||| aspenONE Supply Chain Management

*Aspen Collaborative Demand Manager* is a key component of aspenONE Supply Chain Management and aspenONE Supply and Distribution. AspenTech's aspenONE solutions are designed to align with the key industry business processes, providing manufacturers the capabilities they need to optimize operational performance, make real-time decisions, and synchronize the plant and supply chain.

### ||| About AspenTech

AspenTech is a leading supplier of software that optimizes process manufacturing—for energy, chemicals, pharmaceuticals, engineering and construction, and other industries that manufacture and produce products from a chemical process. With integrated aspenONE® solutions, process manufacturers can implement best practices for optimizing their engineering, manufacturing, and supply chain operations. As a result, AspenTech customers are better able to increase capacity, improve margins, reduce costs, and become more energy efficient. To see how the world's leading process manufacturers rely on AspenTech to achieve their operational excellence goals, visit [www.aspentech.com](http://www.aspentech.com).



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