



# aspen Strategic Analyzer™

*A powerful software modeling tool to maximize enterprise profitability when making multi-million dollar commitments of capital.*

**Aspen Strategic Analyzer (ASA) identifies the alternative combinations of decision options available to the Chief Operating Officer (COO) or Chief Financial Officer (CFO) and generates corresponding plans that are consistent across finance, customer service, manufacturing, materials management and distribution.**

## **The Challenge: Improve decision making to maximize profitability**

Strategic decisions on issues ranging from capital additions to downsizing can have a dramatic impact on company profitability. But the key to finding the best strategic plan is finding the right combination of actions by the company's VPs—one that drives the company the furthest toward its strategic objectives.

Effective strategic planning often requires conflict resolution among a company's executives. Reductions of work in progress (WIP) inventories by the VP of Material Management may be at the expense of customer service. An increase in average run length at the plants by the VP of Manufacturing brings production efficiency (reduced manufacturing cost per unit), but increases finished goods inventories at distribution centers (increased inventory costs). To reconcile competing objectives, companies must consider all of these tradeoffs and then make decisions that promote greater profitability enterprise-wide.

Today's decision-making processes typically fail to achieve these goals. In many large corporations, the computational analysis supporting strategic decision-making is performed by a small group of senior planners who rely solely on spreadsheet-based decision analysis tools and report to the Chief Operating Officer, Chief Financial Officers or VP of Marketing. When alternative decisions are being considered, a senior planner typically defines a scenario with input conditions and computes its outcome based on the company's standard measure of performance—net profit, earnings per share (EPS), or return on investment (ROI). Typically the spreadsheet tools focus only on financial tradeoffs and do not explicitly consider operational constraints such as production capacities, restock lead times or customer service targets, or the dynamics among these constraints.

With spreadsheet-based tools alone, the planner cannot easily account for all the tradeoffs among decision parameters—which may number in the thousands—and must therefore make assumptions that may be inaccurate. For example, when considering whether to build a new plant, inventory-carrying costs may be assumed to remain constant as a percentage of total cost of goods sold. Opportunities to reduce inventory costs—via a particular combination of inventory reductions made possible by the additional capacity—are not considered.

Without tools that can model the various tradeoffs affected by any given strategy, computational analysis may favor a decision that isn't feasible operationally or that isn't nearly as financially profitable as a combination of decision options not explicitly captured in the spreadsheet model. Yet this sub-optimal decision may well be implemented through organizational levels, inhibiting company profitability.

Process companies need new decision analysis tools that will enable more collaborative decision-making processes that address the various sectors of the entire organization simultaneously.

## The Opportunity: Adopt state-of-the-art decision-support tools and build unprecedented value

The value that a firm derives from its strategic planning decisions may hinge on how effectively its executive management team is able to translate strategic corporate financial goals, such as EPS growth targets, into a concise sequence of understandable operational decisions. More powerful decision support tools can help the management team identify those decisions that will lead to greater profits.

To optimize strategic planning decisions and secure a significant competitive advantage, companies need tools that will enable them to:

- quickly evaluate scenarios in financial terms (e.g. income statement, balance sheet, and/or cash flow statement) – weighing the impact of several alternatives on EPS, considering raw materials costs when reassigning sourcing, or evaluating the financial effects of adding warehouses or distribution centers
- find the optimal mix of operational decisions that will maximize financial performance – looking for the optimal mix of production sourcing options, warehouse locations and distribution patterns, and inventory build strategies that will maximize the enterprise's financial performance and determining how this mix will change if the company acquires another firm or builds a new plant

Aspen Strategic Analyzer enables these capabilities by:

- providing a state-of-the-art linear programming optimization framework whose output feeds a set of pro forma financial statements
- modeling both production facilities down to the line level and the distribution network explicitly so that decisions involving simultaneous changes both in production and distribution capacity can be identified

With these capabilities, process industry companies can realize millions of dollars per year in supply chain savings.

“Thanks to the dynamic ASA software links into NOVA Chemicals’ SAP ERP system, we have been able to achieve a significant speed advantage in evaluating options. ASA is an excellent example of leveraging our investment in ERP.”

NOVA Chemicals

## The solution: Strategic planning that will save you millions

ASA is the first out-of-box solution to tie supply chain planning and optimization to strategic decision-making and corporate financial statements. Using this powerful software-modeling tool, corporate executives can make comprehensive and timely strategic planning decisions relative to corporate objectives such as maximizing EPS, return on assets (ROA), return on equity (ROE) or cash flow.

### Aspen Strategic Analyzer:

- focuses your planning process around your company's strategic objectives
- quickly generates multiple *What-if* scenarios for evaluation
- unifies your operational and financial planning processes by directly mapping outputs of an enterprise-wide optimization model into pro forma financial statements

The ASA software evaluates all of the internal dynamics of your supply chain, utilizing data that describes plant locations and line capacities, inventory restrictions, unit costs of production, distribution, overtime labor, and inventory holdings. It then models operational tradeoffs in economic terms and links these to your company's financial statements—and identifies plan execution targets that are consistent internally to resolve conflicting objectives.

### ASA answers questions such as:

- Given a forecast of flattening demand over the next 5 years, how should production capabilities for certain product families be consolidated across a network of plants to maximize the company's EPS over this time frame?
- Given that a major new asset utilizing a new chemical process is under construction and coming on line in 12 to 18 months, what new products should be introduced into a number of markets in order to minimize the cannibalization of demand for the firm's existing products? How should the new product introductions be sequenced to minimize contention for the same production and distribution resources?
- Given that the firm would like to grow its share in one of several markets into which it sells product, what changes in the firm's network of both plant and warehouse locations and capabilities will ensure a smooth transition to this goal with minimum disruptions to capacity and a maximum cumulative earnings stream over this time period?

With ASA, the senior executive can typically evaluate several *What-If* scenarios in the time it would take to evaluate one with less powerful tools. Hence the scenario evaluation process is much more exhaustive and **planning cycle time is reduced between 50 and 90 percent.**

"Our strategic planning function in the BP Chemicals Acetyls business unit tries to understand developments in worldwide supply and demand for acetic acid within our planning horizon in order ensure the optimal supply configuration for the business and to explore profitable growth opportunities. In deciding to convert from a large spreadsheet-based strategic planning framework to ASA, we were confident that ASA would easily pay for itself through its ability to identify capacity growth options that were truly optimal. Having implemented the tool successfully, we not only see this benefit, but also see benefits in ASA's ease of use, its built-in rules for maintaining data integrity, the speed of scenario generation and comparisons, improved reporting and graphical capabilities, and its rich packaged *What-if* functions."

Dr. Edward Hyde  
Strategic Planning  
BP Chemicals Acetyls Business Unit

### Aspen Strategic Analyzer Provides Unique Strengths

Aspen Strategic Analyzer differs from other supply chain optimization solutions in several significant ways:

- **ASA features direct links between its supply chain optimization framework** and a set of pro forma financial statement generators, and defines strategic planning objectives in purely financial terms

ASA integrates a spreadsheet-based input data model, MIMI-based LP optimization, and spreadsheet-based financial statement generation.

- **ASA offers direct links to ERP systems** via its underlying Aspen MIMI™ environment. This includes a number of proven interface options for moving data to and from SAP's R/3 system. It also includes direct links to relational database environments such as Oracle or Microsoft Access via ODBC drivers provided by either the RDBMS vendor or various third parties

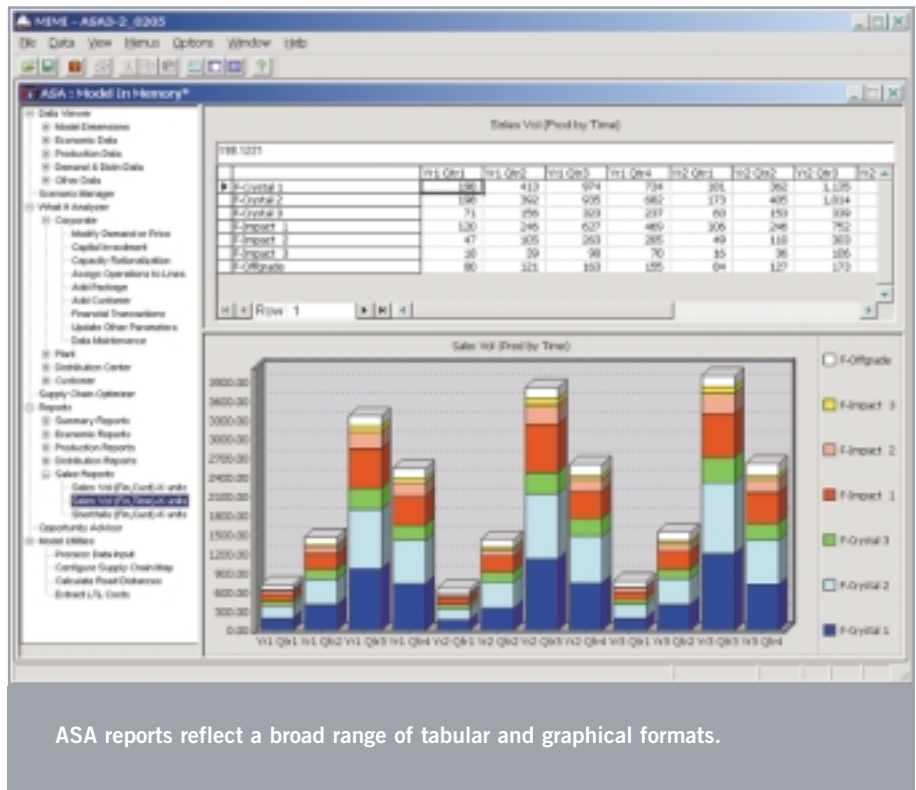
- **ASA sits at the top of a fully integrated supply chain solution.** Many of ASA's outputs become inputs to other Aspen MIMI configured applications that optimize downstream sales and operations planning, scheduling, and real-time optimization functions. These include Aspen Demand Manager™, Aspen Supply Planner™, Aspen Inventory Planner™, Aspen Plant Scheduler™, Aspen Distribution Scheduler™, Aspen Carrier Selection™, Aspen Collaborative Forecasting™, Aspen Capable-to-Promise™ and Aspen Command Center™

- **ASA offers more comprehensive functionality**, including a broad range of *What-if* capabilities that address not only the impact of changes on production and distribution operations but also on the firm's financial performance
- **ASA uses linear programming (LP) technology** to identify optimal plans in terms of purely economic and financial criteria
- **ASA is more flexible than competitive offerings** in that its core packaged strategic decision-making functionality can be quickly configured to incorporate required client-specific functionality using the tools of its underlying Aspen MIMI software environment
- **ASA permits dynamic aggregation of products.** The user can express *What-ifs* in terms of families of products that can be defined on the fly. Reports can also be viewed in these terms
- **ASA is backed by a superior consulting group** which works with the user to ensure that the ASA tool is configured to provide maximum value given the unique features of the user's strategic decision environment

### ASA identifies cost reduction opportunities

An ASA-optimized plan reflects an EPS figure 20 percent greater than the base case projected EPS. The optimized plan reflects an income statement cost increase of \$5M in overtime labor and \$2M in direct shipments from plants to customers. It also shows a decrease of \$4.2M in shipments from plants to distribution centers (DCs) relative to the base case plan.

The user retrieves the base case plan and generates a comparison of overtime labor use, shipments to and from DCs, and direct-to-customer shipments. It indicates that the optimal plan has shifted the sourcing of some product lines among plants to increase effective just in time (JIT) production capacity. This reduces inventories carried at DCs. Why did this shift happen? The sum of overtime cost plus cost of direct shipping to the customer was less than shipping to the DC, stocking it there for a period of time, and then shipping it to the customer. The ASA optimization approach systematically identifies all such opportunities and explains the results in both financial and operational terms.



ASA reports reflect a broad range of tabular and graphical formats.

"The strategic planning practice and its ASA tool play an important role in our mission to help process manufacturers achieve enterprise optimization . . . By using AspenTech, customers can perform mission-critical strategic analysis in a matter of weeks. The results can bring increases of tens of millions of dollars to the bottom line."

Lawrence B. Evans  
Chairman and CEO  
Aspen Technology, Inc.

## Features Summary

Feature	Function
<b><i>Input Data Model</i></b>	<p>A spreadsheet-based environment that can serve as the source of all required ASA input data. This input data model permits the user to perform all data preparation in the same spreadsheet environment in the instance where most of the user's data resides. Features of this data model are:</p> <ul style="list-style-type: none"><li>• automatic populating of the entire ASA model</li><li>• automatic checking for internal consistency of the contents of required data structures</li><li>• flexibility in use of alternative data structures</li></ul>
<b><i>Strategic Optimizer</i></b>	<p>Identifies the plan that is both <b>feasible</b> in terms of production and distribution capacity metrics and raw material availability <b>and optimal</b> relative to the user's objective (e.g., maximize profit). ASA utilizes the Aspen MIMI linear programming (LP) modeling and optimization tool.</p>
<b><i>Scenario Manager</i></b>	<p>Defines, compares, saves, and retrieves strategic scenarios rapidly. A Scenario Tree maintains a record of data dependencies from one scenario to the next. The analyst can grow the tree in one general direction—for example, considering alternate merger options—and then go back to a past scenario and branch into other directions.</p>
<b><i>Financial Statement Driver</i></b>	<p>Generates a set of spreadsheet-based annual financial statements and key financial performance metrics from the optimized strategic plan. This includes corporate level indirect costs such as depreciation, plant level overhead, and interest expense.</p>
<b><i>Scenario Comparison Generator</i></b>	<p>In conjunction with the Financial Statement Driver, this feature permits comparison of scenarios, first in terms of key financial performance metrics like NPV (Net Present Value) and EPS, followed by drilling down to changes at the financial statement line item level, and then to differences in terms of key production, shipment or inventory quantities.</p>
<b><i>What-if Analyzer</i></b>	<p>Leads the user through the steps required to articulate a number of types of <i>What-if</i> questions. Examples are:</p> <ul style="list-style-type: none"><li>• modify demand or price</li><li>• make a capital investment (merger or acquisition)</li><li>• rationalize capacity (shut down or divest assets)</li><li>• assign operations to lines</li></ul> <p>At the user's request, ASA generates sample data reflecting properties of proposed DCs, plants, or production lines based on existing data for "similar" facilities. Via this feature, the user can generate a number of different scenarios with approximate data when he or she does not have the time or the means to prepare detailed input data for these scenarios.</p>
<b><i>Opportunity Advisor</i></b>	<p>Helps the user decide which scenario to examine next in order to converge on the best plan in the shortest time.</p>

## Transportation Data Generation Utility

Using integrated access to an external database, ASA can generate distances and transportation costs between locations of raw material vendors, producing plants, DCs, and customers as needed. This data is typically required when the user wants to consider a completely new range of vendor, plant or DC locations for a particular *What-if* mode. Specific classes of data provided are:

- road mile and rail distances between locations via the PC Miler™ software package (licensed directly from ALK, Inc.)
- less-than-truckload (LTL) trucking costs via the RateWare/CzarLite™ software package (licensed directly from SMC<sup>3</sup>, Inc.)

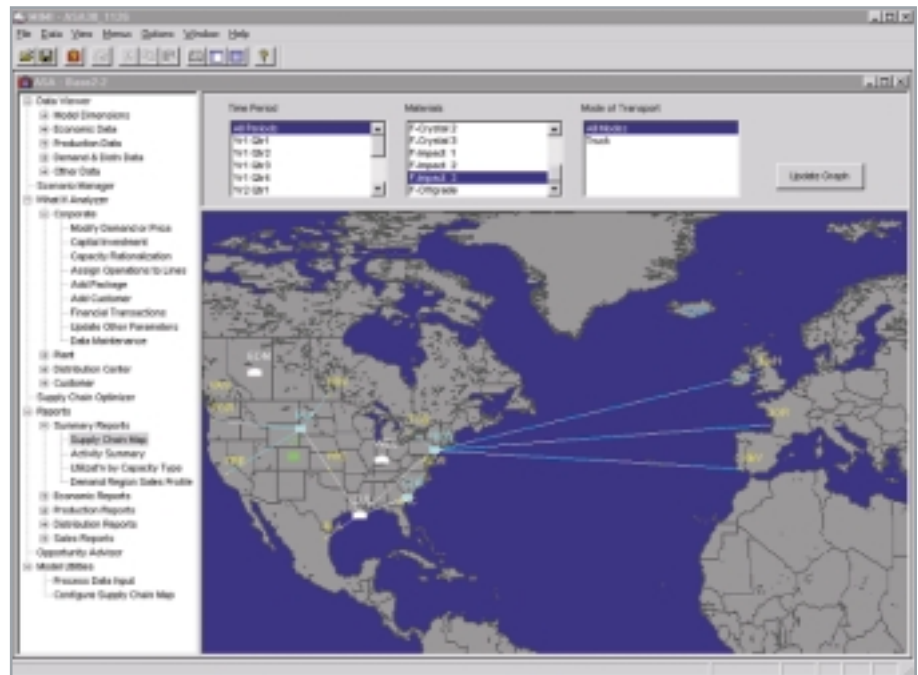
## Recent product enhancements

AspenTech® continues to improve the ASA offering, including a number of significant enhancements:

- the addition of a standard Excel-based input data model
- strengthened capabilities for transportation modeling
- extensive improvements in usability, including logging of *What-if* changes to model data for user review, extensive use of messaging/feedback to guide the user in providing the correct data for *What-if* scenarios, logic for validation of user inputs to ensure internal consistency of the input data, and an improved interface for configuring the supply chain network geographically
- improved reporting functionality, including grouping/filtering of plants, DCs and customers and a multi-dimensional viewer to enable the user to slice and dice multi-dimensional reports into two dimensions with the option to aggregate, filter and group products, locations or time periods

## Our Promise

Aspen Strategic Analyzer makes use of key strategic data about your company: demand forecast; plant capacities; distribution modes and constraints; product cost information; product variable costs of manufacturing, transport, storage, and raw materials; and financial parameters such as depreciation and long term debt payment. With this information, ASA shows you how to make the *most* of strategic business opportunities. ASA shows you the best plans for capacity rationalization; merger, acquisition, and outsourcing opportunities; product and site profitability analysis, product portfolio and mix—and optimization of all production and distribution capacity from a global point of view. Its *What-if* capabilities enable you to evaluate multiple scenarios in a matter of hours.



ASA tree menu eases access to input data, a variety of packaged '*What-if*' modes, and GUI.

## Why AspenTech?

AspenTech is the only supplier of real-time value chain management solutions and a process industry veteran with exclusive focus on the process industry for over two decades.

We have deployed solutions for 46 of the 50 largest chemical companies, 23 of the 25 largest refining companies and 18 of the 20 largest pharmaceutical companies. This experience assures customers that our Aspen ProfitAdvantage™ solutions, developed in partnership with the world's leading companies, are time-tested, best-in-class, and provide a payback period of months, not years.

The Aspen ProfitAdvantage solution provides your company with a competitive advantage by optimizing business processes between the value chain components of demand, supply, production, assets and value chain design and linking strategic vendors, trading partners and customers.

## Hardware and Software Systems Requirements

### Hardware Requirements

Resource	Recommended Requirements
CPU	PC with an Intel® Pentium® III 1024MHz processor. <b>Note:</b> If you are purchasing a new PC, select the fastest CPU available.
Monitor	Super VGA color monitor with 1024 x 768 resolution or higher.
Physical Memory	512MB or higher for large models.
Hard Disk Space	Up to 2.0GB of free disk space, depending upon how many scenarios are saved.
Virtual Memory	512MB consisting of physical memory and swap file. Large enterprise ASA models or multiple open applications may require additional virtual memory.
Pointing Device	Mouse or other pointing device.
CD-ROM Drive	Available on the local PC or through the network during the installation.
Licensing	Aspen License Manager™ (ALM) requires a network adapter. External transportation databases licensed directly from database vendor.

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### Software Requirements.

Operating System	Notes
Windows NT® 4.0, or Windows® 2000	Windows NT® 4.0: Service Pack 6a or higher required. Windows® 2000: Service Pack 2 or higher required.



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