Best Practices in S&OP

A Benchmark Report

June 2005
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Executive Summary

Enterprises in the post millennium era have been severely challenged by a set of irreversible marketplace factors — including shrinking profit lifecycles, demand for personalized solutions, and the rise of the distributed network enterprise — that have transformed the global competitive environment into one with fundamentally more uncertainty and risk, but also one with great opportunity. These pressures have compelled companies to redefine winning business models, processes, and technologies and have catapulted the sales and operations planning process into the single most important tactical process to manage risk and profitability.

Dynamic sales and operations planning (S&OP) is that set of business processes and technologies that enable an enterprise to effectively respond to demand and supply variability with timely determinations of the right market and supply chain mix, all through the S&OP time horizon.

AberdeenGroup has extensively researched the sales and operations programs of a variety of large and mid-size companies, in order to identify and capture the essence of the best practices that are most responsible for enabling superior business performance through S&OP.

A number of companies have risen to the top as practitioners of a fundamentally different and competitively superior approach to the sales and operations planning process, in many cases taking a novel approach to the deployment of new business practices and enabling technologies.

Six best practice leaders were selected (Table 1) to illustrate these success strategies, and to provide keen insight on turning adversity to advantage. Each best practice leader is represented by a case study that discusses the business challenge, S&OP strategy, technology deployment, lessons learned, results, and the conclusion drawn by AberdeenGroup on what this could mean for your enterprise.

Table 1: S&OP Best Practices Winners and Their Solution Providers

<table>
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<tr>
<th>Enterprise Winner</th>
<th>Featured Best Practice</th>
<th>Solution Provider</th>
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<tr>
<td>Bedoukian Research</td>
<td>Optimizing Inventories with “Lumpy” Demand</td>
<td>Smart Software</td>
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<tr>
<td>Campbell Soup</td>
<td>Promotion Centric Demand and Inventories</td>
<td>Tera Technology</td>
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<td>Centillium Communications</td>
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<td>Right90</td>
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<tr>
<td>Auto Electronics Component Manufacturer</td>
<td>Integrating Demand and Reverse Logistics</td>
<td>Logility</td>
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<td>Riverstone</td>
<td>Real Time Demand/Supply Harmonization</td>
<td>Interface Systems</td>
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<tr>
<td>Gehr</td>
<td>Gehr Industries Finds Cost Effective S&amp;OP Control</td>
<td>KCI Computing</td>
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Source: Aberdeen Group, June 2005
Key Findings and Recommendations

Today’s dynamic S&OP business practices are fundamentally different and more effective than the demand/supply volumetric balancing approaches – i.e. balancing physical units of measure such as cases, tons, cubic feet, etc. – that were the hallmark and leading characteristics of these programs in the pre-Y2K era.

Table 2 illustrates that every core tenant of traditional Sales and Operations Planning practices have been over-turned and replaced with a characteristic specifically designed to cope and flourish in today’s chaotic marketplace:

Table 2: S&OP Best Practices Winners: Redefining the Basics

<table>
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<tr>
<th>Characteristic</th>
<th>Traditional</th>
<th>Dynamic S&amp;OP</th>
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<tr>
<td>Timing</td>
<td>Quarterly</td>
<td>“Right Time”: Weekly/Daily</td>
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<td>Objective</td>
<td>Volumetric Balance</td>
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<td>Approach</td>
<td>Single iteration</td>
<td>Multiple “what-ifs”</td>
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<tr>
<td>Ideal Capability</td>
<td>Responsiveness</td>
<td>Shaping</td>
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<tr>
<td>Organizational Scope</td>
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</tr>
<tr>
<td>Predominant Activity</td>
<td>Data gathering and cleaning</td>
<td>Dynamic Decision Making</td>
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Three elements of a successful S&OP program have outshone the others as providing the most business benefits and the best capabilities for managing risk and uncertainty:

- Explicitly linking supply and inventories to demand dynamics
- Contingency planning to shape demand and harmonize supply
- Tightly managing the demand process and not just the numbers

Aberdeen’s S&OP best practice checklist can be used to verify that a company’s sales and operations planning roadmap is reflecting current best practices.

Sales and operations best practices reflect a deep understanding of the business forces that drive risks and opportunities – the “systems dynamics” of their competitive marketplaces. All winning approaches are based on a tight integration of business processes and practices taking advantage of new capabilities in their deployed technologies to take better control of their destiny – proactive rather than reactive management.

For companies contemplating a sales and operations planning transformation program, recommendations for action include:

- Focus on the areas where the greatest risk currently lies in achieving your business objectives. In 90% of the cases, this starts with, or at least includes, demand management. Improving demand has a marvelous way of making even large-scale “supply” problems such as excess inventories, expediting and changeover costs, and low customer fill rates sharply decline or even disappear.
• Identify and focus upon your “levers of power” to shape demand and align supply – relying entirely on manufacturing and supply “responsiveness” is a one way ticket to the ash heap.

• Include your business network partners in the design of the processes and the success metrics – left to themselves you are guaranteed to be working at cross purposes.

• Align your functional metrics to the overall profitability objectives – bottoms up metrics are inherently wrong and will assure huge losses in profitability, responsiveness and excess investment in fixed and working capital.

• Deploy a contingency planning approach based on multiple “what if” scenarios to determine the “hot spots” of risk and opportunities – and then develop and deploy tactics to preempt the competition.

• Plan a three month roadmap to achieve specific business value objectives and keep the roadmap dynamic – you cannot effectively plan more than one or two steps ahead as actual results from your previous and current steps should significantly change your perspective of the next best opportunities.
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Chapter One:
Issue at Hand

Key Takeaways

- Today’s dynamic marketplace has radically increased risk and rendered traditional S&OP processes and technologies obsolete
- Market uncertainty requires next generation demand forecasting – relying only on supply responsiveness is a recipe for failure
- Aligning available supply to forecast demand is no longer the objective – achieving target profitability through a focused strategy of micro-market domination is the new goal
- All enterprises are driving towards significantly compressing S&OP cycle times with the majority of best in class companies targeting real time or daily Closed Loop cycles

Enterprises are under severe pressure to develop tactical business strategies to help master an environment that is increasingly volatile and unforgiving. The cost of being wrong in the marketplace in terms of not correctly targeting winning customers, product, and services, channels, and geographies has become prohibitive as competitive pressures shrink the time window for achieving more sustainable market success.

To identify today’s success strategies for sales and operations planning management, AberdeenGroup researched the S&OP practices of a wide variety of large and mid-size companies and selected nine best practice leaders which demonstrated clearly superior results. This research, expanding upon a 2004 Aberdeen transportation benchmark of over 250 companies, is designed to help demand and supply chain professionals learn from the successes, and challenges, of their peers in developing and deploying enhanced business and technology capabilities to drive superior performance.

Where Has All the Relative Stability Gone?

The last few years have seen a sharp acceleration in a set of marketplace trends that are putting growing pressure on traditional methods used to align enterprise demand and supply:

- Product proliferation is intensifying the requirement for dynamic product portfolio management
- Commoditization pricing pressures require more detailed market segmentation
- Shortening product lifecycles drive the need for more immediate responses
- Customer fragmentation, and growing desire for specialized solutions, demands the ability to make dynamic mix decisions and to support demand shaping
- Market volatility and decreased predictability requires compressed decision cycles
- Changing organizational structures (M&A), joint ventures, and outsourcing force rapid changes in plan objectives/targets
• Use of offshore suppliers and lowering of inventory levels increase risk and impact of supply chain upsets

A mid-sized engineering design company of complex products with outsourced manufacturing identified the need for a system that provided very rapid solutions in a highly competitive and volatile market. Without both dynamic visibility and analysis they continuously were holding and/or paying for excess costly inventories at suppliers – with no decision audit trail.

**Indicators That You Have a Serious S&OP Problem — Take the Test**

Aberdeen research has determined that enterprises facing important issues with the effectiveness of their S&OP programs suffer from one or more of the following:

• *Lost sales* due to the inability to respond to rapidly changing requirements and specifications in different markets

• *Mismatch of available production and actual demand* resulting in excess inventories and unplanned price reductions to “clear the pipeline”

• *Unreliable Delivery Performance*, the inability to provide reliable delivery dates without carrying excess inventories

• *Limited Flexibility* to respond to changing market segment priorities, redeploy finished inventories in transit, and achieve focused market and product mix and share penetration

• *Low Forecast Accuracy* in the 50% rather than the 75% range results in excess “just in case” resources tied up needlessly

• *Lack of Sustained Focus* on the best, and the most profitable customers, channels, products, geographical segments and the best matching supply sourcing

• *Failure to Quickly Identify Winners* both in terms of market segments and products

If your company is experiencing one or more of these problems then you may be a prime candidate for a serious upgrade in sales and operations planning capabilities.

**Dynamic Sales and Operations Emerges as the New Standard**

Dynamic sales and operations planning (Figure 1) is that set of business processes and technologies that enable an enterprise to effectively respond to demand and supply variability with timely determinations of the right market and supply chain mix, all through the S&OP time horizon. The market mix is the customer, product, channel, geographical segmentation choices, and the supply chain mix is the distribution, warehousing, production and procurement locations and sources.

Integral to these processes is the ability to support a Closed Loop process versus actual process to ensure a program of continuous learning and improvement.
Figure 1: S&OP: Orchestrating the Dynamic Marketplace

Source: AberdeenGroup, November 2004
Chapter Two: Key Findings and Recommendations

**Key Takeaways**

- Pain points and opportunities are strongly influenced by the core industry/product characteristics and nature of the business model
- Developing a competitive strategy to target and dominate specific micro-markets of sets of customers, products, channels, andographies is a pre-requisite to success
- The S&OP program roadmap should be “rolling” – refined and re-prioritized with the completion and lessons learned from each phase – do not try and establish a multi-year plan set in stone

**Key 2005 S&OP Strategies Winning Companies Have Adopted**

Best in class enterprises are zeroing in on three complementary strategies to take competitive advantage of this dynamic marketplace and manage the risks. All of these strategies embed a Closed Loop process of continuous learning and improvement.

**Dominate Key Segments**

This strategy recognizes that it is impossible, indeed undesirable, to try to compete in all of the customer, product, channel, market segments and that the key is to dominate the most profitable ones — recognizing that this portfolio changes dynamically. This includes the ability to define different segments, forecast their revenue and profit potential, prioritize segments by desirability, and dominate the best ones – get your “unfair” market share.

**Develop Contingency Plans**

The objective of this strategy is to deeply understand the underlying “system dynamics” of the marketplace, identify the highest probability upsets, and to determine the best contingency tactics to deploy to take maximum advantage of these upsets or minimize their negative impact. This strategy recognizes that the more runways you have to deal with an emerging situation, the greater flexibility and range of resources are available to you to deal with it.

**Leverage Third Party In-Sourcing**

The market fragmentation and requirement for rapid response has enterprises choosing to more aggressively include partners in their sourcing strategies. Many “brand” companies are having partners provide the full sourcing of entire product lines. However, this is NOT outsourcing, as the dynamics of the marketplace demand the ability to include this partner supply as an integral part of S&OP demand/supply optimization. Therefore, the strategy is third party in-sourcing – organizations own or directly control supply but its capabilities are collaboratively included in Closed Loop planning and performance management.
A Framework for Assessing Potential “Pain Points”

Aberdeen research has determined that, while all industries are challenged, core market and product characteristics are the prime determinants of where in the value chain these pressures and opportunities are most reported.

Figure 2 illustrates that industries closer to build-to-stock (such as consumer packaged goods) tend to focus on share of category, price, and finished inventory issues, while enterprises that are more in the engineer-to-order world are more focused on share of each customer, procurement costs, and inventories of assemblies.

![Figure 2: A Framework for Assessing Industry Priority “Pain Points”](source)

Aberdeen research has determined that the type of business model that enterprises choose, from a “virtual enterprise” to vertically integrated and capital-intensive assets, dictates the decision focus along the spectrum of market-centric constraints versus supply-centric constraints (Figure 3).

Outsourcing of manufacturing operations is a business trend that drives key requirements in this area. With outsourcing, since the OEM no longer owns procurement and production operations, there is no need for the OEM to perform detailed operational planning with existing supply planning systems.

However, in high-velocity environments, the OEM does need to proactively assess and continuously manage the impact of S&OP plan revisions on key business metrics. Dynamic S&OP processes and solutions, therefore, take on a very important role at these enterprises.
S&OP Best Practices Checklist

Ruthless Pick and Back Winners

Dynamically selecting and maximizing market share of winning customers, products, and marketplace is increasingly becoming a core competency of all competitively successful enterprises. Best in class companies are much more likely to have structured processes and methodologies for forcing a justification for retention of customers and to explicitly tie menu-based pricing to expectations of profitability.

Only best in class companies have any systematic policies around “firing” customers, although even here this strategy is in place in a minority of these companies. Their strategy is based on the perception that it is much more important to be aware of market volatility and change and be prepared for the unexpected, than the simpler approach that there are a broad range of choices – winners keep changing even if the number of choices is limited.

Relying Exclusively Upon Supply Flexibility: a Formulae for Failure

A consistent attribute of companies with weak emphasis on demand forecasting is their translation of market volatility. The market challenge is to forecast accuracy into decisions that de-emphasize demand forecasting and rely instead on supply flexibility and responsiveness.

No amount of rapid responsiveness or manufacturing flexibility can resuscitate devastatingly poor customer service. And expediting costs of forecasts can be flawed if delivery lead times are within the envelope of total supply replenishment cycle time.
Best in class companies respond to this challenge by investing in next generation demand forecasting technologies (neural nets, pattern recognition software, etc.) as well as supply enhancement solutions.

**Integrate Your Network Partners in Your Processes and Metrics**

Best in class companies overwhelmingly identify working collaboratively with customers and suppliers as by far the most critical element to a successful S&OP management program – this is identified by less than half of industry norm and laggard companies.

**Figure 4: Best in Class Deeply Involve their Partners to Drive Successful S&OP Management**

![Bar Chart]

Source: AberdeenGroup, December 2004

**Success Depends Upon a Closed Loop Process – Not Just Planning**

Whereas in the past, this S&OP cycle would consist of an annual and quarterly planning process and a periodic — monthly and quarterly — review and performance report, the volatility of the new marketplace demands a structural change in the process, based on:

- Testing the validity of the plan assumptions themselves, as much as analyzing performance against the plan
- Developing the frequency and level of granularity of the performance measurement based on decision importance — no fixed periodic review of everything — no “peanut butter” approach
- Much greater emphasis on the “why” rather than just the “what” of what has happened — does this indicate a trend, a blip, an anomaly, etc — and what to do about it
- Much more frequent and systematic testing of pilot initiatives with sharply focused interpretation of the results based on viral deployment strategies — the enterprise cannot afford to “bet the farm” on a single, all embracing thrust
• Continuous development of best practices based on best results, structured identification, and propagation of pilot-based best results

**Best Practice Use of Technology**

The S&OP best practices winners share a set of common approaches that have been a key part of their successful implementations and should be considered a standard for any initiative in this space.

**Develop a Phased Approach – “Big Bang” is the Harbinger of Failure**

S&OP is much more an integrated set of business processes and technologies than a single, all-encompassing process or technology. The “pain points” and opportunities, while related, are nevertheless specific, and lend themselves to resolution with specific changes in process, and enhanced technologies. This is fundamentally different from many ERP implementations where you may have to implement the lion’s share of the infrastructure in order to be in the position to solve a single business issue.

One effective “rule of thumb” is to develop phases that have a specific business objective and the metrics to be improved – not the implementation of a piece of technology. The objective, for example, is to reduce inventories by 15% and not to put in a demand forecasting solution, per se. This leads to the point that you should only configure as much of the solution as is necessary to achieve the business objective, and not to mindlessly “fill in tables”.

These phases should be designed to generate measurable business benefits in 3-4 months. With a longer time horizon you may be late in detecting that there were fatal flaws in the initiative, and lose critical time and value before the issues could be identified and, hopefully, resolved.

**Develop a “Rolling” Phased Approach – Not a Rigid, Multi-Year Plan**

One of the truly special benefits from the implementation of an S&OP initiative is that improvement in areas closer to the customer will almost always improve downstream operations – like magic! For example, improving the quality of demand forecasting will also lead to reduced expediting costs, smoother procurement, and reduction in excess inventories, to mention just a few.

Therefore, you are never certain about the priority of “pain points” to be addressed, much beyond the current set of one or two specific initiatives due to this positive domino effect of business benefits. The best approach is to develop a “rolling” roadmap that is subject to changing priorities, business benefits, and required technologies, based on careful re-view of actual performance across the value chain, with the completion of each initiative.

**Develop an “Outside-In” Sequence of S&OP Initiatives**

The evidence is clear that the areas most likely to generate the greatest improvement in total S&OP business performance occur when you tackle the demand component of the demand/supply alignment. This is both due to the “domino” effect illustrated above and also the fact that no amount of added flexibility and adaptiveness invested on the supply side can offset an ineffective demand management capability.
Finally, the events and assumptions most likely to affect you the most negatively are almost always those *outside* of your control. These are largely concentrated in the decisions of your customers and competitors and manifest themselves in your customer buying behavior and your competitor’s marketplace strategy.

**You Always Need Less Data Than You Think**

One of the hallmarks of a successful implementation is the clear foresight that you should attain on only as much, and as clean, data as necessary to enable a successful initiative – this is not a data cleaning or data gathering operation for its own sake. Research indicates that, in many cases, *less than 10%-15%* of all available data is actually key to achieving the business objective. Projects frequently bog down in trying to secure data that is of marginal importance to the decisions necessary for the project.

Make sure that you know *explicitly* which business problem you are trying to solve and have determined the *minimum* data necessary for the job. Then, if the data is still not “clean” enough to make the quality of decisions required, you only have to clean up this specific set of data, and not engage in a general data cleaning exercise.
Chapter Three: 
Best Practice Case Studies

Best Practice Leaders

This chapter profiles best practice leaders and their supporting technologies. Each winner is recognized for unique excellence in a specific best practice, though they all employ multiple best practices.

Table 3: Best Practice Case Studies

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Source: AberdeenGroup, June 2005
Bedoukian Research Smoothes a Lumpy Road

Business Challenge

Bedoukian Research, Inc., located in Danbury, Connecticut, is a specialized process manufacturer producing high quality ingredients used in flavors and fragrances for customers worldwide. Bedoukian makes 350 specialty chemicals, in small batches, from 2000 raw materials. In addition, the company manufactures fifty insect pheromones used to attract and control insect pests, and resells 100 other products.

Two-thirds of Bedoukian's 525 products are irregular sellers with short shelf life that exhibit intermittent, slow-moving demand, which is very hard to forecast and determine the right amount of product to manufacture.

Bedoukian's customers depend on the company to have products in stock when they need them. So, making sure that its products are in stock, as well as keeping its inventory as lean as possible, is a high priority for Bedoukian.

The forecast results for its slow-moving items were unrealistically flat and not at all dependable. For these items, the company had to set stocking levels manually using primarily judgmental inputs. To achieve its high customer service goals, the company needed a solution that would provide it with accurate stocking level estimates for all of its products, including those with intermittent or slow-moving demand.

S&OP Strategy

The demand uneveness existed despite there being no promotional selling, and the seasonal nature of the products consumed made it impractical to try to induce customers to buy specific seasonal products on a year round basis.

Closer collaboration with customers, while of some marginal value, was not a prime option as the customers themselves were plagued by the same difficulty in forward forecasting their seasonal demands, especially on a monthly basis.
Bedoukian determined that it was critical to enhance their demand forecasting capabilities and use this improved accuracy to better manage target inventory levels and smooth out manufacturing operations.

**S&OP Selection and Deployment**

The company needed a forecasting system that could accurately forecast intermittent demand. Before Smart Software developed its proprietary "bootstrapping" method for forecasting intermittent demand, there was no accurate solution available.

Bedoukian Research bought its first copy of Smart Software's SmartForecasts™ in 1987 and satisfactorily used it to forecast products with high volume demand. Bedoukian was also an early adopter of Smart Software's new, patented intermittent demand forecasting technology in 2001.

SmartForecasts originally interfaced to Bedoukian's Informix host database. More recently, Bedoukian installed Chameleon, a specialized ERP planning system designed for the chemical industry. The combined forecasting and planning system is in full production. SmartForecasts now receives demand history data via file transfers from Chameleon's SQL Server database and feeds forecast results back into the database.

Bedoukian combines the statistical forecast results produced by SmartForecasts with feedback from the sales department to move forward with forecasts for individual customers. The company uses the information to look for purchases that may be outside the range of what is reasonably expected (either high or low), and thereby to spark discussions about the usage of particular products by particular customers.

**Results**

In the past, Bedoukian aimed for an 85 percent service level, and had been achieving it, even for products with intermittent demand. Recently they decided to prioritize their products. For a few items that Bedoukian does not want to run out of because of increased competition, inventory and safety stock requirements are forecasted by SmartForecasts at a 90 - 95% service level. For the approximately 20% of their products that produce 80% of their annual revenue, inventory requirements are estimated at the 85% service level. For the rest of their products, Bedoukian now uses lower service levels.

During the past six months, using the new prioritization process, Bedoukian has reduced its finished goods inventory by 5%, and the number of backordered items by 60%. The company now has more units in stock of the items that they truly need and less units of the items they do not need. This is a truly impressive result, as the more conventional systems have generally been incapable of modeling irregular demand at all.

SmartForecasts is also helping the company see the patterns in its product demand so it can better track sales performance and trends. This has been particularly useful for identifying changes in the buying patterns of customers, so that remedial action can be swiftly taken to satisfy these customers' needs and avoid losing their business.

**Lessons Learned**

Bedoukian has realized that the confidence of the organization increases on the accuracy of the demand forecast, staff is much more likely to be quicker and more aggressive in
taking advantage of this superior information – that it is critical to ensure that the planners experience the improvements in forecasts and their impact on inventory levels and customer service first hand.

With a superior system, Bedroukian has been able to establish a more sophisticated system for differentiating inventory levels and customer service levels, rather than applying a “one size fits all” approach based on the limitations of the legacy system.

Finally, the company has learned that the same system that has proven so successful in helping to manage customer demand can also be effectively deployed to improve the stocking of raw materials, to improve total supply chain efficiency and effectiveness.

**Future Outlook**

Since demand data for raw materials are now available with the Chameleon ERP system, SmartForecasts can be used to create appropriate lead-time forecasts for these items. Bedoukian expects that the planning process will be smoother now that SmartForecasts can be used to estimate optimal inventory stocking levels for its raw materials, many of which are used in multiple products. As Bedoukian moves forward with forecasting raw materials, in the same manner that they forecast finished goods, they hope to have similar positive results.

About six months ago, Smart Software conducted a training and consultation session at Bedoukian at which representatives from production, sales, purchasing and management were present. The goal was for everyone to understand what SmartForecasts' brand of demand forecasting and planning can do for the company and how it works.

Since then, Bedoukian has been working on incorporating more detailed lead-time data into the forecasting process to create more accurate inventory reorder points for all finished good items that reflect desired service levels. They have also started combining information on reorder points and reorder quantities together with estimates of carrying costs with the goal of further reducing inventory investments and overall costs by the end of the calendar year.

**Aberdeen Conclusions**

Bedroukian has demonstrated that there need not be significant changes in existing business processes for demand management in order to take advantage of superior accuracy from new technologies.

The insight by Bedroukian that a system that generates more accurate forecasts of outbound demand can also be a highly effective solution for raw material procurement is powerful. This demonstrates the importance of “thinking out of the box” in regard to the areas where the characteristics of specific types of solutions may be applied, outside of the area that was the original problem of focus.
Campbell Soups Up Real Time Demand Forecasting

**Business Challenge**

Campbell Soup Company is a $7 billion global manufacturer and marketer of high quality soups, sauces, beverages, biscuits, confectionery, and prepared food products. The company owns a portfolio of more than 20 market-leading businesses each with more than $100 million in sales.

The food business is characterized by highly promotion-intensive marketing strategy by all players – as much as 75%+ of all product demand is sold when products are price promoted. To adequately plan an integrated supply chain, especially including products that may have strong seasonal demand patterns, requires a much more accurate demand forecasting system, at the SKU level, than for most other products not subject to such extremes in stimulated demand.

Due to an aggressive business transformation plan, Campbell Soup was facing serious inventory and customer service challenges, and like most CPG companies had about 45% weekly forecast error. This was especially a problem given the promotion-intensive nature of their business – as a destination category, failure to be on retail shelves for highly promoted SKU’s was a prime source of customers switching to competing brands.

They also found that generally adding inventory was no solution – because you must forecast accurately at the SKU level for this additional inventory to actually compensate for error on actual demand. Being “right” at the product or product family level did not significantly reduce net stock outs.

**S&OP Strategy**

Campbell developed an integrated sales and operations planning program based on leveraging their existing investments and augmenting these with the introduction of real-time demand forecasting. They determined that it was vital to transform the S&OP process from informal “cafeteria gatherings” with no structure or accountability to a rigorous and
structured process aimed at illuminating and making decisions upon all relevant demand and supply issues within the tactical planning horizon.

This superior high-level forecast could then be fed into Manugistics’ Demand Planning and Fulfillment system, adjusted by Real-Time Forecasting then used to determine optimal inventory levels and plant manufacturing and distribution plans.

**S&OP Selection and Deployment**

Terra Technology was the only solution capable of meeting Campbell Soup’s exacting criteria of reducing near-term weekly forecast error to less than 25%, and demonstrated this using actual company data in a conference room pilot. Terra was able to seamlessly integrate with the core Manugistics solutions with minimal integration costs.

Real-time forecasting was implemented in 4 months, going live in May 2004 for all of the Campbell U.S.A. products.

Implementing a new solution that provided enhanced demand forecasting based on real-time advanced pattern analysis of shipment and order data to the distribution center provided immediate relief – forecast error shrank to 21% and within a year, the company reported an inventory reduction of millions of dollars. The improved accuracy of the forecast has also allowed Campbell Soup to take better advantage of their existing APS solutions, in terms of balanced manufacturing and supply chain operations.

**Lessons Learned**

Campbell learned that the technologies necessary to enable real-time forecasting for immediate replenishment as not necessarily those that are effective for medium term planning purposes and that it is critical not to take a “one forecasting technology does all” approach. They also determined that it was possible, and very important, to accomplish this while seamlessly integrating with their existing powerful suite of planning applications. Finally, the company proved that individual best intuitive “guesses” were no match for a formal decision making process, enabled by planning and forecasting models capable of generating multiple “what-if” scenarios and simulated outcomes.

**Future Outlook**

Campbell is actively considering the application of real-time forecasting with other divisions within the corporation and seeking additional opportunities to leverage the greater forecast accuracy to improve overall supply chain operations and improve customer service.

**Aberdeen Conclusions**

Campbell Soup was facing a set of challenges that are almost generic in the food and consumer products industries: managing customer service and inventory levels in an environment of chronic promotions. Far from “everyday low prices” (EDLP) becoming the norm, we will continue to see deep promotions and marketing campaigns continue as a hallmark of these industries. The ability to achieve 75%+ forecast accuracy should give Campbell Soup an important competitive advantage in the fierce battles over category management rights and retail shelf space.
Clear Sailing for Centillium Communications

Centillium Communications achieved explosive growth as the prime supplier of semiconductor products that enable broadband communications for the DSL market. Two years ago, as these products grew closer to their end of high-growth life; the need to manage the migration to new, rapidly growing technologies suddenly arose.

The speed and severity of this change was not anticipated by the company, and Centillium came off the DSL peak with excess inventories.

However, the company did not have an effective tool for managing the large number of different product and customer opportunities in a rapidly evolving and dynamic marketplace. The reliance upon spreadsheets and manual processes to forecast, plan, and analyze results meant that the sales force did not have the tools or visibility to provide insightful demand forecasts. It was difficult to judge the quality of the sales pipeline, or measure the effectiveness of tactical decisions or emerging trends in the marketplace.

Because of the uncertainty of the market, the risks and consequences of misjudging customer demand or betting on the wrong new product configurations were severe.

S&OP Strategy

“I want to be in a position where I am never surprised by my sales force and I never surprise my investors,” explained Faraj Aalaei, Centillium’s CEO.

Centillium was determined to better manage its sales and operations planning and performance management program where the greatest risk and opportunity to the company existed – at the development of a coherent, consistent and cross-referential pipeline. The sales organization needed a system with detailed visibility into both historical and current customer prospects as well as product sales in order to better forecast the expected demand.

Senior management required real-time visibility and analysis across a broad range of analytical perspectives provided by the system – from sales personnel to products to customers, etc. – to quickly determine areas that required immediate focus and decisions.
There was a need to manage units, to translate prices to revenue, and then add in costs to obtain margins – since revenue-based forecasts could be extremely misleading. The unit data and roll up had to be authoritative, with high confidence and validity, so that effective decisions could be made based on the analysis.

**S&OP Selection and Deployment**

One essential criteria was that the solution had to be deployed rapidly to individuals with little experience in business applications, therefore, it had to be easy-to-use and could easily evolve as Centillium progressed from demand management to related supply chain management activities.

Centillium had a proprietary ERP solution, and was looking at various CRM solutions – but none of them provided a high degree of flexibility, ease of user uptake and the capability to track the evolution of forecasts to empower executives to take decisive action. The biggest competition came from the internal sales operations team who had wanted to build their own solution, but, as the CEO put it, “you are a sales organization – what are you doing building software?”

Centillium chose the Right90 solution. It was rolled out and deployed to the sales team within 90 days. The ease of use of the system allowed some of the sales reps to immediately add unit pricing and costs to the system without any significant user training. Executives, administrators, marketing, sales, and finance all started using the system from the onset.

**Results**

The most critical indicator of success was effective management of inventory levels. Centillium was able to cut inventories by half and avoid a potential repeat of a write-off that was necessary due to misalignment of demand and inventory caused by product transitions in their DSL business. With such a fast moving business, it is critical to manage the ratio of inventories to projected future sales. With the new system in place, Centillium no longer “builds to unreliable forecasts” and instead follows “if you do not forecast it accurately, we will not build it” guiding principle.

The Right90 system has also allowed Centillium to zero-in on the most severe problem areas of forecasting by regions and individual sales representatives. “We found that some sales people are not accurate forecasters, so we adjust his/her forecast and provide a custom view into a good history and comparable clients and products.”

**Lessons Learned**

Centillium has learned that it is critical to better manage the demand planning processes in order to be effective in a fast-paced industry, and that a single authoritative demand plan is a pre-requisite.

The real-time coordination between sales, marketing, finance, and operations has provided Centillium with the best sales and operations planning practices and the realization that timing is everything – every hour that goes by with an inaccurate forecast or a failure to recognize changes in the marketplace results in potentially serious losses.
Recovery from investing in the wrong products versus market demand is very difficult, therefore it has become the norm to run multiple scenarios with a different set of assumptions, to better understand market place risks and proactively manage those risks.

Richer and more granular data, down to the product family and specific part type is critical to avoid demand/supply mismatches – customers buy specific products and not at the product family level which forecasting was formerly based upon.

**Future Outlook**

Centillium is building from the base of tackling the most easily fixed errors first, to extending the system to deal explicitly with problems that arise as the result of a difference in assumptions and perspectives by sales and marketing. The objective is to categorize “chronic” problems that lend themselves to systematic resolution and build these capabilities into the next iteration of the demand plan.

Another key initiative is to plan and execute for how to deal with either shortfalls or opportunities through a set of specific initiatives – to identify, track, manage and refine this set in real-time and be continuously aware of the status and any shortfalls or opportunities not being dealt with.

**Aberdeen Conclusions**

In a remarkably short period, Centillium has been able to gain fundamental control of its demand management in a highly turbulent, competitive, and unforgiving marketplace.

Centillium has clearly identified the most critical elements of its S&OP processes and technologies that needed to be significantly improved and has demonstrated a highly pragmatic and effective approach to introducing some very different processes and capabilities in leveraging intelligent application software.

The drive to incorporate systematic issue identification and resolution into the Right90 solutions and to successfully evolve the solution breadth and depth of its S&OP program will be a very important element of their future success in the marketplace.
Auto Electronic Components Manufacturer Masters a Complex Material Cycle

Business Challenge

The company, a prime supplier of electronic components to the OEM and automotive after markets, had a business that depended on the return of used equipment, such as alternators, as the core material from which to build products to meet new demand.

However, there was a fundamental mismatch in timing and mix in this highly seasonal business — “when it gets hot business really starts to roll” — between these returns and demand.

Retailers would order at the start of the summer season, but tended to return cores at the end. There did not seem to be a reliable way of forecasting returns or to develop an integrated planning process that enabled the firm’s 14 manufacturing plants to meet demand without building excess inventories.

In 2003, the company suffered from a major “inventory balloon” when there were insufficient cores to meet early summer demand, and the plants went into overdrive. However, they did not stop when the peak season passed and the company was left with a serious inventory hangover from the excess production. The system was dangerously close to being out of control.

S&OP Strategy

The company determined that it needed to take a fundamental look at its entire demand/supply process and adopted a two-phase strategy.

First, “by sheer brute force,” it was able to manually bring the excess inventory under control by establishing an ongoing dialogue with key retailers on their demand and core return, and securing greater visibility and alignment. The company also instituted a weekly planning meeting with the manufacturing plants to give them better forward visibility to anticipated demand, and to make sure that there was no miscommunication.
But with millions of inventory transactions being generated daily, and with no effective systems for forecasting finished demand and returns, or intelligent scheduling of the different types of manufacturing plants, the company needed to develop the capabilities to plan both sides of the demand equation – outbound to and inbound from retailers.

Building upon this “crude beginning” to the S&OP process in place, the company then embarked on 9-month program aimed at combining best practices in demand forecasting and demand management, as the most critical initial phase to regaining control of its complex operations.

**S&OP Selection and Deployment**

The company undertook a rigorous and meticulous program, including 10 technology providers. The focus was on these solutions proving in a conference room pilot environment that they could accurately and simultaneously model both inbound and outbound components of the circular material balance in a single demand model.

The solutions would also have to seamlessly align manufacturing requirements and production schedules with this demand, based on very specific and challenging scenarios that mirrored the company’s existing challenges and reflected the best practices path it was determined to follow.

The decisive test was for the solution provider to prove with customer interviews that it had clients currently deploying at least some of the most important elements of this integrated solution.

Logility was selected at the end of process, based on its ability to demonstrate these core requirements, and its flexibility and capability to develop the unique requirements imposed by the returns issues – “Logility was the vendor that took the opportunity to heart, and found the way to model reverse logistics into a single logic model.”

The integrated Logility Voyager Solution set was selected, including Demand Planning, Inventory Planning, Supply Planning and Global Sourcing Management. The initial focus was to introduce improved demand planning and inventory management processes and technologies. This was achieved in stages over a four-month period, with the finished goods demand planning going live less than 60 days from the initiation of the program.

A single major model is used across its entire supply network, and has several more detailed specialty models, for example, its rapid-response plant in Mexico.

**Results**

The company established quantified targets to measure the success of the program, with focus on two specific areas:

1. Inventory reduction; and
2. Cost reduction due to excess expediting and manufacturing costs from the mismatch of returns and sales.

The program has been in effect for almost two years and has exceeded the planned objectives on all counts. Inventory levels have been reduced from an average of 30 to 35 days of supply down to 14 to 25 days, with a 17% reduction in year-end inventory levels “al-
ready in the bag” and an additional 17% to 20% in clear sight - for a total of 50%. Excess expediting costs have also been reduced by more than 50%.

The company focused on improving the three core areas that drive excess levels of inventory safety stock:

- Demand variability,
- Supply/manufacturing variability, and
- Cycle stock.

While it’s clear that not all of the improvement was due to the technology, it was also true that, without the technology, the business process changes and improvements in operating communications and collaboration could not have been scaled to achieve this impressive level of performance improvement.

**Lessons Learned**

The driving role played by the manufacturing team was a critical element in the project’s success, with its ownership and responsibility of the processes, setting and standing by with the target improvements, and going the extra mile in developing the required best practices for the company to better manage its highly complex and fluid supply chain.

The IT organization was vital in providing technical support, but the dedicated operations team drove the project design, deliverables and implementation strategy. This deep insight led the company to focus first and foremost on improving the demand forecasting component of the S&OP process – “without better demand modeling and especially the integration of the reverse logistics, it would have been very hard to achieve significant improvements in manufacturing efficiencies.”

The company also found, to the surprise of some, that it was possible to forecast reverse logistics with a high level of accuracy – in fact, returns are now forecasted at a higher level of accuracy than finished product demand.

**Future Outlook**

The company is currently embarking on a major complementary initiative to determine the lowest cost solution across the entire network, with full integration of reverse logistics. This is a particularly important phase as it will explicitly enable the company to optimize the role of rapid response specialty plants – with very quick production but also higher manufacturing costs – with the high volume production facilities – with lower production costs based on long production cycle times, and therefore, longer response times.

The company is also in the process of rolling out this highly successful set of solutions to other parts of the organization, and the company is striving to ensure that the same level of ownership is achieved in these other business units to attain a comparable level of energy and enthusiasm.
Aberdeen Conclusions

The company has shown a clear understanding of the root cause of the challenges that beset the company in 2002. Designing a phased strategy to target and resolve these issues has provided an enormous boost to the effectiveness of an S&OP strategy.

Starting with the demand variability and defining an integrated material balance model has provided significant capability to identify the root cause of potential problems, virtually anywhere in the integrated network, and to take decisive action, often before the problem bloomed into adversely affecting sales, operating costs, or inventory levels.
Riverstone Networks Dynamically Plans Profitability

Business Challenge

Riverstone Networks is a prime supplier of complex networking equipment to carriers and service providers, whose customers demand high quality service. The company has deployed an outsourced manufacturing model, with multiple fulfillment sources, for highly configurable products that have in excess of 100 saleable parts.

There was no manufacturing resource planning in their ERP system, and the system of record for the product forecast was different versions of Excel.

Without a centralized model to synchronize demand and supply data, Riverstone was subject to frequent mismatches of rapidly changing demand and available supply. This increased the constant risk of having to write-off owned excess inventories at contract manufacturers. This also made it very hard to track what in the plan was changed, why, when and who approved.

There was no effective way to simulate the value of committing specific orders or satisfying different types of demand, and there was no easy or reliable method to align forecast and actual demand with on hand supply and planned supply.

The organization was spending 70%+ of its time and effort on chasing after scattered data and firefighting, leaving little time for proactive planning – activities the VP of Supply Chain, Graeme Thompson characterizes as “about as valuable to me as the time the planners spent in commuting from their homes to work.” This left Riverstone vulnerable to suboptimal planning decisions resulting in higher risk of:

- Increased expediting charges
- Excess inventories
- Missed ship commits to customers
- Inadequate visibility to future shortages or excess

Company Name
Riverstone Networks

Solution Provider
Interlace Systems

Business Challenge
Managing fluid customer demand and synchronizing supply from different parts of the supply chain to minimize inventory exposure while utilizing an outsourced manufacturing model

Strategy
Dynamically align consensus demand and supply with an integrated end-to-end model of the business and proactively determine and resolve emerging mismatches

Value Achieved
Reduced COGS by over 5%, eliminated inventory write-offs and supported increased sales with reduced planning personnel and process automation.
**S&OP Strategy**

Riverstone determined that it was critical to develop a single integrated model of the business that managed demand and supply variability by identifying constraints, allowed collaboration on multiple scenarios, and eliminated the reliance upon a single individual.

The approach was to redesign three major business processes and ensure that they were reflective of Riverstone’s requirement for a single central point of reference for all plan assumptions, plans, and results:

- **Consensus Demand Planning:**
  - Demand details in unit and dollar value terms, including historical and future detail by customer
  - Approval limits and capabilities to manage the submission and approval of subsequent forecast revisions
  - Ability to keep audit trail of on-going changes

- **Inventory Exposure Planning:**
  - Sharing detailed build plan and tracking in-flight requests with suppliers
  - Display component liability to suppliers without manual work and manipulation
  - Simulate multiple “what-if” analysis on demand changes and understand the potential impact before submitting requests to supplier

- **Order Fulfillment Planning**
  - Enable Customer Support Team to directly commit a new order base without multiple hand-offs
  - Perform “what-if” analysis and potential impact of changes within in-line reports
  - Size the dollar risk for the quarter and identify unsupported orders
  - Flag exceptions when business rules were violated

**S&OP Selection and Deployment**

Riverstone determined that it required a system that could manage these best practices business processes, be the unified system of record, and include audit capability. The system would have to be highly scalable and support the company’s rapid growth without adding to the planning staff. Finally, the system had to be easy to implement and provide ready access to detailed information by all levels of management and decision makers.

Riverstone chose Interlace Systems after an in depth assessment of a number of other potential solutions, based on its flexibility, ability to rapidly model the Riverstone operations, and ability to easily integrate with a single worldwide instance of Oracle 11i for all other major functions.

The system was deployed in under three months to answer three fundamental questions:
Does the consensus demand plan support the forecast and ordered demand within business plan constraints?

Do I have enough product when I need it?

Is the supply base executing to plan?

The system supports dynamic available-to-promise, automated reporting, and multiple product plans. There is easy access to historical trend data at various summary levels across different time periods, and compatible data with consistent formats, that has significantly improved the quality and flexibility of Riverstone’s decision-making.

Results

Riverstone has been able to bring their disconnected business model under tight control with a highly proactive capability to identify and diffuse impending demand and inventory risk. This has enabled the company to reduce COGS by over 5% and to eliminate the risk of company inventory write-offs.

Expediting costs have also been reduced by over 50% and the system has supported growing sales volumes with a reduction in the number of planning personnel required while allowing the existing team to scale.

Communications with suppliers have been dramatically improved, and the sales organization can make faster and much more accurate product availability decisions.

One unexpected benefit has been the ability of the system to provide all of the documentation and detailed decision flow required to satisfy a SOX404 process audit within the supply chain function – it was determined by the external auditors that no additional investment or process changes were needed beyond what the Interlace Systems solution was already providing.

Lessons Learned

Riverstone has taken away three central lessons from their experience to date:

- Demand and Supply alignment is key for reducing order fulfillment cycle time, increasing on time shipments and avoiding extraordinary costs associated with expediting.
- In today’s audit conscious environment it is critical to be able to demonstrate control over forecast commitments that are made.
- Powerful, easy to use software coupled with strong business processes allows this alignment to be managed at a greater level of detail and in a repeatable way.

Future Outlook

Riverstone is building upon the core systems and processes they have put in place over the past year to provide a series of alerts based on more complex, multi-functional business plan challenges, such as the implications of new product design in the portfolio mix.

The existing system is constantly being enhanced in numerous ways to improve the action ability of the reporting and to better arm the decision makers with earlier alerts of
impending issues. The value of this information is constantly increasing so Riverstone has more options available to deal with demand and procurement issues.

**Aberdeen Conclusions**

Riverstone has demonstrated a clear ability to model the most critical, risk prone components of their business model, and synchronize their business processes to take advantage of the new technology capabilities.

They have shown that companies do not require a leading market position to make effective use of S&OP capabilities and that the potential gained from greater S&OP flexibility and adaptiveness can be a very effective lever to improving the relationship with trading partners especially in an outsourced manufacturing model.
Gehr Industries Finds Cost Effective S&OP Control

**Business Challenge**

Gehr Enterprises is a privately held, multinational business consisting of a diverse group of companies engaged in manufacturing, wholesale, and distribution, direct marketing, international trade and real estate, over three continents.

The company found itself in a situation that many other mid-market entities encounter, a legacy 15-year-old ERP system, augmented by many add-ons that lacked a centralized business intelligence tool.

Gehr needed a way to coalesce various databases to develop key metrics and analytics in a comprehensive fashion.

Gehr primarily used Excel to export data from various applications, and to do the operations and financial planning and analysis. This time-consuming process involved many spreadsheets and often resulted in data that was fragmented and outdated – especially information around operations.

The company was getting by “with a lot of elbow grease”, but was not able to creatively develop and deploy the models of the business and the right operating metrics that would provide the required level of proactive management.

Gehr needed a way to find and analyze data to enable more accurate, updated budgeting, planning and forecasting.

**S&OP Strategy**

The company determined that it needed a single comprehensive approach to the development of budgets, S&OP plans, and performance analysis to ensure that it had a more credible and transparent plan and the means to assess its actual performance.

Additionally, Gehr wanted a solution that leveraged its current systems, including complete integration with Excel, while providing the ability to tap into databases and drill down to the most detailed level. For example, Gehr required the ability to view an actual line item on a given invoice.
A key objective was to have any solution highly user friendly, in order to encourage user uptake of the systems’ analytical capabilities to drive better decision making, and faster analytical cycle times.

**S&OP Selection and Deployment**

Gehr researched a number of leading OLAP packages with the goal of finding a solution that delivered the analytics and tools needed to offer forecasting, planning and budgeting while still maintaining a level of user friendliness that would appeal to a non-technical staff.

CONTROL was the best tool with the immediate ability to efficiently analyze large volumes of data very quickly without the need for customized programming. KCI proved that CONTROL could extract data and give Gehr the key financial and operating indicators needed – how and when they wanted them. Essentially, CONTROL was the most powerful, robust tool available at a very affordable price, in turn providing Gehr with the best ROI.

Gehr licensed CONTROL, a premise-based application, in 2000 and began implementing the solution shortly thereafter. The solution has been in full production since 2001. The company largely self-implemented CONTROL in approximately four weeks, which was a goal at the outset.

It was important that Gehr not spend additional dollars paying large consulting fees or hiring an in-house IT staff. KCI has provided selective training totaling only 24 days from 2001 to date. Much of this training was used to help Gehr launch the product and quickly train the staff at the outset.

Gehr generates sales and margin analysis on a daily basis, and customer profitability on a weekly basis, with detailed and cross-functional operational metrics.

**Results**

Gehr experienced many benefits once CONTROL was implemented. The software enabled Gehr to significantly reduce the timeframe of its multi-divisional budgeting process from three months to three weeks.

The solution was introduced at budget time and the initial model was designed around getting the sales assumptions and numbers right – then expanded to full profitability based modeling and analysis.

The new solution offered Gehr a completely new level of organizational visibility, which makes it easy to use historical data to project the future and create multiple “what if” scenarios. The company can now drill down to the lowest level of data and readily detect emerging trends and provide insightful root cause analysis.

Furthermore, Gehr can examine differences amongst divisions, regions, channels, etc. as well as being able to hone in on individual sales rep performance, for example.

Gehr can be confident that its financial data is completely accurate and updated in “real time.” Ultimately, CONTROL is delivering the company unparalleled functionality and flexibility in a cost effective fashion. It is expected that full benefits will be appreciated across all division within the next 1-2 years, as all decision makers become more familiar
with the systems capabilities and learn to generate their own more complex analytical queries.

**Lessons Learned**

Gehr learned that, in retrospect, it might have been more value effective to secure more KCI implementation and training resources at the onset, rather than relying almost exclusively on internal staff. That is because, while the approach chosen certainly reduced implementation costs, it also took longer and with a longer learning curve to business benefits than would otherwise have been the case.

The company also learned that in order to wean the organization off of “hard copies” and onto more electronic formats like PDF’s, it is critical to ensure that individual report preferences had to be available and easy to use – the more fluid the situation and the more the users develop a simulation approach to the analysis, the more the electron and dynamic approach becomes essential.

**Future Outlook**

Gehr plans to expand his use of CONTROL in the near future. The company is currently shifting responsibilities within its staff to obtain more time and resources for application development. Gehr is primarily interested in developing tools that extend beyond analyzing historical data to create even more powerful “what if” scenarios to better manage its business. KCI plans to lend its expertise as needed. The initiatives planned include:

- Executive dashboards with the “WOW” impact
- OnDemand reporting
- Purchasing demand planning
- Inventory alert reporting tied directly to sales and marketing

**Aberdeen Conclusions**

Gehr is an example of a company with very limited IT resources and a deep need to much more effectively control their core business performance, funding a highly cost effective way to achieve their objectives.

Best practices for enterprises faced with a series of critical needs is to carry out a “triage” approach that examines and values the improvement in each major problem area and ensures that there is a solid ROI – for both the “bundled” and the “unbundled” analysis of value.

Companies too often prematurely “bundle” the benefits from a multi phase solution strategy onto the single solution – whereas the benefits from some of the “low hanging fruit” may well be achievable in a more cost effective way.
Author Profile

Stanley Elbaum, Senior Vice President, Research
Aberdeen Group

Stan Elbaum is a senior vice president with Aberdeen Group, responsible for the development and deployment of Aberdeen’s research in Planning and Advanced Analytics, with particular focus on the S&OP processes and technologies. He has more than 20 years of experience at the executive level in industry, management consulting and software, as well as market research and brings a strong end user perspective to the Aberdeen Solutions.

Elbaum has been deeply involved in the development and implementation of S&OP processes and technologies in a variety of multi-national corporations in industries as diverse as consumer packaged goods, petrochemicals, high-tech, and the pulp and paper industry. He has been a leader in introducing S&OP strategies that are aimed at providing competitive advantage through the leverage of technology and the focus on proactive, profit-centric approaches.

Stan has contributed numerous articles to trade and business publications on how enterprises are successfully leveraging best practices and technologies for high ROI and he is the expert presenter with Managing Automation magazine for Business Intelligence and Customer relationship Management.

Elbaum currently leads the Aberdeen research that focuses on performance management across the value chain and deeper research into the leverage of S&OP.
Appendix B: 
Related Aberdeen Research & Tools

Related Aberdeen research that forms a companion or reference to this report includes:

*Integrated Pricing Management: The Key to Profitable Demand Management (April, 2005)*

Seizing the Opportunity to Competitively Manage Business and Financial Risk and Returns (March 2005)

- *Demand Management: Profitably Dominating Your Target Markets* (December 2004)
- *Leveraging S&OP for Competitive Advantage* (June 2004)

Information on these and any other Aberdeen publications can be found at [www.Aberdeen.com](http://www.Aberdeen.com).
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