

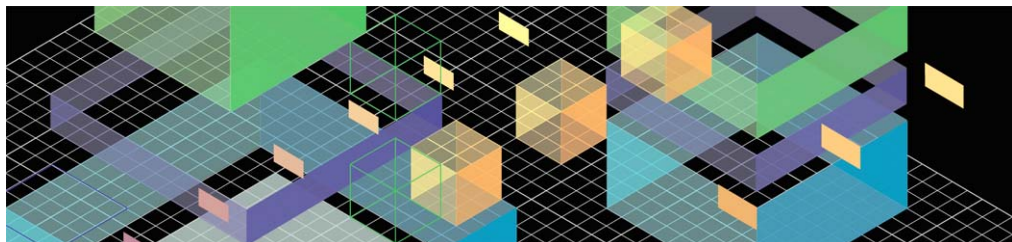


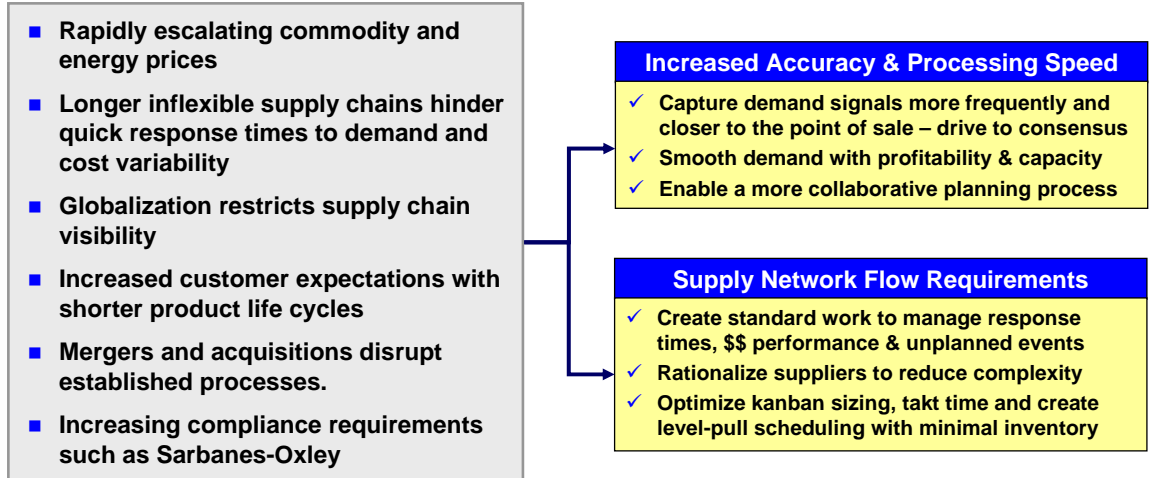
Lean Transformations: The Emerging Role of S&OP

Over the past several years, Lean transformations have moved beyond the four walls of manufacturing and are now widely used as enterprise-wide transformational vehicles driving sustainable growth and profitability. During the same timeframe, supply chain globalization, including low-cost country sourcing, has reduced supply chain visibility masking working capital investments and extended lead time issues. To combat these concerns and enable true enterprise-wide value chain performance gains, a number of organizations are turning to software-enabled S&OP solutions to accurately match consensus demand to supply chain capabilities. S&OP, properly implemented, provides a strong boost to the Lean transformation effort by creating and managing enterprise-wide standard work across the marketing, production and supply chain functions. Far from simply creating a period-specific supply plan, organizations deploying robust S&OP solutions are achieving significant performance gains including 15% less inventory, 17% higher fill rates and a 35% reduction in order-to-cash cycles.

Today's Operating Environment: Increased Complexity, Reduced Visibility

Supply chain management, much like the Lean transformation journey itself, has undergone a significant sea change over the past five to seven years as the complexities triggered by increased globalization have inflated inventory levels, extended lead times and reduced the information flows required to make real-time decisions on asset deployment and customer service prioritization. Given these challenges, manufacturers today are seeking out simple, robust solutions that can improve information accuracy, accelerate decision processing speed and deliver up-to-date snapshots of materials flows:

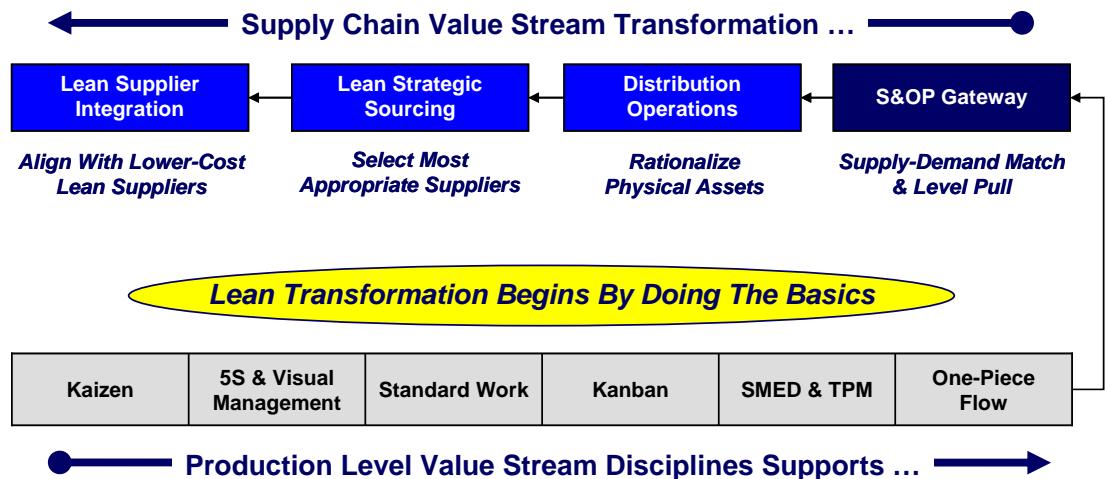




Taken to its logical conclusion, organizations seeking to transform supply chain operations into a true source of competitive advantage recognize the complexities the modern global operating environment has imposed, and are dedicated to implementing Lean solutions that not only generate waste removal, but define enterprise-wide standard work disciplines that translate voice of the customer (VOC) signals into actionable (and margin-enhancing) asset deployments.

Dual Value Stream Challenge: Migrating to an Enterprise Level

Lean improvement programs are usually successful because production-level disciplines (takt time adherence, kanban sizing, one-piece flow capabilities) provide routine, consistent and predictable execution. However, true enterprise-wide Lean transformations can only be successful if the organization focuses proper attention on both the low-level production value stream and the top-level Enterprise management value stream. While shop floor execution is a vital component in any Lean program, true value chain improvements can only be captured if accurate, consensus-driven demand signals (VOC) are rapidly transported upstream across the supply chain and are used to drive supply base management, transportation, distribution and capacity allocation decisions. Given the importance of top-level value stream optimization, S&OP is often considered the gateway for enterprise value chain improvements, given its ability to drive and routinely enforce standard work:



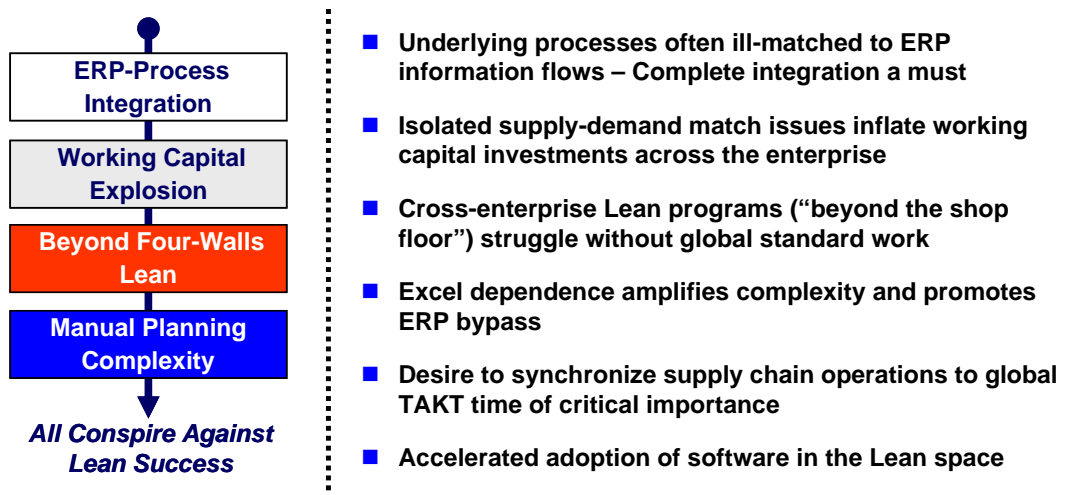
Operating as the gateway to Enterprise-wide Lean transformation programs, S&OP, through its natural ability to drive higher-margin asset deployments, rapidly assimilates supply chain capabilities and provides valuable insights into supply base performance shortfalls (e.g., supplier replenishment routines, batch vs. continuous flow), long-term supplier requirements driving strategic sourcing decisions and asset investments such as transportation and distribution center sizing based on accurate VOC inputs.

S&OP Defined and Challenged

Sales & Operations Planning is an integrated process consolidating all supply chain functional plans into a single customer service delivery vehicle fueled by a one-number consensus-driven demand plan accurately prioritizing VOC inputs. Typically, successful S&OP programs operate with five unique characteristics:

- Provides a single operating plan that categorizes and prioritizes customer needs for a given period
- Delivers a single period-specific plan that identifies all available supply chain capacity along with the cost of that capacity
- Clearly demonstrates the known trade-offs between customer service performance and asset deployment costs
- Translates global demand into pull-based production scheduling to ensure materials flow and avoid batched schedules (and their associated inventory spikes)
- Yields an operational plan that, on a period-by-period basis, maximizes margin capture through a superior supply-demand match

Necessary goals to be sure, but tactical issues, especially in today’s sophisticated ERP environment, are accelerating the need to develop S&OP capabilities to maximize ERP investments and more effectively manage global inventory deployments. Combined, these tactical issues generate significant barriers to strategic success and can often thwart an organization’s overall Lean journey:

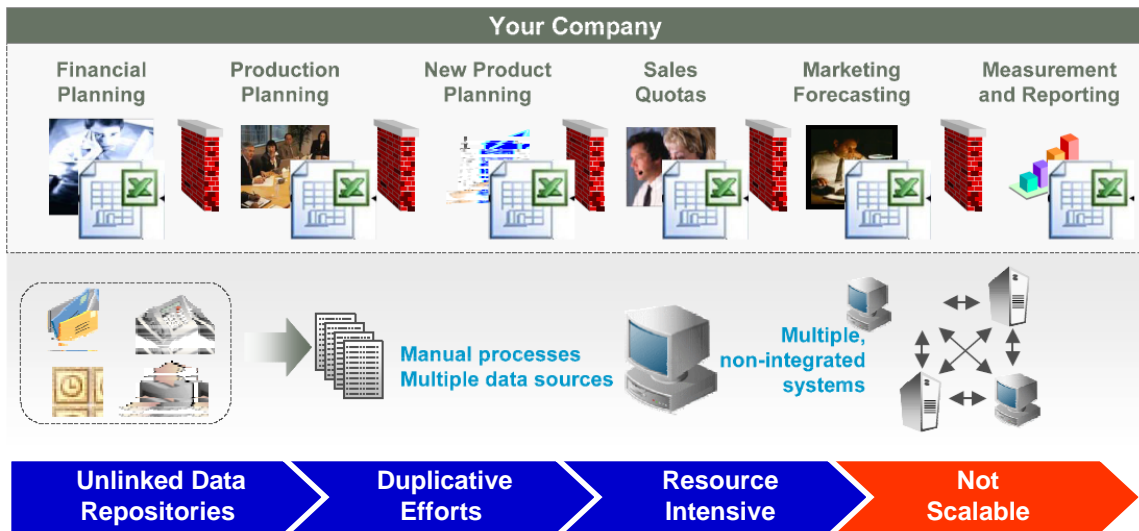


As a direct response to these critical margin-draining issues, organizations have launched a number of S&OP initiatives which have been largely based on local spreadsheet applications driven by disparate information sources and backed by limited standard work-based disciplines to drive uniform practices and predictable customer service responses. Although such efforts

are respectable, attempts at controlling supply chain capabilities and better serving strategic customers, such programs typically suffer from four fatal practices:

- Over-reliance on pure spreadsheet applications which, when multiplied across different locations and business units, rapidly become wholly unmanageable
- Disparate processes from business unit to business deprived of standard work unit deliver highly variable outputs and inconsistent customer service performance
- Inability to scenario-model unique supply chain solutions in real-time prevent maximization of margin capture goals
- Lack of integrated performance management disciplines, driven by the lack of standard work routines, further exacerbates service response variability

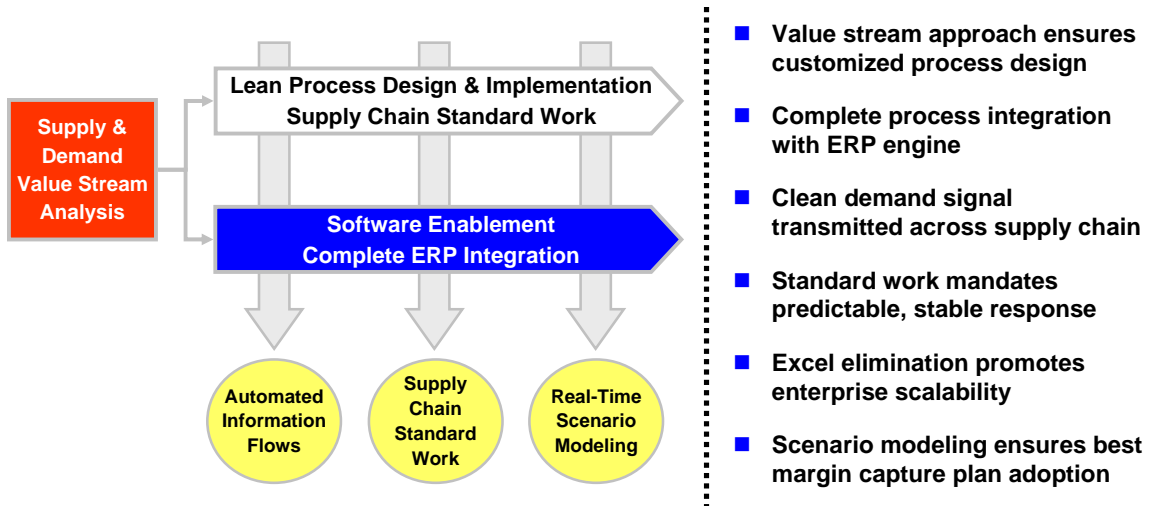
Global operating environment complexity, non-scalable spreadsheet applications and limited implementation of standard work all combined to inflate network-wide inventory buffers (often by as much as 15% to 35% over Lean best practices) and diminish margin capture. Illustrated below, the confusion and complexity imposed by such manual S&OP processes quickly becomes, from a support perspective, untenable:



Manual processes, while a positive step in theory, often create a multiplier effect where the complexity generating the concern is masked by resources, time and repetitive efforts designed to manage the complexity. Given the importance of the high-end value stream and its role in successful Lean transformations, a new model is required that is simple to operate, robust in its capabilities and capable of generating superior customer service performance.

The Emerging Model: Software-Enabled Standard Work

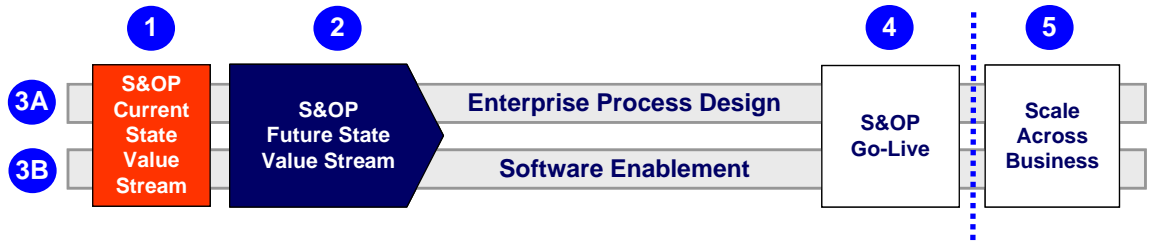
Moving beyond spreadsheet-based models, optimal S&OP programs provide effective process-based solutions fully enabled, automated and integrated by software fueled by readily available ERP-based platforms:



Once deemed anathema within Lean circles, the growing utilization of software, when combined with robust standard work driving consistent process execution, maintains proper focus on the Gemba (where it happens) and facilitates accelerated decision cycles driving superior service performance. Such integrated programs generally possess the following characteristics:

- Creation of a single, high-precision demand plan generated frequently with very granular data
- Synchronized plans, collaboratively developed in a common platform and directly linked to execution (drive to the Gemba)
- All planning is performed from one source of truth in a secure software platform
- Rapid, predictable customer service response driven by enterprise-wide standard work (one system, one plan, consistent execution)
- Interactive demand and supply reviews that factually evaluate supply constraints and margin capture requirements
- Highest-margin balancing of supply, demand and financial budgets
- Integrated performance management with predictive modeling (forward-glancing for VOC, backward-glancing for continuous improvement inputs)

As is often the case, S&OP implementations, especially Excel-based applications, “processes” are typically separated from “applications” and are therefore never properly aligned to deliver superior, sustainable results. Based on our experience, Lean process design (created from the outset to eliminate institutionalized waste) and the underlying software platforms responsible for information flows and decision enablement, should be considered as a single, integrated program in which process designs are linked to VOC requirements and backed by configurable information flows timed to decision cycles and market (service performance) expectations:



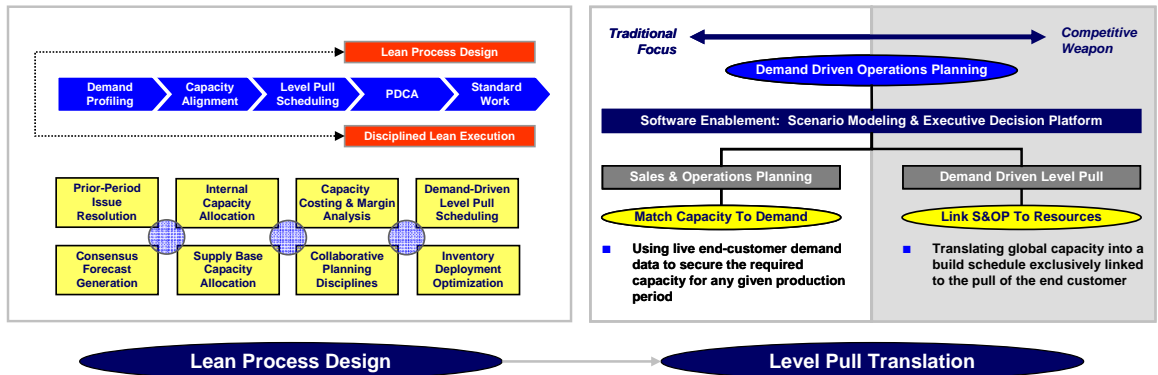
1	Current state value stream map identifies breakpoints, \$\$'s and critical design requirements
2	Future state map articulates required material & information flows and standard work disciplines
3	Process design implementation deploys standard work across the enterprise
4	Software enablement automates information flows with routine scenario modeling capabilities
5	Transition to go-live demonstrates proof-of-concepts and generates momentum for growth
6	Migration roadmap extends Lean S&OP across enterprise to other products and business units

Through our combined experience, successful S&OP implementations commence with a thorough examination of the current-state supply-demand planning value stream in which key processes such as forecasting, working capital management, capacity planning and production scheduling are “layered” over VOC inputs, market requirements and strategic objectives. Once complete, a future-state value stream map can be created outlining required process enhancements, information flow augmentation needs, consensus demand planning requirements and decision cycle management routines. Combined, the two value streams (current-state and future-state) provide an infallible process for identifying critical process breakpoints, waste elimination imperatives and go-forward standard work disciplines across the enterprise.

Armed with the future-state VSM, underlying software enablers can then be properly configured to isolate necessary data repositories, required information flows (and flow timing/quantities), data query needs and other related software functions.

Lean Process Design: Underpinnings of S&OP Success

Considering the importance of process-software integration to S&OP success, Lean process design should encompass a broad but targeted spectrum of activities designed to rapidly achieve consensus demand (“one number”), translate the demand signal (VOC) upstream across the extended supply chain and then convert then demand plan into a level-pull schedule precisely matched to the pull of marketplace demand:



While the physical activities and process designs may vary to a certain degree based on specific industries or marketplace environments, Lean standard work will almost universally be required to support five key functions:

1. **Collaborative Planning Disciplines:** Developing common customer engagement methodologies to evaluate demand patterns, assess marketplace-wide promotional events, decipher seasonality issues and reduce all inputs into a single demand number for supply chain consumption.
2. **Capacity Allocation & Costing:** Armed with a one-number plan, Lean standard work should then evaluate available capacity (supply base, pipeline inventory, internal production components) to determine the optimal response plan including human resources, materials flows, physical capacity commitments and the aggregated costs of each response plan.
3. **Level Pull Scheduling:** The accepted supply plan must then be translated into a level pull production schedule designed to link physical production to confirmed customer demand signals. Critical to the success of the lower-end value stream optimization process, level pull scheduling ensures takt time adherence, proper on-floor resource utilization, proper staffing and above all, development of hyper-accurate inventory deployment policies to continually adjust (and lower) safety and buffer stocks.
4. **Plan-Do-Check-Act Cycle Adherence:** As previously discussed, S&OP is both forward-looking and backward glancing. Successful Lean S&OP programs mandate post-period performance evaluations to determine service level attainment, capacity utilization, margin capture levels and build action plans to continually improve and evolve the process.

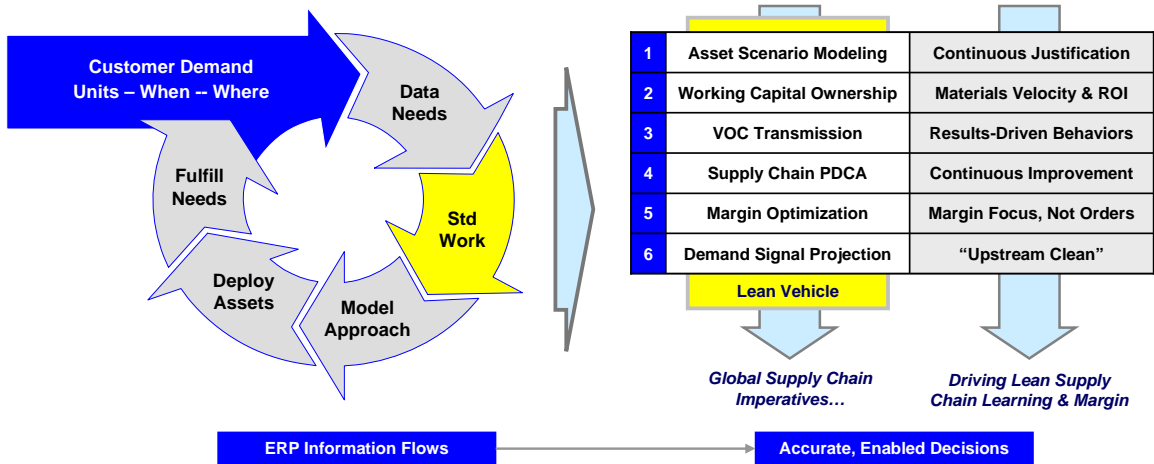
Software Enablement: Automating and Accelerating Lean Process Execution

Software platforms today offer Lean organizations a tremendous advantage in that they can be readily configured to better align internal processes with the information flows required to ensure decision accuracy and timely execution. Far from a simple information repository and data transfer mechanism, enabling software should be viewed from the perspective of its ability to support standard work, supply the necessary information (when needed), automatically reinforce key tollgates & workflow requirements and provide aggressive performance management tools to isolate service issues and provide quantifiable action plans for implementation during the next cycle:



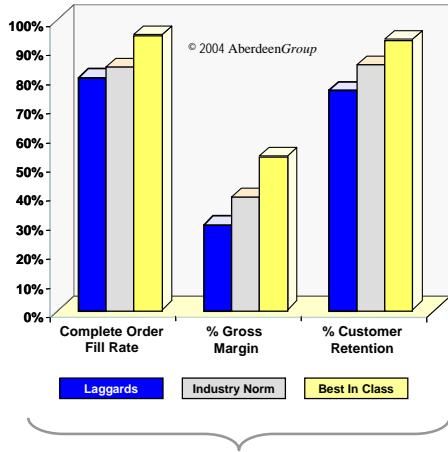
- Provide weighted, prioritized demand inputs from multiple customer and location sources
- Access to on-line tools to help shape demand and develop appropriate supply plans
- Rapidly assimilate changing information and develop accurate alternative action plans
- Assist in the real-time shift to alternate products in times of critical constraints
- Integrate information flows with inventory levels to spotlight stockpiles or shortages
- Automate and govern process workflows via on-line collaboration and scheduling
- Link to financials to quantify margin impacts and per-period profitability
- Eliminate Excel limitations with universal tool
- Scenario modeling tools to evaluate competing plans and service attainment profiles (margin enhancement)

Properly configured, robust S&OP software permits greater focus on the Gemba by accelerating process execution cycles and supplying the most relevant data to help management prioritize service issue resolution and continuous improvement investment planning. To this end, S&OP software platforms, when matched to Lean processes, have the unique ability to maximize ERP investments by channeling available information to their highest-value utilization point. Illustrated in the figure below, ERP, once perceived as an anti-Lean tool, is now recognized as an accelerator and promoter of Lean by enabling processes and allowing supply chain resources to better focus their efforts towards long-term continuous improvement initiatives:



Summary

S&OP, as the gateway to enterprise-wide Lean transformations, possesses the ability to improve margin capture, justify resource allocations (and acquisitions) and sustain long-term, predictable customer service performance. Migrating beyond traditional, cumbersome Excel-based solutions, today’s Lean S&OP platforms seamlessly merge waste-free process design with software enablement designed to accelerate decision cycles, scenario-model differing supply plans based on margin capture, and govern standard work through real-time, on-line tools that are both forward looking (what we have to do) and backward-glancing (how we did, and what can need to improve for the next cycle). In order to ensure lasting success, organizations contemplating the migration to an S&OP are strongly advised to consider an integrated solution that evaluates current-state supply-demand functional environments, develops an appropriate future-state value stream optimization roadmap based on marketplace requirements and enable the value stream through proven software tools that are configured to environment-specific Lean processes. By starting small (specific location or product family) and scaling rapidly across the enterprise, the results can be dramatic:



How S&OP Enables A Competitive Advantage

- **Accelerate decision making by focusing on demand visibility**
 - Sense demand more frequently and closer to the point of consumption
 - Replace spreadsheets with one number demand management - Collaborate with all constituents
- **Improve your forecast accuracy**
 - Use advanced analytics and statistics
- **Smooth demand and create true flow**
 - Promotion excellence and decomposition
 - Leverage granular demand signals (customer, channel, store, shelf)
 - Identify and simulate cross selling opportunities
- **Evolve to near real-time S&OP**
 - Profitable demand response
 - Identify supply side opportunities
 - Define and monitor customer based metrics

Organizations deploying software-enabled Lean practices are able to harness the available computing horsepower to lower inventory levels, radically improve on-time order shipments, rationalize distribution assets and better manage their respective supply base. Highlighted below similar improvements across the supply chain are not uncommon to Lean S&OP programs:

Metrics	Improvement Range	
	Low	High
Period-Specific Demand Plan Accuracy Improvement	12%	28%
Orders Shipped Complete And On-Time (OSCOT)	10%	16%
Network-Wide Working Capital Investment Reduction	7%	28%
Work-In-Process Inventory Levels (Cycle, Safety, Buffer Stocks)	15%	60%
Supplier-To-Manufacturing OSCOT Improvement	14%	21%
Work-In-Process Inventory Levels (Buffer & Safety Stock)	15%	60%
Premium Freight/Expedited Freight Level Reductions	6%	18%
Promotions Fulfillment Improvement (Sales Plan Attainment)	8%	24%



The results are in. With the limitations of traditional, non-scalable S&OP programs known and documented, migration to Lean S&OP solutions enabled by robust software programs facilitate true enterprise-wide Lean transformations and deliver sustainable customer service improvements that drive profitability and top-line business growth.

About the author

Bob Hawkey, Associate Partner

A partner responsible for LHC's Lean Supply Chain management practice, Bob Hawkey has over 15 years of supply chain strategy and management expertise assisting Lean Horizons customers with key supply chain improvement initiatives including sales & operations planning, strategic sourcing and network optimization.

About Lean Horizons Consulting

Lean Horizons Consulting offers integrated competencies for achieving enterprise-wide performance transformation to global firms in the manufacturing, energy, consumer products, financial services, pharmaceutical, bio-technology and healthcare sectors. Lean Horizons further serves investment firms regarding acquisition integration and rapid value creation. Lean Horizons aligns Lean and Six Sigma capabilities with the deployment of enterprise strategy to deliver unique, end-to-end solutions that incorporate the organization's business model, core processes, functions and information systems. Lean Horizons' field force of internationally experienced industry professionals bear direct lineage to the Toyota Production System, lending a unique combination of explicit and tacit knowledge to Lean performance transformations.



Strategically Creating Value through the Elimination of Waste

Lean Horizons Consulting - Americas

P.O. Box 1402
Glastonbury, CT 06033 USA
Phone: Intl +1 (860) 537-6786
Email: getlean.am@leanhorizons.com

Lean Horizons Consulting – Europe, Middle East, Africa

P.O. Box 4918, Alderminster
Stratford-upon-Avon
CV37 8WL UK
Phone: +44 (0) 1789 459 220
E-mail: getlean.ec@leanhorizons.com

leanhorizons.com

Copyright ©2008 Lean Horizons Consulting, LLC. All rights reserved.