



KLA-Tencor Case Study

MCA Solutions Helps KLA-Tencor Improve Customer Service and Lower Service Supply Chain Costs

Company Overview

KLA-Tencor is the world leader in yield management and process control solutions for semiconductor manufacturing and related industries. With more than \$1.3 billion in revenue, the San Jose, CA company provides the world's major semiconductor manufacturing companies with a broad range of products and services for in-line wafer defect monitoring, reticle and photomask defect inspection, electron beam metrology, wafer overlay, film and surface measurement, and overall yield and fab-wide data analysis.

In a capital-intensive industry in which a state-of-the-art wafer fabrication facility can cost in excess of \$3 billion, KLA-Tencor's Service Supply Chain Management group plays a critical role in ensuring equipment availability and overall fab productivity. The group's objective is to maintain high levels of availability for 60,000 spare parts on 20,000 systems in more than 300 wafer fabs around the world – "the right part, at the right place, at the right time, at the right cost."

MCA Solutions' SPO Strategic Planning Functionality Delivers Results

In the fall of 2001, KLA-Tencor initiated an extensive evaluation of available solutions for service supply chain forecasting and optimization. The selection process was based on both functional requirements and demonstration of operational capability through a data-driven evaluation process.

With its unique approach to forecasting and optimization, MCA Solutions' proof-of-concept model recommended inventory investment levels 10 to 20 percent lower than competitive models and demonstrated the ability to deliver predictable, product-differentiated delivery performance when evaluated against real demand data. As a result of this evaluation, KLA-Tencor selected MCA's Service Planning and Optimization (SPO™) Strategy product for forecasting and positioning of service inventory and began implementation in early 2002.



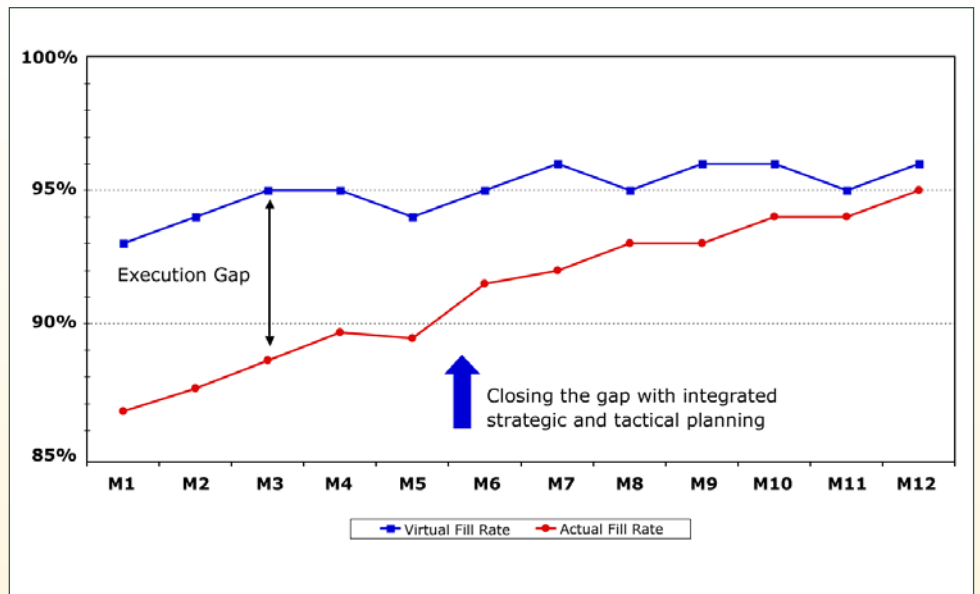
Within two months of project kick-off, KLA-Tencor achieved a positive return on investment through rapid implementation in a hosted environment. Implementation of SPO Strategy resulted in an 18% improvement in local fill rates and a 4% reduction in service supply chain costs.

Leveraging the model developed during the evaluation phase, KLA-Tencor was able to immediately implement the SPO Strategy recommended investment levels. Within two months of project kick-off, KLA-Tencor achieved a positive return on investment through rapid implementation in a hosted environment. The fully integrated enterprise application was implemented within the next three months.

Implementation of SPO Strategy resulted in dramatic improvement across KLA-Tencor's service supply chain¹:

- Local fill rates improved an average of 18%
- Regional fill rates improved an average of 7%
- Service supply chain cost as a percent of revenue fell by 4%

In addition to forecasting and optimization, KLA-Tencor utilizes SPO's what-if capability as a decision support tool to analyze service network scenarios such as expected inventory growth from new stocking locations and increased service levels, and the cost/service impact of differentiated service strategies.



Above: The execution gap is the gap between the virtual (or theoretical maximum) service level and the achieved service level. When the strategic plan (setting target stock levels to drive virtual fill) is not aligned with the tactical plan (order generation to drive target fill), the gap is large. When integrated strategic and tactical planning is implemented, the execution gap is significantly narrowed.

“Great Plan – But Can You Execute”

After implementing SPO Strategy in 2002, KLA-Tencor faced the challenge of aligning SPO's forecasting and positioning methodology with XelusPlan, a tactical planning legacy system that relied on a more traditional, distribution-centric approach to planning. Ongoing measurements of stocking model coverage and virtual fill rate clearly demonstrated the capability of SPO Strategy to meet target service levels. But KLA-Tencor struggled to maintain the planned stock levels that were required to close the gap between actual fill rate and target. This “execution gap”² was a direct result of the legacy system's inability to prioritize supply chain decisions based on the predicted service impact of each decision. This resulted in the need for excessive supply chain rebalancing in the form of non-value-added order change/cancellation and inventory movement transactions.

¹ Joseph J. Chamberlain and John Nunes, “Service Parts Management: A Real Life Success Story”, Supply Chain Management Review, September 2004, pp. 38-44.

² Execution Gap = (Virtual Fill Rate – Actual Fill Rate) x Percent of Planned Lines With Stock

Defining the Ideal Solution

To address this problem, KLA-Tencor began an extensive evaluation of available software solutions for service supply chain tactical planning. The initial phase of this evaluation called for a clear definition of business requirements against which potential solutions could be evaluated. But rather than simply trying to improve upon existing legacy functionality, KLA-Tencor set out to define an ideal solution and drive potential vendors to meet the goal. The requirements process defined must-have functionality that included the ability to:

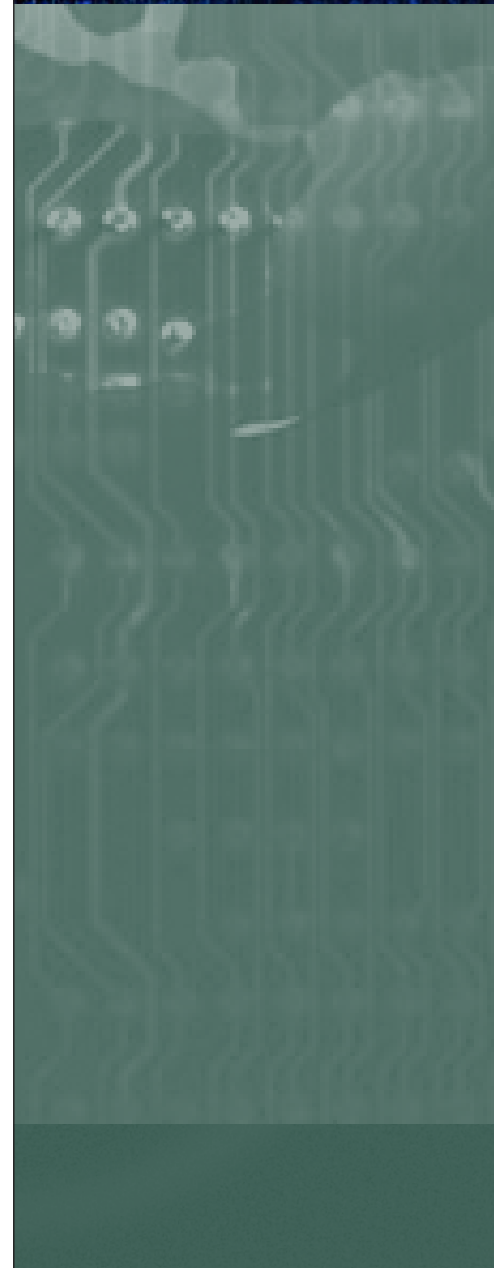
- Maximize the use of repairable assets
- Minimize excess inventory by tying recommended investment levels to financial limits
- Balance existing inventory across global locations to maximize fill rate performance while minimizing inventory churn and transportation costs
- Minimize the need for artificial business rules and manual intervention
- Improve planner productivity by reducing manual order generation

SPO Tactics: The A.R.T. of Service Supply Chain Planning

The objective of a service supply chain tactical planning system is to achieve optimal deployment of resources throughout the network on an ongoing basis to meet the target investment levels established through inventory optimization.

The traditional approach to this problem is to establish business rules that prioritize locations or customers and define fair share logic. When sufficient supply exists, the traditional business rule approach is adequate. But in a more dynamic supply chain with constrained supply resulting in frequent temporary shortage situations, business rules typically lose out to customer commitments. The result is frequent exception management, special expediting, and higher logistics costs.

SPO Tactics takes a unique approach to this problem by calculating a “service impact” for each part-location stock level below target. It can then recommend and prioritize supply chain decisions to optimize the balance between service impact and supply chain cost. This unique approach to Allocation, Replenishment, and Transshipment (A.R.T.) results in a minimum gap between theoretical and actual fill rate and a reduction in emergency freight costs, yet is not dependent on static user-defined business rules or manual prioritization of orders. Better answers yield better results.

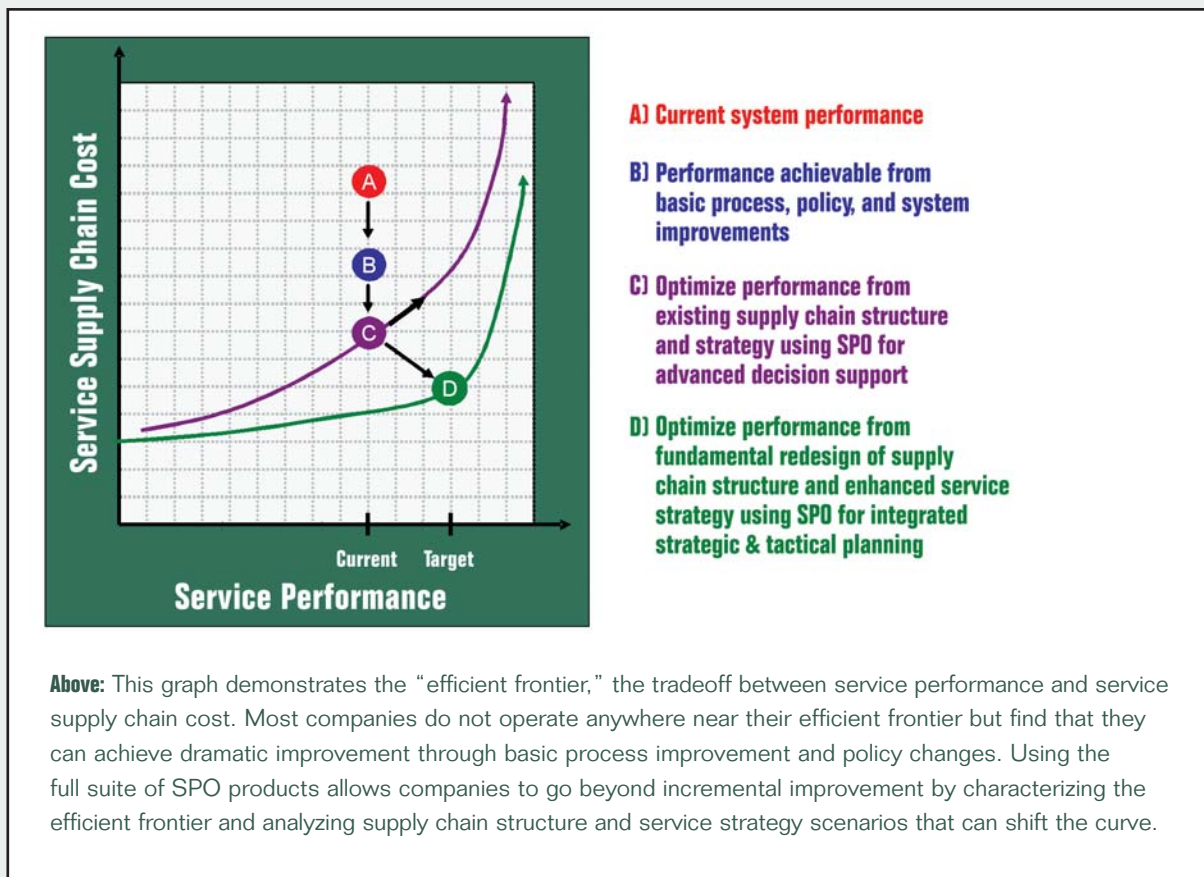


Integrated Strategic and Tactical Planning

SPO Tactics' unique approach to tactical planning was the key decision factor in the selection process at KLA-Tencor. SPO Tactics was implemented in March 2004, replacing KLA-Tencor's legacy planning system. Allocation recommendations from SPO Tactics increased the ratio of field to distribution center inventory by 10% and reduced the execution gap of planned to actual fill rate from 6% to 3% on average. SPO Tactics also improved planner productivity by eliminating non-value-added transactions and providing meaningful supply chain exception alerts.

Continuous Improvement

As KLA-Tencor's aftermarket business evolves, they continue to leverage the value of SPO's leading-edge functionality. In September 2005, KLA-Tencor upgraded to SPO 5.0 to take advantage of a completely redesigned user interface. KLA-Tencor is also using SPO Tactics to manage material requirements for its Spares Manufacturing Group.



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