



Simplifying Sourcing Series



**Supply Chain Challenges: Does Your
Contract Manufacturer Have Enough
Visibility Into Inventory Levels**

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By John Sheehan

Ask any OEM whose products incorporate electronics what their number one challenge is, and they will indicate it is electronic parts. The supply/demand imbalance for electronic parts has never been greater. Addressing that issue requires a combination of strong systems, good forecast visibility and good supply chain relationships. Another area complicating this current situation is unpredictable demand. Shortages that developed during the height of the COVID-19 shutdowns, changes in lifestyle patterns and shifts in equipment requirements in mission critical applications have driven spikes in demand that make historical forecasts inaccurate. That said, cycles of supply and demand imbalance eventually end. When that happens, the higher level of inventory currently being carried will need to be adjusted rapidly.

This whitepaper looks at what is driving current material, logistics and demand variation challenges; the systems and practices SigmaTron employs to address those challenges; and the best strategy for monitoring and addressing the issues that will arise when the market imbalance eventually resets itself.

Current Challenges

The supply/demand imbalance that developed in 2021 continues into 2022. While the semiconductor industry continues to add capacity, the variables that have exacerbated this situation such as transportation industry capacity constraints, unanticipated COVID-19 restrictions in areas of virus surge and continued high demand for consumer products constrained by last year's chip shortages continue to be a factor.

No electronics manufacturing services (EMS) provider has a total solution to these issues. In the best case, most companies are reacting to information suppliers are providing, holding greater levels of inventory as a hedge against late supplier decommits, working with non-franchised distributor supply options with customer approval and optimizing the internal variables such as manufacturing cycle time that they can control.

The reactionary nature of this environment creates the potential excess inventory risk if not managed carefully. Forecasts in many cases are being extended to over two years to tie down necessary long lead-time components. Most EMS providers are stocking higher than normal levels of inventory in-house as well.

Questions to ask in this situation include:

- Has our product development team reviewed any potential changes that may impact our product over the two-year time period we are now forecasting?

- Does our sales and marketing team that created the forecast that is being used to order materials understand that many devices are currently NCNR going out 12 months and is product life cycle planning taking this reality into account?
- If non-franchised distributors are being used for difficult to find components, what processes are in place to validate material integrity?
- What level of visibility does the contract manufacturer have into inventory levels vs consumption?

Aligning Systems, Processes and People

From a systems standpoint, supply chain management (SCM) has traditionally been focused on automating transactions to the point where human intervention is the exception, rather than the rule. However, in the current environment, purchasing agents often start the day with a flood of supplier emails that represent mandated changes to purchase orders which must be addressed line item by line item. In short, exceptions are the rule. Systems strategy needs to align with this new reality, improving visibility and simplifying the activities the SCM now needs to perform.

SigmaTron uses a combination of proprietary and internally-developed systems for enterprise and shop floor management. All facilities utilize a common ERP system plus third-party Product Lifecycle Management (PLM) tools.

The combination of an industry-standard ERP software with an internally-developed iScore suite of supply chain management tools enable all stakeholders to track demand, material on order, inventory, work-in-process, finished goods and shipments. An MRP Share program provides suppliers with complete customer forecast visibility, plus current inventory and material on order.

On the supply chain side, this system enables the purchasing team to view consumption across the company on a given part. SigmaTron's IT team has enhanced system capabilities to help reduce the workload material constraints are creating. All part fields in purchase orders include a date wanted and supplier promise date. Larger suppliers receive a weekly data file of purchase orders so they can confirm or update promise dates. As constraints develop in a specific part, purchasing has the ability to provide early trends warning to program teams who in turn alert customers. The system's auto-replenishment feature is also being monitored for late de-commits. A third-party API that pulls broker and distributor inventory has been integrated into the iScore system for situations when a supplier de-commits or customer demand changes create potential gaps in the pipeline. This information can be viewed simultaneously with the MRP plan to determine the viability of filling shortages in real time.

SigmaTron's SCM organization includes purchasing agents, materials analysts, materials systems specialists and quote specialists. In SigmaTron's traditional materials organization structure, the purchasing agents manage the purchasing process and exceptions, the material analysts handle the planning function and ensure that bills of material are appropriately set up within the system, and the material systems specialists develop and maintain proprietary software tools such as APIs to address

specialized needs not already automated through existing systems. Quote specialists focus on the significant volume of material quoting that is always going on at an active EMS company. Dedicated purchasing teams support each facility, plus SigmaTron maintains an International Purchasing Office (IPO) in Taiwan that handles both a purchasing and a supplier identification/quality assurance role.

In 2021, SigmaTron's management team realized that this traditional organizational structure did not address the realities of the current supply/demand imbalance well enough. The Company started evolving roles in 2020 as purchasing agents started to see workload changing as production restarted after the initial COVID-19 shutdowns. Initially a Manager of Account Planning role was created and filled by a material analyst who interfaced with purchasing agents, program managers and customers on the most rapidly changing programs.

As the workload grew the role redeployment continued. Material analysts, material systems people and quote specialists were assigned purchasing agent functions, while purchasing agents became more customer facing to expedite approvals on fabricated parts, approved material list (AML) additions and purchase price variance (PPV) approvals. Purchasing agents with the heaviest workload are getting assistance from the IPO team.

At a senior management level, there is also stronger focus on communicating with component manufacturers as well as distributors to highlight the criticality of projects and push back on policies that drive unacceptable risk such as requests for NCNR periods that extend beyond 12 months.

While customer collaboration is always an element in good outsourcing relationships, the current material challenges have driven EMS-OEM teams to a much closer working relationship with higher degrees of trust. In SigmaTron's business model program managers are educating customers on market changes and contingency plan options should constraints worsen, to give OEM teams time to consider those options. For example, continued pricing inflation is likely and as a result, acceptable ranges of PPV may need to be pre-approved for constrained parts, particularly if sourcing involves component lots purchased from non-franchised distribution. Planning horizons need to factor in longer shipping and lead-times.

Customer forecast requirements have been modified. A requested 12-month forecast was standard, but now at least 18 months is encouraged. Similarly, customers have been encouraged to give advanced notice on new programs as soon as possible. SigmaTron's engineering and purchasing teams can assist with component selection recommendations that factor in availability and lifecycle considerations as the bill of material (BOM) is being developed. If forecasted demand is available, long lead-time material that is locked can be pipelined with suppliers. Program teams are running horizontal MRP to view the total demand from each account and monitor the way consumption and demand is changing in upcoming weeks to look for early indicators of changes in demand. IT tools that help assist with this modified reporting have been put in place.

In cases where demand is increasing dramatically week over week, purchasing and program teams are reviewing and resizing material bonds and reviewing and resizing finished goods kanbans on a much more frequent basis than in periods of stable demand.

Customers are also involved in calls to component manufacturers or distribution where they have leverage in building a business case for better component availability.

In short, an all-hands-on deck approach has been taken to address the challenge of limited material availability. Combining real-time systems visibility with human judgment and enhanced stakeholder communication helps ensure an agile response to changing market conditions. That said, the current imbalances won't last forever, and this same type of approach will be key in adjusting to that situation.

Preparing for the Reset

In a stable market, project status visibility among a contract manufacturer, OEM customer and supply chain is critical to ensuring adequate inventories are in place. In the current environment of imbalance between supply and demand, project status is critical to understanding the options available when a key variable changes. When the business environment begins to normalize, project status visibility will be essential in reducing inventories in a timely enough manner to avoid excess material.

iScore's ability to enable SigmaTron's team to view all material company-wide will be beneficial when constraints start to ease, helping to ensure that ordering activities are adjusted rapidly enough to consume the higher than normal in-house inventories that have been maintained to ensure parts availability.

The combination of spikes in end market demand and material constraints is also challenging to customer teams. At SigmaTron, customers can be given visibility into inventory status via the Score™ customer portal. Score gives customers the ability to track product through the manufacturing process with order, manufacturing and shipping status available 24/7.

The current supply/demand imbalance issues are systemic and will likely continue through much of 2022. That said, eventually this imbalance will end. If the end is similar to other cycles, forecasts may shrink dramatically as "just in case" orders are pulled off the books. Working with an EMS provider whose combination of hands-on supply chain management and systems visibility has been adjusted to deal with this challenging market helps ensure that as trends start to change a plan is developed to address the expanded inventory pipeline before it becomes problematic.

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