Product Realization Group

A Step by Step Guide

SWITCHING CONTRACT MANUFACTURERS

ESSENTIAL STRATEGIES FOR MITIGATING SUPPLY CHAIN RISK

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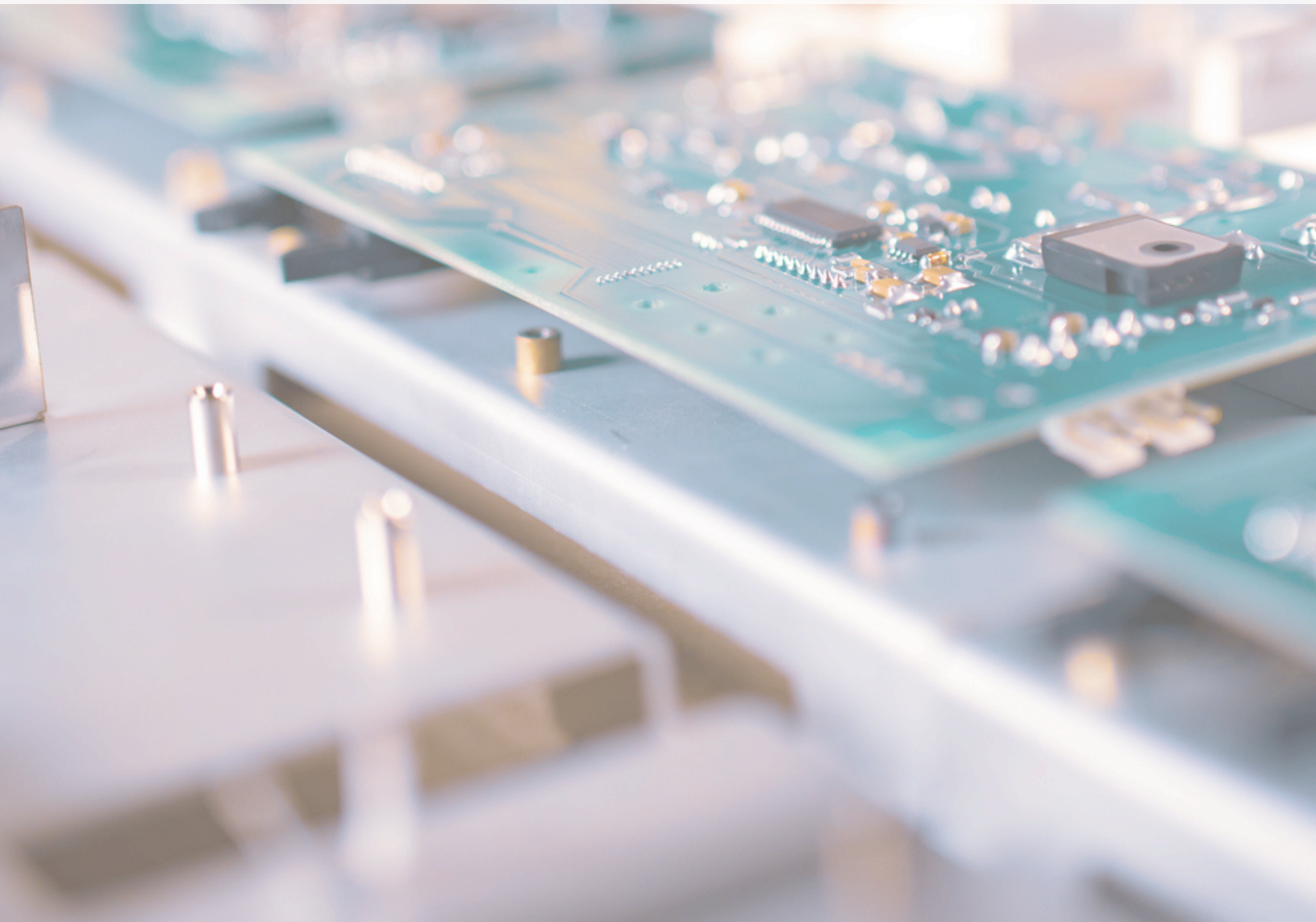

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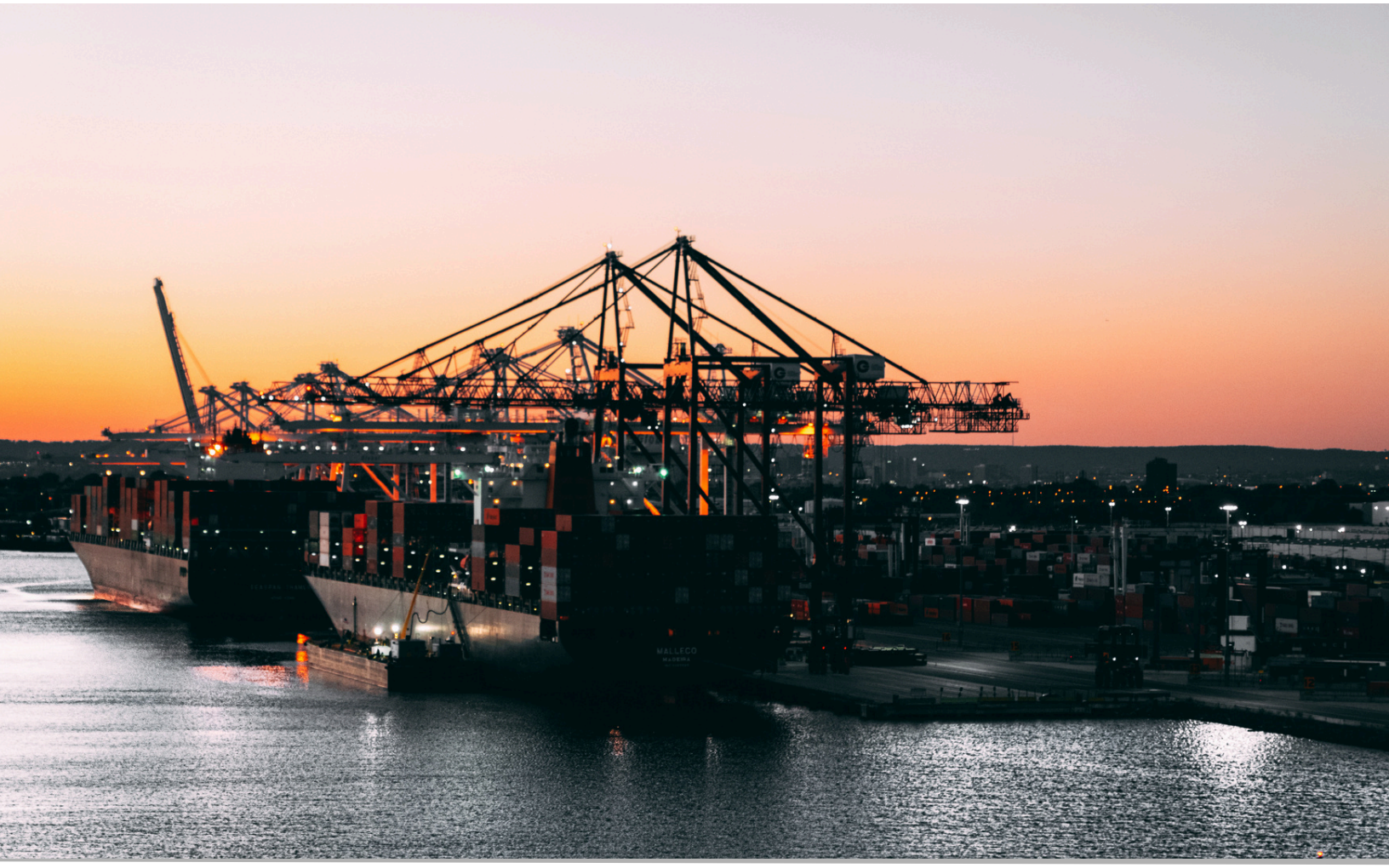
INTRODUCTION

Transitioning to a new contract manufacturer (CM) is a complex yet crucial process for high-tech hardware companies looking to enhance efficiency, reduce costs, and improve product quality.

Whether companies seek to scale production, mitigate geopolitical risks, or optimize supply chain management, selecting the right CM is vital for long-term success. This guide provides a comprehensive overview of the strategies, risks, and best practices involved in making a smooth transition to a new CM while ensuring minimal disruption to operations.



Creating a Strategy for Supply Chain Resilience

Creating a Strategy for Supply Chain Resilience

For hardware products, particularly complex electromechanical systems, transitioning to a new CM can involve significant risks. These risks include maintaining manufacturing process quality, ensuring regulatory compliance, and shifting complex sub-assembly and component supply chains.

A strong supply chain resiliency strategy ensures long-term stability and flexibility. Companies can change CMs for various reasons, including adding a new CM to increase capacity or moving from one CM to another to mitigate risk, reduce cost, and/or improve quality. Identifying the right approach for your business will depend on your production needs, cost structures, and supply chain vulnerabilities.

Why Companies Change Contract Manufacturers

Companies often change CMs to address common operational and financial challenges. One of the primary drivers is cost reduction, whether through lower material and labor costs or reducing the "landed" cost, which includes tariffs and other import/export fees. Expanding capacity is another reason, particularly when a company anticipates scaling up production. Additionally, companies can align manufacturing with customer-driven regional distribution needs to offer shorter delivery time and better service.

Beyond cost and capacity, companies may also seek CMs with expanded capabilities and expertise to improve product quality. A well-matched CM can reduce overhead costs, speed time-to-market, and provide a competitive advantage. Companies must also consider the impact of tariffs and the broader geopolitical climate on the Cost of Goods Sold (COGS) and profit margins.

Keys to Success Before Transitioning

Before transitioning to a new CM, several foundational elements should be in place to ensure a successful move to a new factory. One of the keys to success is to create a clear transition plan and dedicated team with a strong project owner, as well as ensure that key support resources are available.

Documentation

Next, the product and process documentation needs to be in order. To start, a stable product design is crucial to avoid delays and costly redesigns. One of the biggest challenges in supplier transitions is documentation availability and accuracy. Over time, manufacturers may introduce minor process changes or component substitutions, but these adjustments are not

always fully documented. This could create major issues when transitioning production in a new facility.

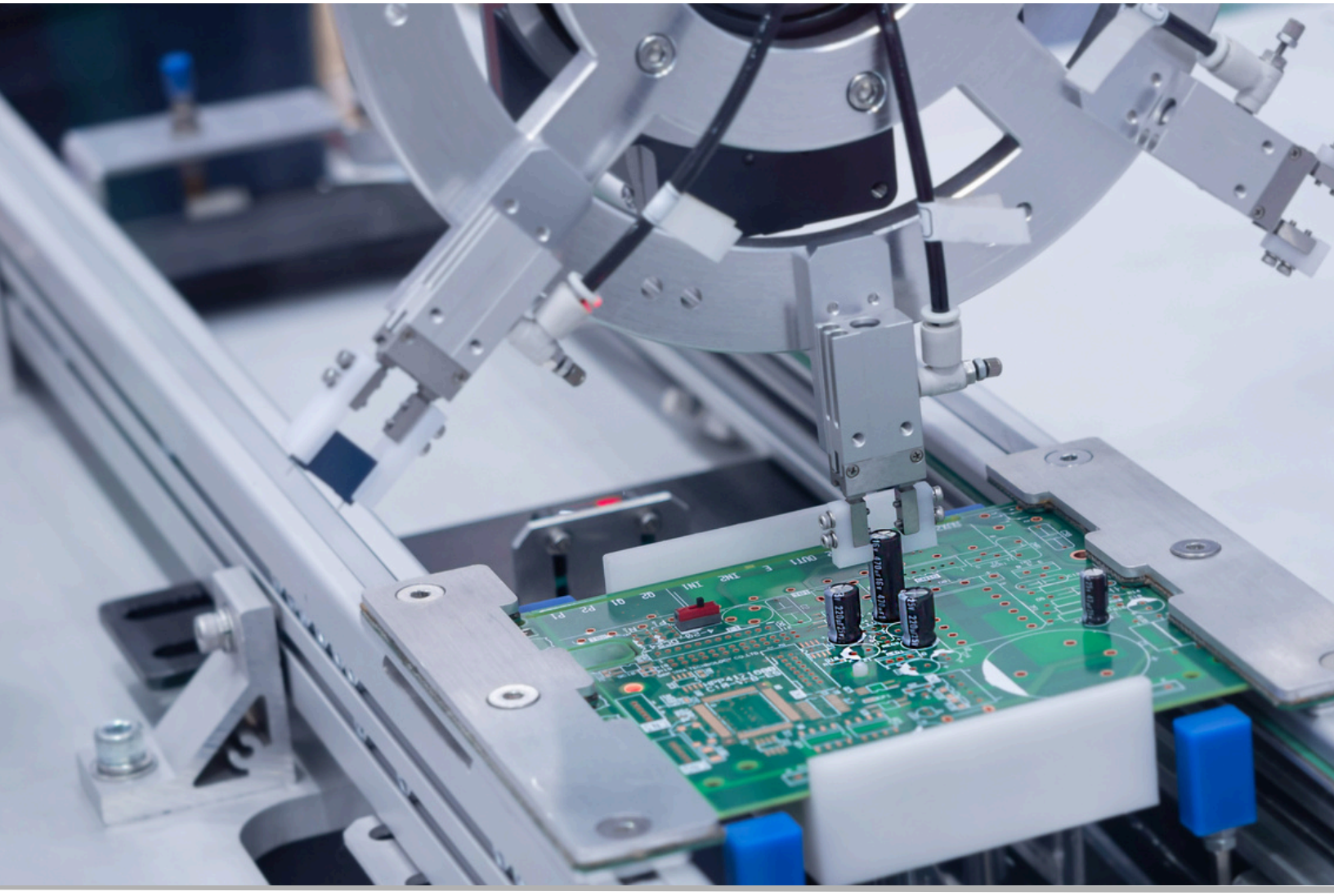
This issue highlights the importance of Product Lifecycle Management (PLM) systems. A well-maintained PLM system ensures that design revisions, engineering changes, and component sourcing information are accurately tracked. Without such a system, companies may find themselves struggling with outdated specifications and unforeseen technical hurdles at the new supplier.

Maintaining clear and comprehensive documentation of both product and process specifications is essential for consistent manufacturing outcomes. Expect to find the unexpected when reviewing product documentation. A common pitfall, for example, is finding the design your company has is not the most recent version the CM is using on the assembly line.

If your documentation isn't updated and available in a cloud-based PLM system, you might end up moving a product that is not properly documented, which can cause major issues at the new facility.

Component availability

Component availability is another major concern. Many manufacturers source materials and components independently, meaning that not all suppliers use the same parts. For example, I worked with a company that moved production to a new supplier only to realize they didn't have clear sourcing information for critical components. A camera assembly was part of the product, but they didn't know exactly where it was sourced from. The original supplier had handled procurement, so now they had to find a new source.



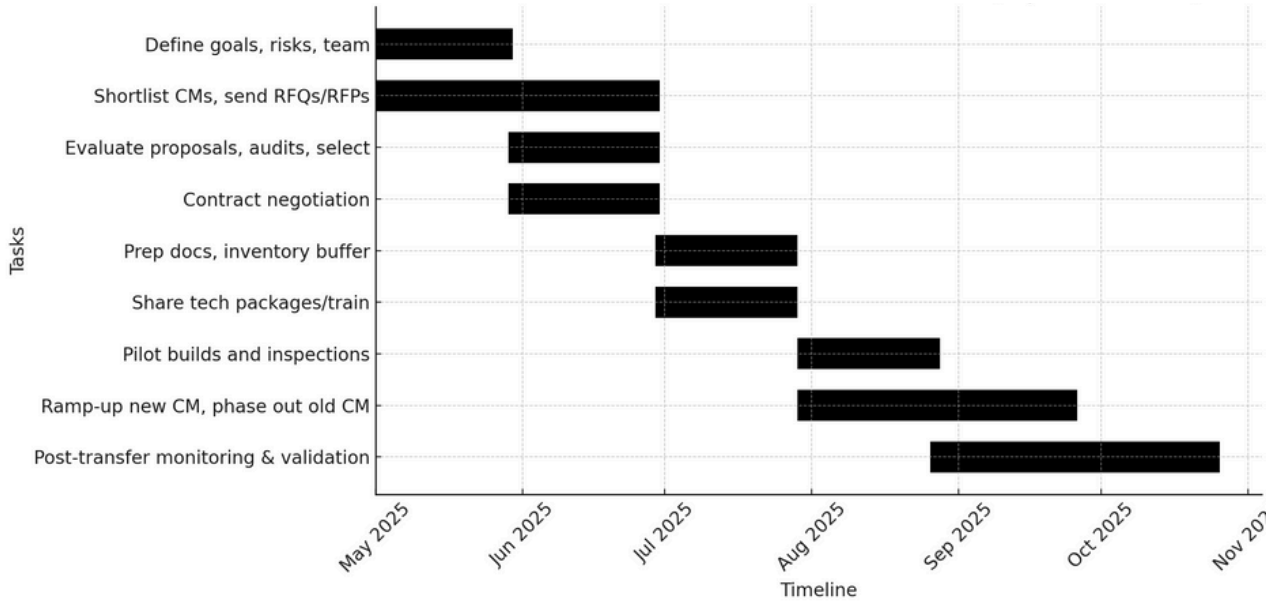
Supply chain scalability

Supply chain scalability is another key consideration. Ensuring that Tier 2 suppliers and OEMs can support your production needs as your supply chain grows. During the transition, many companies essentially double their production. Maintaining reasonable forecast accuracy will help mitigate risks, and having an experienced manufacturing support team can streamline the transition and address challenges proactively.

> “If your going to do a move, you've got have double the resources to support both the old and new manufacturer.”
>
> – Michael Keer, PRG Founder and Managing Partner

Ongoing Management

Successful CM transitions require ongoing oversight. Establishing key performance metrics for quality, on-time delivery, and cost will help maintain high standards. Regular team meetings—weekly, monthly, and quarterly—ensure alignment between stakeholders and manufacturing partners. Access to technical resources in engineering and manufacturing further supports smooth production operations.



CM Transitions Gantt Chart

On-Site Presence

A dedicated team on-site at the CM can handle real-time troubleshooting. Beyond operations and supply chain teams, engineering support is often required. Many companies discover unexpected design inconsistencies during the transition process. To avoid production disruptions, companies should plan to embed key personnel at the new supplier facility until production is stabilized.

Supplier transitions rarely go smoothly without hands-on oversight. There's no substitute for having people on the ground to address problems that could hamper the transition.

Key KPIs for a Successful Contract Manufacturer Transition

Measuring the success of a CM transition goes beyond simply moving production. Clear Key Performance Indicators (KPIs) ensure that the new manufacturing relationship supports quality, cost, and delivery goals.

Set target thresholds for each KPI before the transition begins (e.g., "FPY must exceed 98% within 2 months of first production") and align them contractually with the CM where possible. Use these KPIs to drive proactive reviews and course corrections during the critical early months after the transition. The following KPIs are critical to monitor before, during, and after the transition:

First Pass Yield (FPY)

Cost of Goods Sold (COGS)

Time-to-stable production

On time delivery

First Pass Yield (FPY)

- **Definition**:The percentage of units that pass all manufacturing steps and quality inspections without needing rework.
- **Why it matters:** A high FPY indicates strong process control and that the new CM is properly trained and equipped to meet product specifications. A decline in FPY after transition signals potential gaps in onboarding, equipment calibration, or workmanship that must be immediately addressed.
- **How to measure:** FPY=Units passing without reworkTotal units produced×100\text{FPY} = \frac{\text{Units passing without rework}} {\text{Total units produced}} \times 100

Track FPY at key points: during pilot builds, at initial production, and after full ramp-up.

Time-to-Stable Production

- **Definition**: The time required from first production at the new CM to achieving consistent output that meets yield, quality, and delivery targets.
- **Why it matters:** Rapid stabilization minimizes disruption to supply chains and customer satisfaction. A shorter time-to-stable production reflects effective training, clear documentation transfer, and a strong working relationship with the new CM.
- **How to measure:** Define clear thresholds (e.g., FPY consistently above 95%, defect rate below X%) and measure the number of weeks/months from first article approval to meeting those targets without intervention.

Cost of Goods Sold (COGS)

- **Definition**: The total cost to produce the product, including materials, labor, overhead, and any manufacturing fees charged by the CM.
- **Why it matters:** Transitions often reveal hidden costs — such as higher scrap rates, slower cycle times, or unexpected tariffs. Monitoring COGS ensures that projected cost savings (or neutral cost impacts) from the transition are actually achieved.
- **How to measure:** Compare COGS at the previous CM versus the new CM over multiple production cycles. Flag and investigate any increases, particularly in materials sourcing, labor efficiency, or nonconformance costs.

On-Time Delivery (OTD)

- **Definition**: The percentage of production orders shipped on or before the scheduled delivery date.
- **Why it matters**: Delays during or after a CM transition can ripple through your entire supply chain, harming customer relationships and revenue. Monitoring OTD verifies whether the new CM has reliable production planning, inventory control, and logistics capabilities.
- **How to measure:** OTD=Orders delivered on or before the promised dateTotal orders×100\text{OTD} = \frac{\text{Orders delivered on or before the promised date}}{\text{Total orders}} \times 100

Track both internal OTD (to your company) and external OTD (to your end customers).

Addressing tariff risk

Addressing tariff risk

Many companies assume that shifting manufacturing locations will automatically reduce tariffs, this isn't always the case.

If you're still buying subassemblies or raw materials from a tariff-affected country, you'll still be paying those tariffs—even if the final assembly moves elsewhere.

Unless you are moving everything back to the US, the tariff landscape is very unpredictable now. Until there is more clarity and stability, the risks are high. Yet, tariff planning can potentially lead to significant cost savings. Companies should calculate the full landed cost when making onshoring or offshoring decisions. Reviewing the best Harmonized Tariff Schedule (HTS) classification for products in each destination country can prevent compliance issues. Additionally, verifying the correct country of origin and understanding applicable free trade agreements' rules of origin can lead to more favorable tariff structures.

This connects to the broader theme of supply chain resilience. With ongoing geopolitical shifts and trade policy changes, many companies are adopting

a "China Plus One" strategy—keeping some manufacturing in China but expanding capacity to other regions to mitigate risks.

When dealing with potential tariffs on goods from China, companies should take a strategic and proactive approach to minimize financial impact and supply chain disruptions. The first step is to evaluate tariff exposure by reviewing the supply chain and ensuring accurate HTS classifications to avoid unnecessary costs or compliance issues.

Alternate sourcing

If tariffs pose a significant financial burden, companies should explore alternative sourcing and manufacturing options, such as shifting production to Vietnam, Mexico, or India, or consider onshoring to reduce risks and logistics costs.

Work with suppliers

Collaborate with suppliers to absorb some tariff costs or negotiate better pricing to offset additional expenses. Explore cost-sharing agreements with customers or partners.

If tariffs are significantly increasing the price of your product for consumers, it's important to involve a cross-functional team in strategic planning. This team should include members from business development, sales, marketing, and customer support to find solutions that can help offset the impact of tariffs and support your overall manufacturing strategy.

Tariff Engineering

Companies can also optimize costs through tariff engineering, modifying product design or assembly locations to qualify for a lower tariff classification. An example of tariff engineering is modifying a product's design, assembly process, or components to qualify for a lower tariff classification under the Harmonized Tariff Schedule (HTS).

Expert Help

Legal and regulatory considerations play a role in tariff management. Some tariff classifications are ambiguous, making it essential to consult legal experts when planning supplier transitions, so working with experts in this area can have a big impact on your ability to comply with different scenarios and minimize tariffs.

A company should consult several types of professionals to navigate the complexities of tariff engineering and customs regulations. A customs broker is a licensed expert who helps businesses navigate the complexities of international trade regulations, including tariffs, classification, and customs compliance. They can assist with identifying the correct HTS codes, managing import/export documentation, and ensuring that the company adheres to all customs laws.

Additionally, a trade compliance specialist ensures that the company remains compliant with international trade laws, including tariffs, quotas, and free trade agreements. They are instrumental in helping businesses understand rules of origin, classify products accurately, and stay up-to-date with changes in tariffs and trade policies.

For companies looking to optimize their tariff exposure, a tariff consultant or trade consultant can provide expert advice on minimizing tariffs and identifying cost-saving strategies. They specialize in tariff engineering and can recommend sourcing alternatives, manufacturing adjustments, and other strategies to help reduce the impact of tariffs.

An international trade lawyer is also crucial for addressing any legal questions related to trade agreements, rules of origin, and compliance with trade laws. They can ensure that any tariff engineering strategies implemented are legally sound, helping businesses avoid costly penalties or fines for misclassification.

Finally, a supply chain manager or logistics consultant plays a key role in optimizing the supply chain to minimize tariff costs. They can advise on nearshoring, sourcing alternatives, and adjusting final assembly locations to reduce overall duties and transportation expenses.

By consulting these professionals, companies can create a strategy to effectively manage tariffs, stay compliant with trade regulations, and reduce operational costs.

Strategies for Changing Factories

Strategies for Changing Factories

Onboarding a new CM introduces production risks that need to be actively managed. Two key factors in ensuring smooth operations are forecast accuracy—how well projected demand matches actual orders—and mix accuracy—how accurately the expected product mix aligns with what is actually produced. Poor accuracy in either can lead to material shortages, excess inventory, or production inefficiencies.

Materials

From a material perspective, buffer stock should be built up to cover the transition time between CMs. If not, shortages are likely to occur. Monitoring material availability and cost fluctuations, alongside thorough testing of capacity, yields, and debugging capabilities, helps prevent costly disruptions. Clear and timely cross-functional data communication is also essential for maintaining efficiency.

Engineering Change Orders

Effective change management is critical to minimizing production disruptions, especially when it comes to Engineering Change Orders (ECOs)—formalized modifications to product designs, components, or manufacturing processes. Proper ECO timing and implementation ensure that changes are introduced smoothly without causing delays or excess costs. Poorly managed ECOs can lead to obsolete inventory, production bottlenecks, or quality issues.

Test and tooling capabilities

The other big risk is test and tooling capabilities -- generally, test equipment and production tooling need to be transferred between one CM and another. Depending on who developed, these it could be easier or harder -- more or less expensive. If the existing supplier has developed proprietary testing processes, component specifications, or manufacturing techniques, the company might find itself unexpectedly locked out of production knowledge about its product.

This scenario is not uncommon, and it underscores the need for companies to clarify IP and production tooling, test equipment, and fixturing ownership ownership upfront when working with CMs. Companies should ensure that all design files, test procedures, and critical manufacturing documentation remain accessible to prevent dependency on a single supplier.

A strategy the PRG team has seen succeed for companies with a large mechanical component to the products, like consumer products where you have enclosures, for instance. If there's tooling, sometimes it makes sense to continue to develop tooling at your existing source but then you relocate that tool to the region that you want to manufacture. So there's a lot of places to do plastic injection molding in the US. You can move those tools that are built in Asia to the US and actually take advantage of the fact that your product is going to be built in the US.

> “One of the [contract] manufacturers had developed all the tests, and when the company tried to move, the supplier said, ‘This is our test, but we can sell it to you for $600,000.’”
>
> – Michael Keer, Founder & Managing Partner

Transportation and Logistics Considerations

Additionally, transportation and logistics considerations, including lead times, shipping methods, and tariffs, should be factored into planning to avoid unexpected delays and cost increases. A proactive approach to managing supply chain risks ensures production remains on schedule and within budget.

Managing Parts Shortages and Allocation

OEMs should engage with all aspects of the supply chain, including distributors, ODMs, CMs, and component manufacturers. When working with brokers, it is essential to ensure they are reputable, verify date codes, and request compliance certifications.

Managing Transportation and Logistics

Global supply chain disruptions have led to increased transportation lead times, with some shipments taking over three months instead of the typical three to four weeks. Companies should plan accordingly and consider selective air shipping for critical items. Delays in docking and offloading can further impact delivery schedules, and shortages of trucks to transport goods to their final destination can compound these issues.

Eight Essential Ways to Reduce Supply Chain Risk

1. Build Strong Relationships

A manufacturing partner is an extension of your business. Investment should be made in forming and building strong relationships. This not only increases performance in the good times, but also increases your chances of surviving the bad times.

2. Understand Market Dynamics

A thorough understanding of market dynamics is essential for minimizing supply chain risks. Companies should evaluate end-user market locations, manufacturing capabilities, political landscapes, and trade policies. Staying informed about regional regulations and economic conditions can help companies make strategic decisions when selecting or relocating contract manufacturers.

3. Utilize Standard and Short-Lead-Time Parts

Designing products with standard and widely available components helps mitigate supply chain disruptions. Short-lead-time parts reduce dependency on a single supplier and enable faster production adjustments. Whenever possible, companies should opt for components with multiple suppliers to ensure flexibility and resilience.

4. Stabilize Product Design

Before scaling production, companies should ensure their product design is stable and fully validated. Frequent design changes can cause delays, increase costs, and create confusion within the supply chain. A well-documented and controlled engineering change order (ECO) process minimizes disruptions and maintains manufacturing efficiency.

5. Select Suppliers Carefully

Choosing the right suppliers is critical to maintaining a resilient supply chain. Companies should assess potential partners based on their technology fit, company culture, scalability, financial stability, and strategic location. A thorough vetting process, including audits and supplier evaluations, can help identify the most reliable manufacturing partners.

Selecting a CM for the right strategic reasons, rather than just cost, will lead to a more sustainable partnership. Understanding what CM capabilities you need as a company is critical, because when you need certain quality levels or kind of material procurement capabilities or inventory management capabilities, it is essential to find a supplier with those skills.

6. Diversify Supply Sources

Relying on a single source for critical components or manufacturing processes increases supply chain vulnerability. Companies should establish alternative sources where feasible and maintain intermediate or safety stock for key components. Diversification reduces the risk of supply chain disruptions due to geopolitical instability, natural disasters, or unexpected demand fluctuations.

7. Communicate Predictable Volumes

Effective communication with suppliers is key to managing demand fluctuations. Providing accurate forecasts allows suppliers to plan production and allocate resources efficiently. Regularly updating demand expectations and collaborating with suppliers on capacity planning ensures a stable and responsive supply chain.

8. Conduct Regular Supplier Reviews

Consistent supplier performance evaluations help maintain high standards in quality, cost, and delivery. Companies should conduct quarterly reviews to assess supplier performance, identify areas for improvement, and ensure alignment with strategic objectives. Establishing clear key performance indicators (KPIs) and fostering open communication with suppliers can lead to long-term, mutually beneficial partnerships. Executive reviews that include cost, quality, delivery and process/technological improvements should be held at least on a quarterly basis.

CONCLUSION

Changing CMs is a significant step that requires careful planning, strong risk management, and continuous oversight. By implementing a well-structured transition plan, businesses can enhance efficiency, lower costs, and maintain product quality while mitigating potential supply chain disruptions. Following the strategies outlined in this guide will help ensure a seamless transition and position companies for long-term success in a competitive global market.

About the Author

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Wayne Miller is a seasoned executive with decades of experience designing and manufacturing products in the robotics, clean-tech, semiconductor, and consumer industries. He held leadership roles at companies including Skydio, Ubiquiti, and Apple.

Miller specializes in designing products for scale, cost reduction, and new product introduction. In addition to holding 35 patents, Miller has also lectured on entrepreneurship at Northeastern University and UC Berkeley.

Product Realization Group

PRG is a Silicon Valley firm specializing in electronic hardware product development and project management. Our hands-on experts help technology and medical device companies navigate the transition from engineering to volume manufacturing.

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