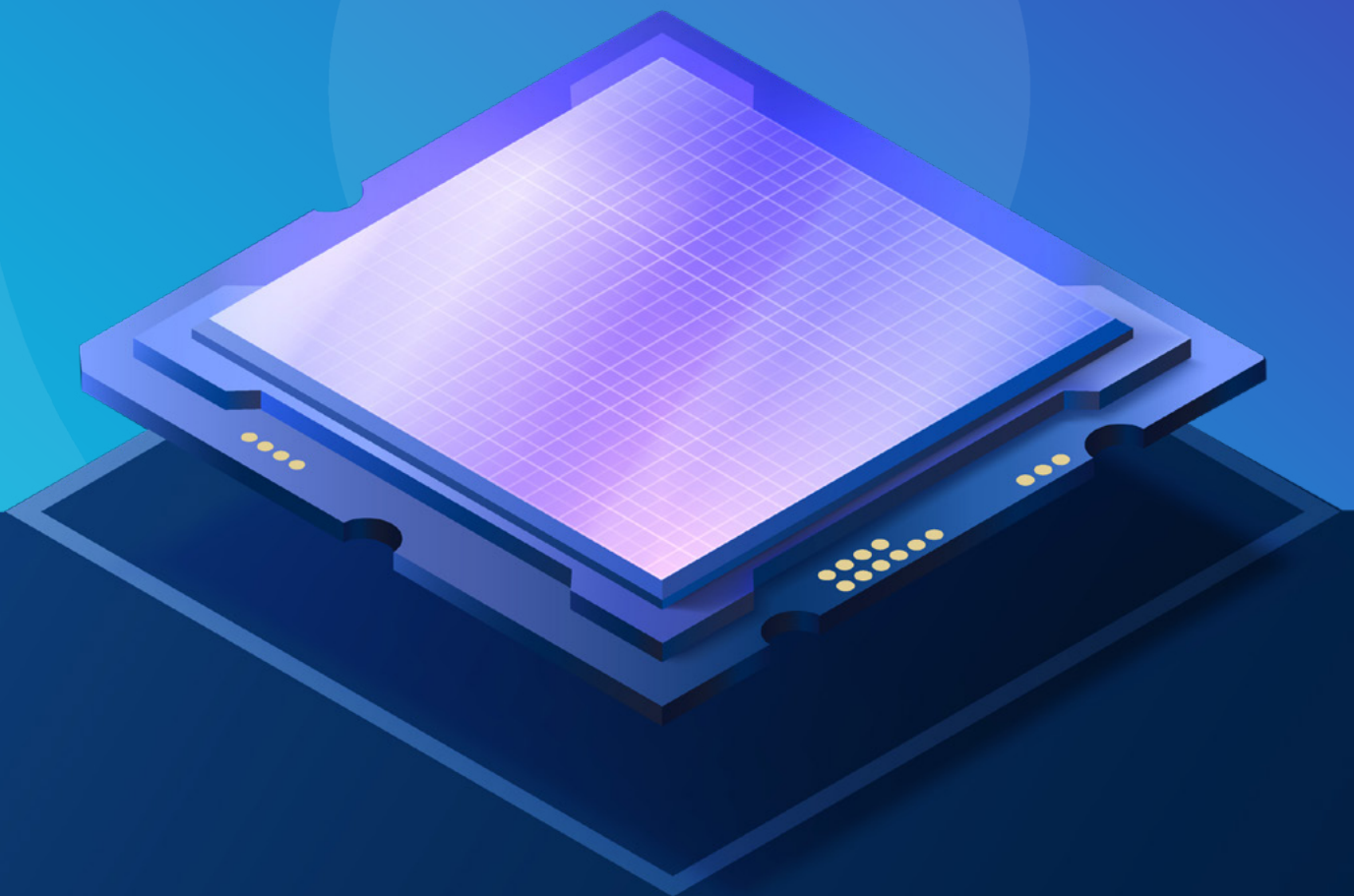


Pivoting the Electronics Industry to Design for Supply



Sprawling global supply chain shortages and hyper-competitive sourcing ecosystems are forcing electronic product engineers to redesign critical products, extending design & production cycles, and grapple with procurement headaches that bog down creativity, innovation, and quality. For many, the approach so far has been to hunker down and get through it.

Worse yet, tried-and-true strategies like Design for Manufacturing (DFM) and Just In Time (JIT) are feeling the full brunt of crippling supply management issues – in the U.S., we’re seeing the average inventory for semi-conductors falling to less than 5 days even for some of the biggest players in the space. Low-cost manufacturing doesn’t help much if you can’t find the parts to manufacture products in the first place.

We need to address this issue head-on without veering into any theoretical, downstream strategies that require a lengthy R&D cycle and a never-ending stream of developers and Kanban boards. Let’s also acknowledge that the deep strategy layer often best serves the larger players. You can read plenty of excellent material surrounding these subjects at McKinsey, Boston Consulting Group, or Deloitte. (while well-researched and probably effective) often only serve the handful of larger organizations.

That’s not going to help your average sourcing organization. So, instead of getting sidetracked, let’s talk about what the electronics manufacturing industry can do to address the headaches around increased lead times, redesigns, and the other issues surrounding sourcing/procurement and supply chain shortages.

FIGHTING FOR GOOD DESIGNS: THE CHALLENGES FACING ELECTRONICS PRODUCT ENGINEERS

Design cycles that include electronic components, especially semiconductors are in a state of flux. Product engineers are trying to source parts from multiple suppliers, contend with long waiting times, and deal with bone-dry supply chains. For many microcontrollers (especially older technologies), lead times are beyond 52 weeks and the outlook for improved capacity is bleak for the short term.

You probably already understand the implications of this, because 96% of the folks in the electronics industry think things are only going to get worse over the next few years.

Part of the issue is obvious: engineers shouldn't have to walk a tightrope during their design process due to supply constraints. Market conditions and supply constraints are forcing engineers to constantly bounce between ideation and trying to find new, comparable parts. Every time a product requires a different component due to shortages, engineers face three options:



1. LET'S FIND AN ALTERNATE

Is one part out-of-stock? No problem! We'll just find an equivalent, approved alternate. Simple, right?

Let's start by saying this: finding alternates is a non-linear process nightmare, and in heavily regulated industries like medical devices, it's not exactly a bulletproof solution. We all know it. First, engineers consider functional parameters and brainstorm parts that could be similar or same value & functionality. This often requires drawing up multiple (sometimes dozens) of alternates. In addition, they need to be certain that the alternate is in stock or has a reasonable lead time and is not slated to become obsolete in the near future.

Next, the engineer gets into a back-and-forth email exchange with the sourcing team and attempts to find each of these parts one-by-one on the market. Finding these new parts, obviously, isn't easy — and the difficulty of finding these parts is exactly why we're at this step in the first place.

The part search process can take weeks. And, even after an alternate part is finally found, it still needs to go through testing,

approvals, and certifications. Many will fail one or more of these steps (especially since they weren't the original part in the design). Worse yet, engineers now have to decide whether to compromise on functionality, price, or performance if the part does pass quality control — since it likely wasn't chosen originally due to its less-than-ideal parameters or cost.

Finding alternate products in most sourcing and procurement ecosystems can add months. In fact, 75% of engineers are experiencing delayed production schedules for this very reason. The manual process of finding alternate parts, vetting them, testing them, and certifying them is excruciating, especially for engineers who are battling tooth and nail to create a viable, innovative product for customers. To add to this, each iteration and testing cycle takes time and money, and significant disruption to the development timeline & sales process. When this process is finally completed, it's not very fulfilling — you wasted months of time, went over budget, and designed a suboptimal product.

Or worse, you weren't even able to find an equivalent alternate. "Alright," you think, "this isn't working." So, back to the drawing board for a full redesign we go.

2. LET'S JUST REDESIGN THE WHOLE THING

Fifty-five percent of electronics engineers are redesigning boards, 35% are making firmware changes, and 25% are also having to rewrite software, too. Redesigning the entire product is becoming a sad new reality, mostly due to the challenges associated with sourcing & procurement of parts.

Did you know that 80 percent of the lifetime risk (and cost) of a product is created during its initial design? So, what happens when 55% of engineers are designing products based on part availability, not function? Yeah, we have a problem. Not only does redesigning have a massive impact on the design cycle (we're talking months), but it can cripple your product's form and function.

Suddenly, you're dealing with long-term impacts on customer loyalty, branding, and negative word-of-mouth, in addition to which job satisfaction on your engineering/design team is at an all-time low.

In a perfect world, engineers out-design complexities and create high-quality products that generate the highest possible profits. In the current market environment,

most teams are lucky if they get the product built — much less get it out with the quality and ease-of-use as originally designed.

Ok, so the costs associated with a redesign aren't going to work. Wait! What if we just... drop the part from the whole design? Or we could just buy the part from the broker market!

3. LET'S GO THROUGH UNVERIFIED VENDORS

Some larger, liquidity-drenched companies in certain industries (e.g., Tesla) have the luxury of cutting part out of their designs. But most companies and some industries don't have this luxury. Even if they do, cutting out parts introduces additional complexities, testing requirements, and quality threats — so part cutting isn't simple even when it's simple.

The last, and only other alternative is to use an unverified vendor or broker. Let's not even open that bag of potentially counterfeit/stolen worms. You could get faulty parts, and you may not know until years have passed and customer complaints have flooded your inbox.

So... what now?



SOLVING ELECTRONIC ENGINEERING & DESIGN HEADACHES IMMEDIATELY

When we look at the design challenges facing electronic engineers, they're all solved by addressing broader sourcing & procurement problems and gaps in communication.

If product engineers have a better understanding of the procurement ecosystem and access to sourcing data, they could drastically improve product designs and plan for supply chain disruptions when they (inevitably) appear. We've heard a ton of consulting firms start to use the term "Design for Supply" to describe this approach.

What we're talking about here is making actionable changes to your overall sourcing & procurement ecosystem to resolve these inevitable disruptions immediately — not some downstream, strategy-based solution that requires expensive think-tanks and keynote speakers.

At the core, this is a visibility problem. Data surrounding sourcing is disparate, siloed, and sitting on laptops in Excel files. In a perfect world, you could open a single dashboard and immediately understand what inventory is available across all your verified and trusted suppliers across your entire company (not just products/product lines).

Then, you could design components and products around this availability or redesign with alternate parts based on broader availability and cost.

Instead, if you're still operating like most companies, you have a sprawling, overly complicated procurement data ecosystem. Disparate systems across teams, functions, and units each contain nuggets of vendor information and part details. Often, point solutions combined with ERPs create these data bubbles.

You have cost information on one system, inventory availability for specific parts on another system or platform, and various procurement-related spreadsheets tucked away in various folders on laptops, in email and on shared cloud drives.

If you want to be well-positioned to proactively identify and act when shortages interrupt design cycles, you need to optimize your organization's process to allow for streamlined part identification and purchase.

Eventually, you can work on creating products using interchangeable BOMs or tackling some of the upstream strategies like Design for Value or Design for Supply Chain. But, bringing all of your part and component information into a unified, accessible format to immediately provide visibility across all of the folks in your organization is a problem you can solve today.

BETTER SOURCING TECHNOLOGY CAN HELP YOU DESIGN PRODUCTS SMARTER, FASTER, AND WITH MORE PURPOSE

Are you ready to solve today's design problems and get your new product to market faster... today? Part Analytics provides end-to-end visibility in part availability, lead times, lifecycle, and provides a health score for your entire BOM. Within hours, your engineers will have the visibility and data they need to design around supply, instantly find viable, safe alternates when supply disruption hits, and redesign products and boards based on a full understanding of availability.

Better yet, we can get you up and running within hours. Ready to see how our AI-powered sourcing solution is transforming businesses around the globe for yourself?



ABOUT US

We're here to make supply management for direct materials less painful for electronics suppliers & manufacturers.

We are paving the way toward a future with simple, effective, and straightforward collaboration between electronic equipment manufacturers and suppliers. In that pursuit, we're creating a comprehensive & standardized source of information for supply management.

We draw on deep expertise in sourcing and product design to help electronics equipment and component manufacturers find available parts, manage costs, and limit overall risk to their supply chain with intuitive, easy-to-use software tools.

Automate direct materials sourcing, procurement & PLM processes with AI-powered software that will find available parts, monitor market changes, and provide product cost, risk, spend & supply insights for everyone on your team.



262-372-1787



info@partanalytics.com



11414 W. Park Place Suite 202
Milwaukee, WI 53224