

## Overworked Engineers Have a “Web” of Options

Joe Zaccari, Strategic Partnership Manager, Screaming Circuits

Feeling overworked? You aren't alone. Corporate downsizing of engineering teams has continued. Engineers find themselves not only having to maintain expertise across multiple design disciplines, but also involved in purchasing components and building prototypes.

[Screaming Circuits'](#) [1] customer base surveys show that simply managing the prototype process can be a source of frustration. For example, when asked what they felt was the most difficult challenge in getting prototypes built, survey respondents said:

- Sourcing components – 35 percent.
- Just coordinating the overall process – 21 percent.
- Getting PCBs fabricated – 14 percent.
- Getting the order placed – 10 percent.
- Waiting for the finished prototypes – 10 percent.
- Creating the file set – 7 percent.

The trend toward miniaturization is proving to be an additional challenge. Components are getting too small to be placed by hand. This eliminates the ability to do a quick internal build by hand.

Design cycles are also shrinking. Designers are not only supposed to deliver working prototypes on time, but those protos should be optimized for designability and testability.

The good news is that while workload and job complexity is increasing, so are the web-based tools needed to address this issue. Gone are the days where the only option for ordering prototypes was to jump in the car with a bag of parts and head to the local job shop. While that option is still available, web-based tools allow real-time quoting and ordering in minutes.

For example, Screaming Circuits website offers automated quotes on PCB layout, full prototypes, simple prototypes or short-run production 24/7 via its [website](#) [1]. For more complex projects, a call in to the sales staff is required. This ability to quickly cost options and place orders helps minimize the time spent on purely administrative activities. Through a relationship with PCB fabricator Sunstone Circuits, customers of either company can order both boards and prototypes in a single web transaction.

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*The trend toward product miniaturization drives automated placement in prototyping. While this increases the complexity of prototype manufacturing, web-based tools make it easier to one-shop stop for these services. Photo courtesy of Screaming Circuits.*

This support has been further enhanced through a partnership with North American distributor Newark Electronics/element 14 to offer prototype services via element 14's [Knode](#) [2]. The Knode is an intelligent online search and knowledge tool that helps engineers to quickly find the right solutions for all phases of the design cycle. It saves time by centralizing unbiased information, components, advice and services in one common location.

How can engineers tap tools like these in reducing workload? Here are a few tips:

- *Let Your Prototype Firm Drive the Process* – High quality, quickturn prototyping firms stay in business because of their ability to add structure to chaos without losing time. There may be white papers, blogs or other informational resources that can help you closely align your internal processes more closely with the chosen supplier's preferred best practices. In some cases, a prototype house may be able to transform a loose file set into a documentation package acceptable for a prototype build, which helps reduce internal engineering team workload.
- *Tap Your Supplier for DFM/DFT and General Layout Advice* – Your bleeding edge technology may be standard practice for your prototype supplier. There may be informational resources, design guidelines or a helpline to assist with component footprints not in your CAD library. Best layout options for odd form components or other issues that can also be tapped to speed your layout process. PCB fabricator Sunstone Circuits offers PCB123, a schematic and pc board layout CAD system that has built-in design rules and they provide design rule add-ins for many popular CAD systems. The Knode on element 14 offers a range of information options including engineering forums, development tools, CAD tools and suppliers.
- *Outsource procurement* – Another Screaming Circuit survey found that engineers could spend as much as two days in the design cycle simply ordering components for a prototype run. Comparatively, a quickturn prototype house which offers both consigned and turnkey options will have dedicated staff and a qualified supply base in place to support component procurement.
- *Expand Engineering Support for Complex Product Requirements* – Good prototype houses aren't simply board stuffers anymore. They often become integral links in their customer's product realization cycles. When mixed signal technology or embedded processors are part of the equation, the difference between receiving prototypes and working prototypes can be a prototype supplier's in-house engineering expertise. When filling gaps, consider the availability of on-call engineering resources at the chosen supplier. In some cases, this engineering focus may also extend further into

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the supply base. For example, Sunstone Circuits worked with Screaming Circuits to improve procedures in their raw board electrical test process to fit within the parameters of Screaming Circuit's quickturn environment. Their strategic partnership includes focused continuous improvement efforts which benefit both companies and their respective customer bases.

As these examples show, there are a wide range of options to make engineering easier. Looking for a good New Year's Resolution? Analyze the gaps you'd like filled in your product development and check the web for those resources.

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### Links:

[1] <http://www.screamingcircuits.com/>

[2] <http://www.element14.com/community/community/knode>.

[3] <mailto:atjzaccari@screamingcircuits.com>

[4] <http://blog.screamingcircuits.com/>