Ways PCB Designers Can Improve Productivity While Working From Home

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INTRODUCTION

Working from home, optional or not, does have its unique set of challenges. Nearly every technology company is racing to enable customers and employees alike to work from home, while maintaining the level of support customers expect. The PCB design industry is no exception. This paper provides some ideas and guidance on how PCB designers can improve productivity while working from home.

1. PRODUCTIVITY

It may surprise you, but statistics show that fulltime, work-from-home employees are often up to 15 percent more productive than their office-bound counterparts. However, if working from home is not your normal routine, the transition to normal or increased productivity may take some time. Starting out, it can create pressure, stress, and even make you feel less productive — so make sure you’re creating a comfortable and productive working environment for both you and those in your home.

Don’t let being remote limit your normal in-office interactions. Make sure to take time to chat via phone, messenger apps, and video meet-ups with your manager, reports, and co-workers.

You’ll also want to prioritize important tasks and manage your time wisely. Many remote workers put reminders and place holders in their email calendar apps to help them stay on track. It’s also important that you don’t let your surroundings control your schedule — be disciplined. And don’t forget to take breaks, stay hydrated, and take a lunch break!

When working from home there is a greater temptation to work longer hours. For some, especially in times like these when we are encouraged to not leave the house, work can even provide a productive and welcomed distraction. That is not necessarily a bad thing, but be sure to set boundaries. After you have finished working for the day, turn off your devices and mentally log-off from work.
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2. RESOURCEFULNESS

PCB designers don’t work in a vacuum; we understand the value of collaboration. We normally rely on sharing information, trading insights, and asking questions at the office to communicate project and PCB design knowledge. Suddenly having to work from home can present challenges when interacting with peers. Although email, instant messaging, and phone calls are typical for keeping in touch, the new normal also gives folks the opportunity to be more resourceful in the ways each of us prefers to stay in touch. No matter what forms that takes for you, be available, be responsive, and be respectful.

If you’ve never worked from home before, you’ll quickly discover that the convenience and availability of simply asking a workmate a question over the wall of your work cube is not possible. Being out of sight, even out of talking range, changes that communication dynamic. You will likely find yourself discovering new ways to be resourceful. For example, you may discover online portals of information that you never explored before. Ones that not only answer your questions, but lead you towards tips and techniques that provide you with even more knowledge.

Improving job skills, learning new techniques, and catching-up on the latest industry and tool features and enhancements is just the beginning. For PCB designers, it’s not only a great time to take advantage of offerings like on-demand training, you may also be inclined to learn about areas of PCB design that you have little or no proficiency in.

Take design areas like thermal analysis or power integrity. If high-speed DDR routing has become a time-consuming task, or design performance issues are emerging after PCB fabrication due to a lack of simulation, look into ways of modernizing your tool and skill sets.

3. TECHNOLOGY

Today, technology is such that working remotely is viable for most anyone that uses a computer or needs to communicate verbally with others. Using a headset rather than holding a phone allows you to continue working on your computer while attending long meetings. Chances are you likely don’t need any special equipment, you can use earbuds or headphones you already own, as most have a microphone. That said, some headsets can have a drawback; that is, they pick up high frequency noise and amplify it. High frequency ambient noise travels the farthest, so if you’re attending an important meeting make sure you are in the best, and likely quietest, location at home and mute your phone when you are not talking.
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It’s also important to be understanding. It’s very likely that not only are you and your coworkers working from home, but the entire family is home too. And don’t forget all those pets that are either excited, confused, or just wanting attention now that you are home more. So be prepared to have and hear some background noise, as complete isolation may not be possible.

For PCB design in particular, make sure you set up a desk area that allows for a second monitor, perhaps replicating the setup you had in your office. Many companies are letting employees take capital equipment like monitors and docking stations home to use for extended remote working situations.

What about WiFi? Well, depending on local availability, you may need to upgrade to a higher speed internet service for your home. If your family members may be streaming movies or playing online games at the same time, this may be even more essential. However, you don’t actually need anything too extreme for web meetings and daily network usage; speeds around 100Mb/sec should be fine. For 5G signals, connecting directly to the WiFi router provides the best signal and avoids bandwidth/speed reductions caused by walls, floors, and distance. If you have only one router and your work space is not within 15 meters of it, or if there are three or more walls between you and the router, you may want to consider a WiFi repeater.

4. PCB DESIGN COLLABORATION
Don’t forget, it’s not just you working from home. Chances are your MCAD counterpart or design firm is working from home too. Having the ability to communicate design data to and from mechanical CAD systems remotely can be a game changer! For example, the ProSTEP *.IDX file data exchange standard, based on the XML protocol supported by most tools, enables ECAD and MCAD designers to communicate between disciplines remotely. Data can be exchanged in real-time, at any time, and as often as desired, while keeping participants in their respective ECAD or MCAD system’s comfort zone — even when their current working zone has suddenly become their home.

MCAD collaboration efficiently replaces paper and verbal interchanges with digital, error-free exchanges. It also provides a graphical platform for collaborative discussions, ensuring that ECAD and MCAD engineers consider the complete set of design requirements. So whether you are collaborating with a company across town or across the globe, using 2-way ECAD-MCAD collaboration can remove any barriers to design progress.
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5. ONLINE PORTALS

Working remotely can mean that access to shared databases, drives, and networks are limited, or in the worst scenario, unavailable. Thanks to the internet, this does not have to be a roadblock for achieving design progress. For example, using an online component portal where you can search and select parts and then download their symbols, footprints, and even 3D models for use in your PCB designs can enable you to make progress when access to your corporate library is limited or unavailable. Online component portals not only optimize component selection, they speed-up product design. They also ensure that the parts you’ve selected have up-to-date pricing and availability.

You may even discover cloud-based tools that allow subject-matter experts to work either independently or together. We are seeing the birth of virtual online engineering communities that promote crowd-sourced model libraries and designs and are available to all. These cloud-based tools provide an online environment where analog, digital, and mixed-signal designs can be created, simulated, and shared. These are perfect sites to learn, work, and collaborate — all in one place, using the latest cloud-based technology. On these sites, community members can simply follow design activity, or they can actively curate and share content with their colleagues and friends. Users can build on each other’s work, allowing for rapid and collaborative prototyping.

6. CONTINUE TO LEARN

Continuing education is a must in the electronic product design industry. Continuing education includes keeping up with the latest industry standards, including IPC, ANSI, and MIL, as well as PCB fabrication and assembly processes. Technologies like the Internet of Things (IoT), Artificial Intelligence (AI), and rigid-flex circuits are becoming commonplace in today’s electronics — from automotive to medical to consumer and beyond. PCB designers contend with a constant stream of new and improved components and packages, as well as new fabrication, manufacturing, pre- and post-test, and assembly processes.

Consider emerging technologies like 5G. Next-generation wireless technology will change our lives in ways we cannot imagine. By connecting everything around us, it will provide new ways of communicating, transporting, and making faster more educated decisions. Because of this, an exponential growth in electronic devices using 6 to 100 GHz wireless technology will emerge, which means we will all need to learn new design techniques and use new tools to help with wireless design automation.

Depending on the device you are creating and the communication protocol used, the carrier frequency could range from 6 GHz up to 100 GHz. This will require new board materials and stack-up methods, special routing techniques, as well as via design and stitching. The placement of components will be more critical, and integration with RF simulation tools will make design creation faster and less error prone. By learning about RF design practices, you will master the RF-centric layout capabilities you need to accelerate wireless design, adding to your skillset and boosting your productivity.
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7. CONTRIBUTE
Oscar Wilde wrote: “The only thing to do with good advice is to pass it on. It is never of any use to oneself.” Sharing information can change your life. Working from home can be inspirational as our minds often think of creative and innovative ways to make our work and our lives more exciting. Think about those shortcuts, those macros, those scripts you’ve created to accelerate design, then make an informational or how-to video, pen a blog, or write a white paper.

YouTube alone has transitioned from an entertainment video platform to a portal for business, education, and much more. Being a YouTuber has actually become a career goal for some, accidental for others. And should you get a large subscriber base, it can lead to monetization. Who would have thought! Some of the most frequented engineering YouTubers are actually making their career now by posting content. So, the next time you create or discover a shortcut while designing a PCB, take a few minutes to record it and share it with your teammates, the design community, forums, and other social media platforms. Maybe start your own YouTube channel and have some fun!

CONCLUSION
If you are a PCB designer working from home for the first time or perhaps an occasional home worker moving to a fulltime work from home schedule, I hope this paper gives you some ideas to help you maintain and perhaps even improve your productivity. But just as important is staying connected to those you work for and with. Though working from home has its own set of challenges, there are plenty of ways to stay connected, stay productive, and develop new products for our future.