

THE FUTURE

THE EVOLVING ROLE OF A PCB DESIGNER




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The Future: The Evolving Role of a PCB Designer



In our previous columns we covered all aspects of design fundamentals. As this series concludes, it's important to understand why being knowledgeable on all facets of the design process is integral to design success and what their role is within the future of PCB design.

Technological Renaissance

Printed circuit board technology is evolving rapidly and in return, engineers need to evolve just as quickly. PCB designers' roles are going to become even more important soon. Empowering engineers with the knowledge needed to understand design fundamentals, effectively leverage today's technology, and learn from the mistakes others have made in the past is crucial.

The advent of automation and the latest software capabilities have made it much easier for even the most inexperienced users to "complete" full designs. But the lack of design fundamentals and collaboration can lead to major issues later and make it almost impossible to leverage the technology available to its fullest potential.

The future is driven by the constant evolution of technology. No matter where you are in your career, this will always continue to be true. To remain successful, designers are going to have to find ways to quickly adapt and take on new roles. Ultimately, it is about adequately preparing for the next electronic generation.

With emerging technologies such as 3D printing, artificial intelligence, and machine learning becoming synonymous with daily life, its impact on the design process is all but inevitable. The emergence of 3D printers from companies such as Nano Dimension, Ltd., Voxel8, and Siemens, has made the idea of 3D printed circuits a reality. "From a micro-perspective, I firmly believe an engineer of the future is going to be sitting at

his/her desk and is going to click 'file > print' and over in the corner there is going to be a 3D printed circuit board printer, just knocking out a prototype board," said Manny Marciano, CEO of EMA Design Automation.

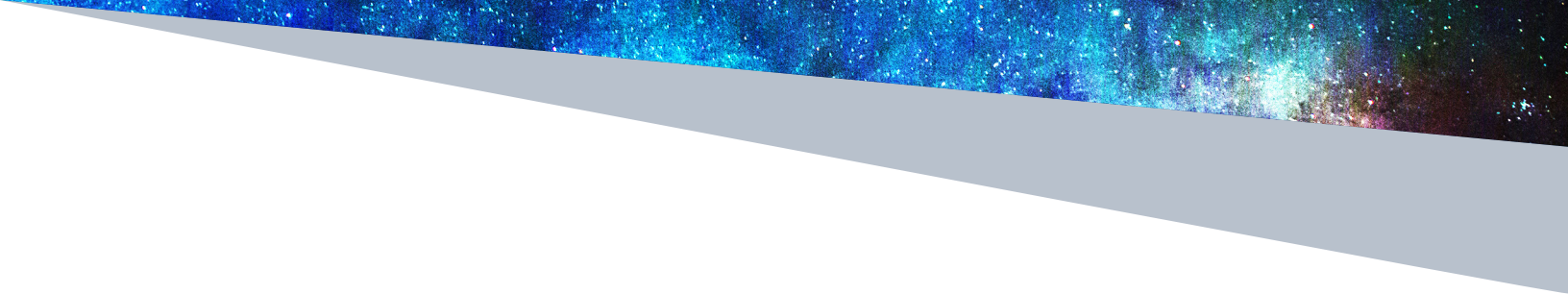
"Due to the nature of how 3D printers work, the EDA industry will need to develop tools to keep pace with the additive manufacturing process of printed electronics, just as their mechanical predecessors did when they embraced the technology," said Mike Brown, principle PCB design consultant.

An Evolving Role

The process of PCB design is evolving and with that, so is the role of the Electrical Engineer. What was once a highly segmented process -- a separate person in charge of libraries, schematics, PCB layout, DFM, etc. -- has now converged into a single job role. This new role, the 'PCB Design Engineer' or whatever other title it might be called in the future, requires one to not only understand every aspect of the PCB design process, but the tools which will ultimately help accomplish these myriad of tasks on-time and on-budget. Having a complete understanding of design processes will ensure utilization of these evolving technologies to their fullest potential.

As we continue to look towards the future, we can see ECAD and MCAD are slowly beginning to become synonymous with one another. This convergence is causing the emergence of a new discipline called Mechatronics, and its adaptation is going to change how engineers of the future will work.

The desktop workflow of the future is going to be a mechatronics solution where many individual disciplines as we know them will be absorbed into one consolidated engineering profession. Knowing how to properly design a printed circuit board will provide engineers with the foundation to be successful. Merging both electrical and mechanical knowledge is



slowly becoming essential to creating a proper design at the Mechatronics level. Engineers must adapt and become the reference point for other specializations.

“Mechatronics is the most compelling issue in front of us. Innovation and technology will always be compelling, but it must be converted to the real world. That is where the PCB comes in. The PCB converts concept to reality whether it’s a tiny system on a chip to a large telecom design, it all has to be turned into the physical realm of a PCB,” Marciano stated.

Conclusion

The future of printed circuit board design is very bright if engineers can stay flexible and keep up with the pace of rapid changes in the world of technology.

Few people will be doing the job of many, basing their design workflow on automation and resources available on an industry-wide basis. Mechatronics is a field that opens the doors to many breakthrough ideas that can turn into reality. Since the electronics industry is already known for having a competitive landscape, designers will have to constantly review trends and evolve with them. Those armed with a fundamental understanding of design and manufacturing process will set themselves apart from their peers.

Download [The Hitchhikers Guide to PCB Design](#) to learn more about the future of PCB design as well as real-world, actionable PCB design tips from industry experts.

