

Bits & Bytes

In the summer of 2016, I had built my first computer using parts I had bought online through various websites. One of the parts that are needed for the completion of a computer build is a Central Processing unit, better known as the CPU. 2016 was only 3 short years ago, but that time was enough for engineers to improve performance greatly in the CPU space. The improvement is a result of Moore's Law, which is a law stating that the transistors on a processor will double around every 2 years, therefore improving performance on newer processors.

According to a news article by TechRadar, one of the ways that the semiconductor company AMD is trying to keep Moore's Law a reality is by implementing chiplets to the manufacturing process of new CPUs. The chiplet approach is "a single processor package using several different chiplets and connect them using a die-to-die interconnect scheme" (Papermaster, Mark, "AMD Turns to Chiplets as Moore's Law Slows." TechRadar, Oct. 9 2019).

All of the information given by TechRadar helps keep consumers in the computer building community, like myself, excited for the future releases of these companies because they bring change and innovation that helps build an incredible experience when it comes to the performance of a new computer. Since my first computer build, I have watched the improvements made and it really does make a difference. 3 years ago, I spent \$500 on my computer, and today, \$500 would allow me to make a computer that is at the very least twice as fast, which is almost unbelievable to me.

While Moore's law may seem to only apply to consumers in the computer building community, it actually affects everyone and anyone in the market for a device that has a processor in it, which applies to billions of electronics all over the world. Currently, TSMC, the largest manufacturer of semiconductors, is producing 5nm nodes for processors, meaning that the size of nodes are nearly double the size of a human DNA strand (Nano.gov, Size of the Nanoscale). The progress of shrinking the

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transistors in newer processors is allowing for the adoption of smaller circuit boards in many devices and making many conveniences for the lives of everyone.

The constant shrinking of transistors on a processor requires a lot of research, so a person that wants to conduct research and be a part of fulfilling Moore's Law can definitely find a career in that area. Since AMD and Intel are both competing very fiercely in the CPU market at the moment, research will increase, providing jobs for engineers, money to continue the research, and a better experience for the end user when they have a processor that can edit videos faster, browse the internet faster, play games at higher resolutions, higher frame rates, or simply have better bragging rights for a superior computer. The amount of data that is created is enormous and having computers that can assist in "turning data into knowledge will lead to humanities knowledge" that will in turn provide much more useful information to those who analyze it and apply it to future work (Paul, Logan, Bits and Bytes Lecture 2019).

The few aforementioned results of research should be enough for companies to truly invest into it and make life better for the world. The only obstacle obstructing companies from innovating in the CPU market is the amount of money needed for research, but with the amount of other companies and consumers needing faster and more reliable hardware, Intel and AMD will definitely improve with the money that is falling onto their laps.

The market is continuously improving and if the performance of these products follows that same trend, I will be stoked to purchase and use the improved products that are the result of geniuses putting in effort for making transistors almost as small as the diameter of a human DNA strand. Those tiny transistors will make everything we process on future devices much more swiftly than any current product and will pave the road to a future with vastly superior technology, which in turn will prove that technology will always continue to enhance our daily lives.

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Works Cited:

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TechRadar- AMD turns to chiplets as Moore's Law slows

<https://www.techradar.com/news/amd-turns-to-chiplets-as-moores-law-slows>