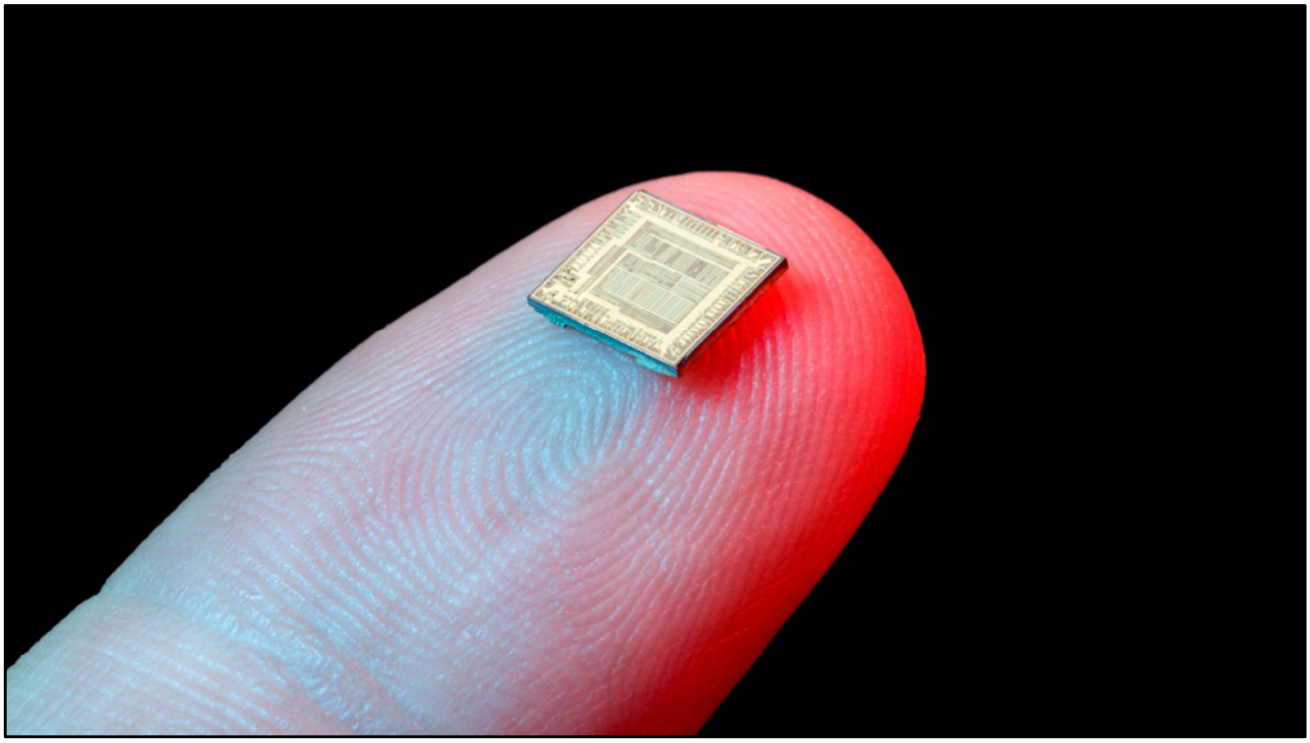
Getting Bigger by Going Smaller
By Steven Zicherman, MBA, CFA | Equity Analyst

"Big doors swing on little hinges" is a saying that is often credited to W. Clement Stone, a 20th century American entrepreneur and philanthropist. Historical writings, however, suggest this saying goes further back and references the massive cathedral doors used all across Europe.

The concept, though, is timeless, as it reminds us that sometimes it's the smallest things that allow big things to happen.

This is no truer than when thinking about semiconductors today – those little chips that make our digital gadgets go.



Electronics permeate our everyday lives. Take a look around you right now. You're probably watching this presentation on some kind of device – a TV, computer, iPhone or iPad. Now think about the technical wizardry required to make these devices function. Part of that magic is semiconductor technology.

Today, I am going to talk about how the Big Tech companies – the Apples and Googles – are adopting and implementing their own proprietary semiconductors to enhance their products and services. By doing so, these big companies get stronger and widen the gap between them and their competitors.

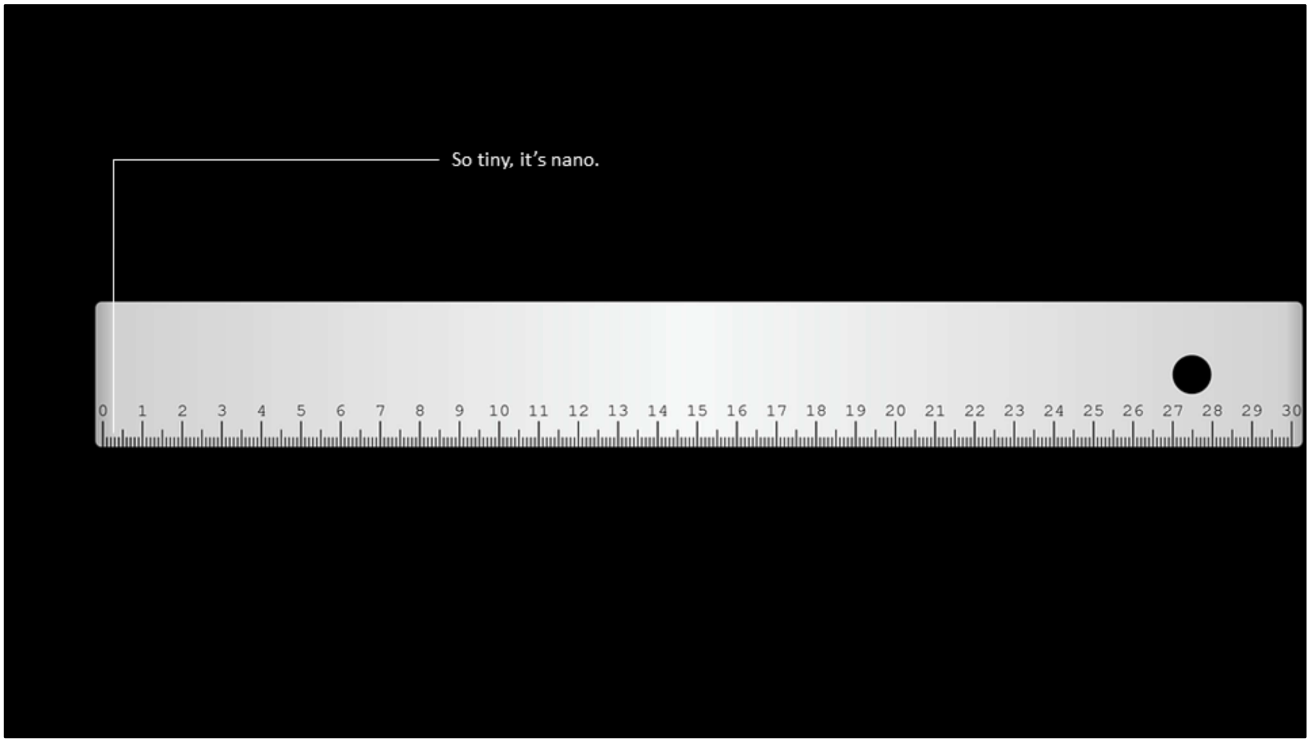
You may have heard my colleague Trevor talk about our increasing demand for online services in his presentation, and I'm sure you know from your own personal experience that our reliance on devices is becoming more entrenched. As we come to expect device technology to be faster, more powerful and more energy-efficient, we are increasingly relying on semiconductor technological advancements.

Source: Apple

Let's take Apple, for example.

In-house engineers at Apple recently designed and developed new computer chips. This moment marks the beginning of the end of Apple's 15-year partnership with Intel. Thanks to innovations in semiconductor manufacturing, Apple's new chip – the M1 – is both faster and more power-efficient than the latest generation of Intel chips.

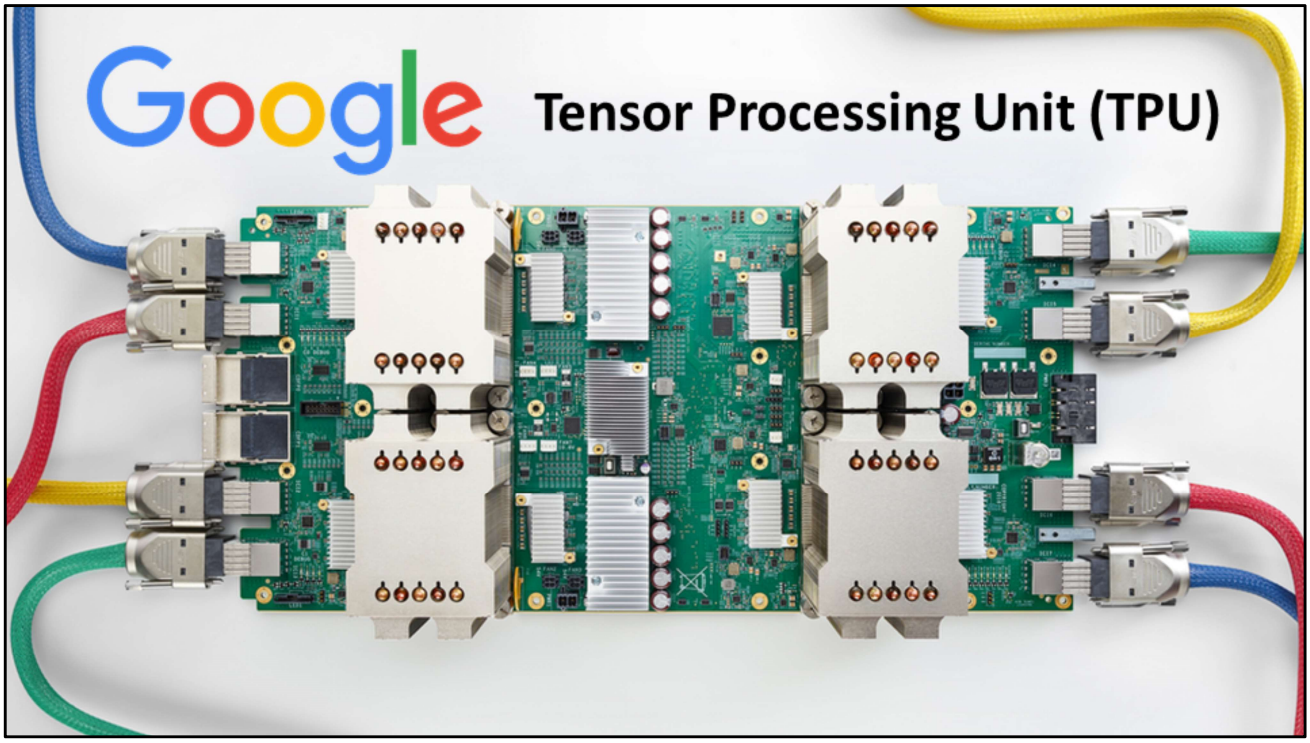
The Apple chips are so good that the new MacBook Air doesn't need a fan, making the computer completely silent!



The M1 chip is made using a five-nanometre production process.

What's a nanometre? Well, I'm glad you asked. A nanometre is one-millionth of a millimetre.

The smaller the transistors, the more you can fit on a chip, making it faster and more efficient. Intel's latest chips use a 10-nanometre process, and Intel does not expect to ship smaller nanometre chips until 2022. In simple terms, Intel stumbled, and Apple moved forward.



Source: Google

Tech companies like Amazon and Google are also designing these kinds of chips in-house for better performance.

Google's Tensor Processing Unit, otherwise known as a TPU, is a good example. The TPU was developed for machine learning. It improves the accuracy and power of Google products like Photos, Gmail and Search. Google's investment in its TPU is a differentiator that makes its services better.

These developments bolster our confidence in the big technology companies. We are comforted that the Apples and Googles are leveraging semiconductor innovations to sustain and grow their moats. As valuations expand, the mega-cap companies need to generate higher amounts of revenue and earnings. Semiconductor technology is allowing these companies to do so.

We know that technology is evolving and arguably at a faster and faster pace. Our analysis and research on products like Apple M1 and Google TPU have led us to think about the semiconductor industry more broadly.

As the industry grows in relevance, there will be lots of winners and losers. The parts of the semiconductor industry we find most intriguing are the equipment makers and chip manufacturers. We think of these as “pick and shovel” businesses. People selling picks and shovels during the gold rush fared much better than the prospectors hoping to strike it rich.

In the past few years, semiconductor growth was driven largely by smartphone and cloud computing demand. As we look forward, this growth should remain robust thanks to innovations and increased demand in the automotive and industrial sectors.

For example, an internal combustion engine car contains roughly $350 worth of semiconductors, while the average electric vehicle contains $1,000 worth. If we transition to fully autonomous vehicles, that figure could grow to $2,000 per car – roughly six times the average cost of semiconductors in a vehicle today.

While we do not currently recommend a pure play semiconductor stock, we are actively researching the space for opportunities. Taiwan Semiconductor is the world's largest semiconductor manufacturer. Lam Research provides the tools and equipment that manufacturers need to make chips. These are fundamentally sound businesses.

Good businesses typically enjoy above-average profitability and return on capital. Great businesses are able to reinvest those returns into attractive opportunities. We look forward to watching how these small but important innovations make a big difference.

ODLUM BROWN
Investing for Generations®

Please read our Odlum Brown Limited Disclaimer and Disclosure - It is important!

Odlum Brown Limited is an independent, full-service investment firm focused on providing professional investment advice and objective research. We respect your right to be informed of relationships with the issuers or strategies referred to in this report which might reasonably be expected to indicate potential conflicts of interest with respect to the securities or any investment strategies discussed or recommended in this report. We do not act as a market maker in any securities and do not provide investment banking or advisory services to, or hold positions in, the issuers covered by our research. Analysts and their associates may, from time to time, hold securities of issuers discussed or recommended in this report because they personally have the conviction to follow their own research, but we have implemented internal policies that impose restrictions on when and how an Analyst may buy or sell securities they cover and any such interest will be disclosed in our report in accordance with regulatory policy. Our Analysts receive no direct compensation based on revenue from investment banking services. We describe our research policies in greater detail, including a description of our rating system and how we disseminate our research, on the Odlum Brown Limited website at www.odlumbrown.com.

This report has been prepared by Odlum Brown Limited and is intended only for persons resident and located in all the provinces and territories of Canada, where Odlum Brown Limited's services and products may lawfully be offered for sale, and therein only to clients of Odlum Brown Limited. This report is not intended for distribution to, or use by, any person or entity in any jurisdiction or country including the United States, where such distribution or use would be contrary to law or regulation or which would subject Odlum Brown Limited to any registration requirement within such jurisdiction or country. As no regard has been made as to the specific investment objectives, financial situation, and other particular circumstances of any person who may receive this report, clients should seek the advice of a registered investment advisor and other professional advisors, as applicable, regarding the appropriateness of investing in any securities or any investment strategies discussed or recommended in this report.

This report is for information purposes only and is neither a solicitation for the purchase of securities nor an offer of securities. The information contained in this report has been compiled from sources we believe to be reliable, however, we make no guarantee, representation or warranty, expressed or implied, as to such information's accuracy or completeness. All opinions and estimates contained in this report, whether or not our own, are based on assumptions we believe to be reasonable as of the date of the report and are subject to change without notice.

Please note that, as at the date of this report, the Research Analyst responsible for the recommendations herein, associates of such Analyst and/or other individuals directly involved in the preparation of this report may hold securities of some of the issuer(s) referred to directly or through derivatives.