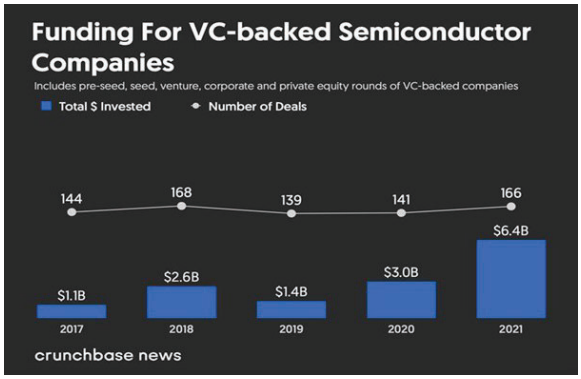
TSMC Blog

TSMC: Enabling Startups to Unleash New Semiconductor Innovation

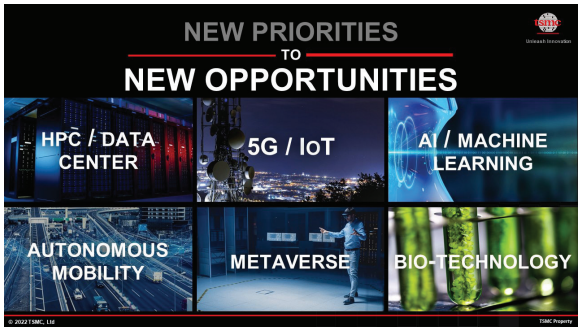
2022/04/18 | **Lucas Tsai**, Director, Market Development and Emerging Business Management, TSMC North America

Semiconductor innovation empowers products for nearly all other industries, such as smartphones, cars, medical devices, IoT applications, and high-performance computing. Companies from automakers to newly emerged cloud service providers and private spaceflight businesses have rushed to establish in-house semiconductor divisions to both gain a better grasp of the industry supply chain, and to accelerate innovation for their differentiated products and services. One effect of this phenomenon is a renaissance in semiconductor startups, where venture capital funding for semiconductor companies has more than doubled from 2021 to 2022[1].



Startups have driven semiconductor innovation from the very beginnings of the tech industry. Innovative products and business models often provide the foundations of a promising startup. Since its founding 35 years ago, TSMC has been working with startups across the industry, providing access to its technologies and manufacturing capacity to help them grow and thrive. We are honored to have prospered together with industry juggernauts, such as NVIDIA, Broadcom, Marvell, and MediaTek, since their early days. As the world's first dedicated semiconductor foundry, TSMC has been tireless in researching and investing in process technology advancements, manufacturing capacity expansion, and design ecosystem development to enable those companies to unleash their innovation. Their partnership with TSMC allows each of them to invest in chip design and innovation rather than in capital-intensive semiconductor manufacturing and has given them the flexibility to innovate broadly and creatively. Those companies are now the wellspring of innovation that empowers our electronic world.

TSMC vigorously strives to support startup customers to confidently transform their forward-looking idea from inspiration into real products, manufactured at high volume. For example, the TSMC Open Innovation Summit (OIS) (formerly the TSMC Customer Collaboration Summit) brings together startups, investors, and other chip innovators to discuss transformational silicon designs for autonomous driving, HPC, AI, 5G, IoT, Metaverse, and Medical/Bio applications, as well as share valuable findings on how to accelerate the innovation cycle through effective collaboration, drawing synergy from each other and consolidating resources to achieve greater success. Their disruptive innovations are the dynamo that drives the semiconductor industry development in the United States and around the world.



Our partnership with Silicon Catalyst has demonstrated how we work closely with investors to enable startups to get off the ground and achieve a win-win situation by integrating resources. Silicon Catalyst is the only incubator that focuses exclusively on semiconductor startups. "Our long-standing relationship with TSMC has afforded the startups in our incubator access to their world-class foundry services and technical expertise," said Pete Rodriguez, CEO of Silicon Catalyst. "TSMC continues to be a vital element in our mission to nurture the next generation of semiconductor startups from around the world. We look forward to our continued

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collaboration in the years to come. At Silicon Catalyst, it starts with startups, and when it comes to foundries, it starts with TSMC."

The complexity of today's silicon design requires close collaboration across the entire ecosystem to help chip startups conserve cash by accelerating time to innovation with the best technology and services in the industry. In 2000, TSMC formed a dedicated team in North America to support startup companies, providing them not only with our industry-leading technologies and manufacturing excellence, but also the guidance to help them gain perspective on how to plan their production schedule, technology roadmap, and even business model, so they can produce fast results and significant business outcomes. Over the past 22 years, TSMC has supported nearly 1,000 startup customers, helping them achieve design and business success, and enabling advances in communications, computing, healthcare, transportation, clean energy, and countless other applications.

The collaboration between TSMC and Ambiq® is a great example of how we have helped customers overcome design challenges and implement their strategies. Ambiq started in 2010 with an experienced team focused on building ultra-low power semiconductor platforms and solutions for IoT endpoint devices. "As a great foundry partner, TSMC has been constantly helping us overcome design complexity and challenges with its customized process technologies and solutions, breaking through innovation bottlenecks, meeting time-to-market goals, and bringing our differentiated product design to reality," said Fumihide Esaka, Chairman and CEO, Ambiq. "Today, Ambiq has enabled more than 150 million devices to be energy-efficiently smart using our sub-threshold power-optimized technology (SPOT®) solutions. We couldn't get here without TSMC, whose commitment and support of advanced but agile innovators like Ambiq helped nurture the environment for us to succeed."

TSMC enables our startup customers with an abundance of resources and support from our design ecosystem partners. To lower design barriers and improve first-time silicon success, TSMC established the industry's most comprehensive and vibrant ecosystem, the TSMC Open Innovation Platform® (OIP), in 2008. TSMC OIP combines the foundry segment's earliest and most comprehensive EDA certification program and the foundry segment's largest and most robust silicon-proven IP and library portfolio. Expanding its libraries and silicon IP portfolio to more than 40,000 IP titles and providing more than 38,000 technology files as well as over 2,600 process design kits spanning 0.5-micron to 3-nanometer to customers, TSMC works together with ecosystem partners and proactively engages with them much earlier and deeper than ever before to address mounting design challenges at advanced processes.

Credo Technology is one of many startup companies that have succeeded and achieved rapid growth by working with TSMC and its OIP ecosystem partners. As an innovator in providing secure, high-speed connectivity solutions, Credo was founded in 2008 and became publicly traded on the Nasdaq in January 2022. "My full appreciation goes to the TSMC Emerging Accounts team and its OIP ecosystem partners, who have played an important role over the past decade in cultivating our success through delivering great support, flexibility, responsiveness, and ultimately treating our needs with high priority," said Bill Brennan, CEO and President of Credo. "TSMC enables us to accelerate innovation for our high-speed connectivity solutions, which target the data center market and require highest-speed analog circuits with very low power, using its industry-leading 12nm process. We look forward to our next-generation design on TSMC's 5nm technology and have great confidence that our collaboration with TSMC will help us achieve a greater success."

Since the year 2000, TSMC has worked with a diverse array of startups, helping them connect with leading experts, realize their potential, and tackle some big challenges. Those startup companies are fearless, pave new paths and are not afraid of taking bold steps or to challenge themselves to work more creatively and rapidly. As their trusted technology and capacity provider, we will continue to support our customers and look forward to their exciting innovations to spur tremendous growth throughout the semiconductor industry.

Reference:

Mergers & Money: Semiconductor Shortage Produces Record Venture Funding, Big Deals
By Chris Metinko, February 24, 2022

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