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Metaverse concept likely to create huge opportunities, TSMC and MediaTek say

Staff writer, with CNA
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Contract chipmaker Taiwan Semiconductor Manufacturing Co (TSMC,) and integrated circuit designer MediaTek Inc are optimistic about the metaverse concept, expecting it to create major opportunities for the semiconductor industry.

At a tech forum last week to commemorate former finance minister K.T. Lee, who has been dubbed the father of Taiwans economic miracle and who helped build Taiwans semiconductor sector in the second half of the 20th century, TSMC chairman Mark Liu said he expects the metaverse to grow quickly in the next decade.

Over the next 10 years, data computing power and transmission speeds are forecast to increase significantly, paving the way for a combined real and virtual world, Liu said.

TSMC has been developing the technologies needed for metaverse applications, he added.

The metaverse concept has been promoted by Facebook Inc chief executive officer Mark Zuckerberg since July. It refers to a digital world where people can move between devices and communicate in a virtual environment.

Liu said hardware for the metaverse concept has been in development for years, leading to the belief that augmented reality (AR) devices could replace smartphones and virtual reality (VR) gadgets could replace personal computers.

The main problem is how to make AR and VR headsets more affordable and lighter with a longer battery life, Liu said, adding that the headsets have to be improved 100-fold if they are to become as popular as smartphones.

MediaTek chairman Tsai Ming-kai said the AR and VR device market is forecast to be worth US$500 billion by 2040, and the applications for devices to be used in the metaverse would be a main target of the semiconductor industry.

The market for these applications, which would be used while working, socializing, gaming, buying goods or making financial transactions, could grow to US$8.3 trillion, Tsai said.

The metaverse concept is expected to prompt more suppliers to develop VR and AR devices, Taipei-based market information advisory firm TrendForce Corp said.

It forecast that shipments of VR and AR devices would hit 12.02 million units next year, up 26.4 percent from a year earlier.

TrendForce said the smart manufacturing market resulting from the metaverse concept is expected to top US$540 billion in 2025.

Other Taiwanese semiconductor suppliers such as Novatek Microelectronics Corp, which supplies driver ICs for flat panels, and Phison Electronics Corp, a memory control IC maker, also appeared upbeat about metaverse applications.

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TSMC, MediaTek upbeat about Metaverse future

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Taipei, Dec. 6 (CNA) Contract chipmaker Taiwan Semiconductor Manufacturing Co. (TSMC) and integrated circuit designer MediaTek Inc. are both optimistic about the "Metaverse" concept, expecting it to create major opportunities for the semiconductor industry.

At a tech forum held last week to commemorate K.T. Lee (???), a prominent technocrat who helped build Taiwan's semiconductor sector in the second half of the 20th century, TSMC Chairman Mark Liu (???) said he expected the Metaverse to grow quickly during the next decade.

Over the next 10 years, Liu said, data computing power and transmission speed are expected to increase significantly, paving the way for a combined real and virtual world, and TSMC has been developing the technologies needed for Metaverse applications.

The so-called "Metaverse" concept has been talked up by Meta (Facebook) CEO Mark Zuckerberg since July. It refers to a digital world where people can move between devices and communicate in a virtual environment.

In fact, Liu said, hardware for the Metaverse concept has been developed for years, leading to the belief that augmented reality (AR) devices could replace smartphones and virtual reality (VR) gadgets could replace personal computers.

The main problem at present is how to make AR and VR headsets more affordable and lighter with a longer battery life, said Liu, who contended that the headsets "have to be improved 100-fold" if they hope to become as popular as smartphones.

MediaTek Chairman Tsai Ming-kai (???) expected the AR and VR device market to be worth US$500 billion by 2040, and the applications for those devices to be used in the Metaverse will be a main target of the semiconducter industry.

The market for these applications, which will be used while working, socializing, gaming, buying goods or making financial transactions, could grow to US$8.3 trillion, Tsai said.

According to Taipei-based market information advisory firm TrendForce Corp., the Metaverse concept is expected to prompt more suppliers to jump into VR and AR device development, and it forecast shipments of VR and AR devices to hit 12.02 million units in 2022, up 26.4 percent from a year earlier.

TrendForce said the smart manufacturing market resulting from the Metaverse concept is expected to top US $540 billion in 2025, with a compound annual growth rate (CAGR) hitting 15.35 percent from 2021 to 2025.

In addition to TSMC and MediaTek, other Taiwanese semiconductor suppliers such as Novatek Microelectronics Corp., which supplies drive ICs for flat panels, and Phison Electronics Corp, a memory control IC maker, also appeared upbeat about Metaverse applications.

(By Chang Chien-chung and Frances Huang)

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NVIDIA Next-Gen Gaming GPUs, GeForce RTX 40 'Ada Lovelace' Series, Launching in 2022 & Will Utilize TSMC's 5nm Process Node

Hassan Mujtaba
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NVIDIA's next-generation GeForce RTX 40 series gaming graphics cards based on the Ada Lovelace GPU architecture are being prepped for a major 2022 launch. In its latest report, DigiTimes states that partners including Taiwan factories that are partners with NVIDIA are getting ready for a major GPU refresh next year in the form of the GeForce RTX 40 series.

NVIDIA Partners at Taiwan Prep For Major GeForce RTX 40 'Ada Lovelace' Series GPU Launch in 2022, Gaming GPUs To Utilize TSMC's 5nm Process Node

We have already heard about the possibility of NVIDIA utilizing TSMC's 5nm process node for its next-generation gaming GPUs codenamed Ada Lovelace from reliable leakers but this time, the information comes from directly within the Taiwanese based factories where these GPUs will be made. While the DigiTimes article is behind a paywall, a snippet of the information was revealed by RetiredEnginner (@chiakokhua) over at Twitter.

"Nvidia's biennial GPU refresh coming in 2022, riding on metaverse and gaming. Following H100, based on Hopper architecture, using TSMC's 5nm + CoWoS, aimed at datacenter/AI, gaming GPU RTX40 series, based on Ada Lovelace architecture, will also tap TSMC's 5nm...."

— RetiredEngineer® (@chiakokhua) November 30, 2021

The NVIDIA Ada Lovelace GPUs will power the next-generation GeForce RTX 40 graphics cards that will go head-on with AMD's RDNA 3 based Radeon RX 7000 series graphics cards. There's still some speculation regarding the use of MCM by NVIDIA. The Hopper GPU, which is primarily aimed at the Datacenter & AI segment, is allegedly taping out soon and will feature an MCM CoWoS architecture. NVIDIA won't be using an MCM design on its Ada Lovelace GPUs so they will keep the traditional monolithic design. The Ada Lovelace GPUs are expected to bring in a series of key innovations, architecturally.

NVIDIA GeForce RTX 4090 Graphics Card - Ada Lovelace Powered AD102 Flagship GPU

Based upon previous rumors, there have been whispers that NVIDIA would utilize TSMC's N5 (5nm) process node for its Ada Lovelace GPUs. This includes the AD102 SKU too which will be an entirely monolithic design. In his latest tweet which talks about the specific GPU configurations, the AD102 GPU is said to feature a clock speed as high as 2.5 GHz (2.3 GHz average boost). The specific tweet states that the GPU clock for Ada Lovelace 'AD102' could be 2.3 GHz or greater so let's take that as a baseline and previously leaked specifications to figure out where the performance should land.

The NVIDIA AD102 "ADA GPU" appears to have 18432 CUDA Cores based on the preliminary specs (which can change), housed within 144 SM units. This is almost twice the cores present in Ampere which was already a massive step up from Turing. A 2.3-2.5 GHz clock speed would give us up to 85 to 92 TFLOPs of compute performance (FP32). This is more than twice the FP32 performance of the existing RTX 3090 which packs 36 TFLOPs of FP32 compute power.

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The 150% performance jump looks huge but one should remember that NVIDIA already gave a big jump in FP32 numbers this generation with Ampere. The Ampere GA102 GPU (RTX 3090) offers 36 TFLOPs while the Turing TU102 GPU (RTX 2080 Ti) offered 13 TFLOPs. That's over a 150% increase in FP32 Flops but the real-world gaming performance increase for the RTX 3090 averaged at around 50-60% faster over the RTX 2080 Ti. So one thing we shouldn't forget is that Flops don't equal GPU gaming performance these days. Furthermore, we don't know if 2.3-2.5 GHz is the average boost or the peak boost with the former meaning that there could be even higher compute potential for AD102.

Aside from that, the leaker also states that the NVIDIA GeForce RTX 40 flagship would retain a 384-bit bus interface, similar to the RTX 3090. What's interesting is though that the leaker mentions G6X which means that NVIDIA won't be moving to a new memory standard until after Ada Lovelace and utilize the higher

pin-speeds of G6X of 21 Gbps for its next-generation cards before we see a newer standard (e.g. GDDR7). The card will feature 24 GB of memory so we can either expect single-sided 16Gb DRAM or dual-sided 8Gb DRAM modules.

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NVIDIA CUDA GPU (RUMORED) Preliminary:

GPU	TU102	GA102	AD102
Architecture	Turing	Ampere	Ada Lovelace
Process	TSMC 12nm NFF	Samsung 8nm	5nm
Graphics Processing Clusters (GPC)	6	7	12
Texture Processing Clusters (TPC)	36	42	72
Streaming Multiprocessors (SM)	72	84	144
CUDA Cores	4608	10752	18432
Theoretical TFLOPs	16.1	37.6	~90 TFLOPs?
Memory Type	GDDR6	GDDR6X	GDDR6X
Memory Bus	384-bit	384-bit	384-bit
Memory Capacity	11 GB (2080 Ti)	24 GB (3090)	24 GB (4090?)
Flagship SKU	RTX 2080 Ti	RTX 3090	RTX 4090?
TGP	250W	350W	450-650W?
Release	Sep. 2018	Sept. 20	2022 (TBC)

The NVIDIA Ada Lovelace GPUs will power the next-generation GeForce RTX 40 graphics cards that will go head-on with AMD's RDNA 3 based Radeon RX 7000 series graphics cards. There's still some speculation regarding the use of MCM by NVIDIA. The Hopper GPU, which is primarily aimed at the Datacenter & AI segment, is allegedly taping out soon and will feature an MCM architecture. NVIDIA won't be using an MCM design on its Ada Lovelace GPUs so they will keep the traditional monolithic design.

Which next-generation GPUs are you looking forward to the most?

* AMD RDNA 3 (Navi 3X Radeon RX GPUs)

* NVIDIA Ada Lovelace (GeForce RTX GPUs)

* Intel ARC Alchemist (ARC Graphics Cards)

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TSMC stock jumps on news Meta buying AMD chips to power metaverse

Liam Gibson
181 words
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TWNNWS
English

TAIPEI (Taiwan News) — Taiwan Semiconductor Manufacturing Company's (TSMC) share price jumped from NT$9 (32 cents) to NT$611 at the start of trading on Tuesday (Nov. 9), buoyed by news of a deal between AMD and Meta.

The deal, announced on Monday (Nov. 8) at an AMD event, has Meta (formerly known as Facebook) placing an order for a new generation of AMD's Epyc processors to power new data centers that will support its metaverse project, according to a report by CNA.

At the same event, AMD launched its 3rd Gen EPYC Milan-X series processor, the first model to use TSMC's 3D Chiplet package architecture. The news sent AMD's share price soaring up over 10% to reach US$150.16.

Metaverse is currently investing billions to build its virtual and augmented reality labs to support the "metaverse" — a digital environment where users can move between different devices and communicate virtually. It announced a new product team for the project in July.

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