

# FutureHorizons



The Global Semiconductor Industry Analysts

## **Future Horizons Newsletter**

**April 2022**

## **Contents Page**

<b>Industry News by Company</b>	<b>Page 03 - 05</b>
<b>Industry News &amp; Trends</b>	<b>Page 06 - 08</b>
<b>East European News &amp; Trends</b>	<b>Page 09 - 10</b>
<b>World Economic Round Up</b>	<b>Page 11</b>
<b>Future Horizons &amp; Industry Events</b>	<b>Page 12</b>

## **Industry News By Company**

### **[AMD To Acquire Pensando For \\$1.9B Amid Surging Semiconductor Deals](#)**

Chipmaker AMD announced Monday it agreed to acquire Pensando, a developer of programmable processors used in cloud computing, in a transaction valued at around \$1.9 billion.

Milpitas, California-based Pensando previously raised at least \$313 million in known venture funding, per Crunchbase data. The company, co-founded by former Cisco CEO John Chambers, launched in 2017 but operated in stealth mode until 2019. Lead backers include Qualcomm Ventures, Hewlett Packard Enterprise, and Lightspeed Venture Partners.

The deal comes on the heels of several extraordinarily busy quarters for venture investment and M&A dealmaking in the semiconductor space. In 2021, the industry saw an unprecedented amount of venture capital—as well as one of its biggest M&A years ever.

### **[Chinese Takeover Of Newport Wafer Fab Approved](#)**

The government has decided not to intervene in the takeover of Newport Wafer Fab by quietly approving the controversial sale of a Welsh microchip factory to a Chinese-owned firm.

Nexperia, the Amsterdam-headquartered spin-off from NXP owned by Wingtech of Shanghai, took a 15% share in Newport Wafer Fab in 2019. Nexperia was a customer of Newport Wafer Fab.

Nexperia got the right to trigger a 100% buy-out option of Newport Wafer Fab and to put two directors on the Newport Wafer Fab board if it fell into financial difficulties.

In 2021 Newport Wafer Fab needed funds to increase capacity to meet semiconductor orders placed by Wingtech.

### **[Graphcore Supercharges IPU with Wafer-on-Wafer](#)**

Graphcore unveiled its third-generation intelligence processing unit (IPU), the first processor to be built using 3D wafer-on-wafer (WoW) technology.

Codenamed the Bow IPU, Graphcore's new AI processor achieves up to 40% higher performance and 16% better power efficiency than the previous (non-WoW, but otherwise identical) product, launched in 2020.

“Wafer-on-wafer technology sets a direction in terms of where Graphcore is heading,” said Graphcore CEO Nigel Toon. “We’ve been working very closely with TSMC on this technology, developing this over the last two years. We’ve been in extensive production qualification over the last year with very detailed testing for reliability, and we’re now at the stage where this technology is ready for full volume production.”

Graphcore plans to drastically increase its price/performance metrics by offering the new parts at the same price as the old ones. Customers can swap over to Bow IPUs without making any software changes, the company said.

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## **Complete Power Management Solutions For Next-Generation Intel Xeon Processors Drive Superior Performance And Energy Efficiency In Data Centers**

Munich, Germany – 31 March, 2022 – Infineon Technologies AG (FSE: IFX / OTCQX: IFNYY) today announced the launch of a complete power management offering for compute servers based on Intel’s Sapphire Rapids compute processing units (CPU). This new “pick-and-place” solution utilizes several Infineon power management devices and technologies that deliver optimum power efficiency and performance, including XDP™ digital multiphase controllers, OptiMOS™ integrated power stages and OptiMOS IPOL voltage regulator. This offering will help leverage the green potential of data centers.

“These power management solutions combine our software-defined digital controllers with best-in-class integrated power stage and POL converter to deliver outstanding energy efficiency and overall system performance,” said Rakesh Renganathan, Director of Marketing, Power & Sensor Systems Division of Infineon. “By leveraging our cutting-edge technologies, we provide our customers with flexibility in system design to maximize performance across various workloads and system architectures. We are excited to bring this solution to the market and to further digitalize the world.”

The XDP hyper transient phase XDPE152 series controllers (XDPE15284D, XDPE15254D, XDPE152C4D) are based on the ultra-low-power Arm® Cortex®-M0 for maximum flexibility and optimized performance across workloads, along with ultra-fast dynamic load response time. The proprietary control algorithms offer ultra-high-speed response by effectively managing pulsating processor peak currents with minimal output capacitance. In addition, the software-defined architecture offers unique flexibility for system designers to optimize system performance across different system architectures and processor workloads.

## **Renesas Develops New Bluetooth LE RF Transceiver Technologies**

Renesas has developed two Bluetooth LE RF transceiver technologies that simplify board design, while reducing circuit size and increasing power efficiency.

Renesas Electronics Corp. recently announced the development of two 2.4-GHz RF transceiver technologies for IoT devices that support the Bluetooth Low Energy (LE) low-power, near-field communication standard. With the new matching circuit and signal correction technologies, Renesas designed a prototype circuit, which it claims is the smallest Bluetooth LE RF transceiver, while boosting power efficiency.

Renesas developed the technologies to help companies with increasing requirements for RF expertise in the IoT space. “The increase of IoT applications requires RF functions by engineers who are not experts in RF technology compared to smartphone and PC engineers,” said Hisayasu Sato, Ph.D., senior principal engineer, Connectivity & Audio Business Division, Renesas. “BLE needs to be easy to use for many engineers who are not RF experts.”

## Wacom, STMicroelectronics, And CEVA Collaborate To Enhance The Digital Pen Experience

CEVA, Inc. (NASDAQ: CEVA), the leading licensor of wireless connectivity and smart sensing technologies and integrated IP solutions and an ST Authorized Partner, together with STMicroelectronics, a global semiconductor leader serving customers across the spectrum of electronics applications, and Wacom Co., Ltd, the global leader and a key innovator in digital pen technology, today announced their collaboration to develop an enhanced digital pen experience with a new, wireless sensor module that extends the digital pen's functionality through advanced gesture, cursor, and motion control. The combined effort leverages the specialized capabilities of the three companies to create an advanced, sensor-enabled digital pen that can be adopted by OEMs to add value to their smartphone, tablet, notebook, PC, interactive whiteboard or other smart-display products.

The "Active ES® (AES) Rear IMU Module" combines Wacom's digital pen technology together with a custom version of ST's low-power 6-axis Inertial Measurement Unit sensor and Bluetooth Low Energy System-on-Chip (SoC), along with CEVA's MotionEngine™ Air motion-control software. The result is a low-power, highly compact design suitable for integration into any digital pen form factor. With support for motion-based pointing, gesture control, and 3D motion tracking, OEMs can customize the module reference design to enable a host of new applications, user conveniences, and features. The sensor-enabled digital pen can also serve as a wireless presentation controller that can control the on-screen cursor with natural hand movements. It can also be programmed to replace complex series of menus and taps with a single gesture. The software features CEVA's patented orientation compensation and adaptive tremor-removal technology, ensuring a highly consistent and intuitive user experience across a wide range of applications.

## **Industry News & Trends**

### **[Patent Trends Foretell Chipmakers' Fortunes](#)**

Building out a patent portfolio is a tried-and-true path toward success, but it's no guarantee. Sheer numbers are one thing; but the quality of the patents a company applies for and receives can be just as important, if not more so. So which semiconductor companies are building patent portfolios wisely, and which ones seem to be amassing patents simply for the sake of doing it?

In January, LexisNexis published its "Innovation Momentum 2022: The Global Top 100" list in which the dynamics of innovative strength over the last two years were analyzed across industries to pinpoint technology owners who outperform their peers. The report uses a new approach that focuses on recent innovations rather than giving full weight to patents nearly 20 years old.

### **[The Role Of mmWave In Eliminating Challenges of Real-World 5G](#)**

Expectations from 5G are huge. However, a major challenge facing 5G deployment is that the available sub-6-GHz spectrum does not support the latency and throughput needed to deliver the optimal performance required by advanced applications and simultaneous users. While current sub-6-GHz 5G networks provide marginal improvements over existing 4G LTE networks, they fail to deliver on the promise of 5G coverage, performance, and latency in dense urban environments and crowded event venues. mmWave technology can help address this, but there are also challenges. This article looks at the key factors to consider in addressing these 5G deployment challenges.

Cellular technologies are always evolving to meet the growing data demands of the modern age. GSM led to 2G which allowed text messaging and basic data transfer. 3G allowed effective mobile internet browsing and 4G allowed users to stream video more reliably and enjoy stable VoIP calls. 5G promises much more, being up to 100 times faster than its predecessor, with higher bandwidth, lower latency, more reliable coverage, and greater availability.

### **[Apple To Cut Iphone, AirPods Output Amid Ukraine War Uncertainty](#)**

TAIPEI -- Apple plans to make about 20% fewer iPhone SEs next quarter than originally planned, in one of the first signs that the Ukraine war and looming inflation have started to dent consumer electronics demand, sources briefed on the matter told Nikkei Asia.

Apple launched the iPhone SE as its first 5G-capable budget phone less than three weeks ago but is now telling multiple suppliers that it aims to lower production orders by about 2 million to 3 million units for the quarter, citing weaker-than-expected demand, four people told Nikkei Asia. The U.S. tech giant also reduced orders for its AirPods earphones by more than 10 million units for all of 2022, as the company predicted lukewarm demand and wanted to reduce the level of inventories.

The company shipped about 76.8 million units of AirPods in 2021, Counterpoint Research data showed, but people with knowledge of the situation said overall shipments for 2022 could likely see a decline.

### **McLaren Applied's 800-V SiC Inverter For Fast Charging**

McLaren Applied is advancing toward full production of the Inverter Platform Generation 5 (IPG5), an 800-V silicon carbide inverter for faster charging, greater efficiency, and longer range. The inverter is a high-performance and sensitive component at the same time: It manages power at hundreds of kilowatts but modulates it finely, according to the wishes of the driver. With these assumptions, it is clear that a malfunction of the inverter can cause many problems for the electrified car.

McLaren Applied development the inverter technology for Formula 1 cars. It is in the process of optimizing that technology for the commercial electric vehicle industry. The company is sampling its IPG5 now, but it doesn't expect to ramp up to commercial production volume before 2024.

"800 V is likely to become the de facto standard bus voltage for electric vehicles because it opens the door for ultra-fast charging," said Stephen Lambert, head of electrification at McLaren Applied.

### **3G's Final Sunset Has Begun**

AT&T's closure of its 3G network on Feb. 22 was the first major shutdown of 3G technology in the U.S. It is only the beginning of the end for the long-running cellular technology in North America.

T-Mobile is shutting down Sprint's 2G and 3G CDMA networks at the end of March. Its 3G GSM-based network will follow on Jul. 1. Verizon is the last in line, planning to shut down its 3G CDMA network at the end of 2022.

We don't know exactly how many devices in the U.S. still run on 3G. In May 2019, Telit said that more than 80 million devices still use 3G networks in North America. Certainly, plenty of automobiles, alarms, mobile personal emergency response system (mPERS) products, and other enterprise and consumer IoT devices run on antiquated 3G radio technology.

### **Nanox Opens South Korean Fabrication Plant to Produce Semiconductor Chips for Novel Digital Nanox.ARC 3D X-ray System**

NEVE ILAN, Israel & YONGIN, South Korea--(BUSINESS WIRE)--NANO-X IMAGING LTD ("Nanox" or the "Company," Nasdaq: NNOX), an innovative medical imaging technology company, today announced that it has opened its new semiconductor chip fabrication plant in South Korea. The facility is operational, opened on schedule, and will be the main production site of Nanox micro-electro-mechanical systems ("MEMs") known as Nanox.SOURCE, a chip that produces the digital X-ray source for the Company's Nanox.ARC system, a 3D medical imaging system that has the potential to democratize meaningful access to imaging not currently available in approximately two-thirds of the world.

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Nanox expects to get to scale for production by mid-year 2022. Additionally, Nanox has been building its production line capabilities and establishing an operational assembly line at its Israeli facility to enable the expected ramp up in production and preparation for shipments of the Nanox.ARC system.

The new facility is a highly advanced fabrication plant, dedicated to the production of MEMs. Strategically located next to the world's largest semiconductor cluster in Yongin, South Korea, the Nanox facility spans 12,000 square meters, including a 1,200-square-meter MEMs clean room.



## **East European News & Trends**

### **[Computer Vision Makes Sales In Stores Smarter](#)**

A Russian start-up called Intelligence Retail employs computer vision in merchandising.

Intelligence Retail uses computer vision to help companies step up the efficiency of shelf utilization in stores. Its software scans assortments, prices and other relevant information in real time. It reportedly takes the service 10 seconds to generate an e-report on one retail section audit with an image recognition accuracy of as high as 99%.

### **[New Visualization Nanoparticles Step Up Biomedical Diagnostics](#)**

New technology for silicon nanoparticles synthesis developed by scientists at Moscow Lomonosov State University (MSU) enables the use of the nanoparticles in biomedical diagnostics, visualizing inhomogeneity in tissue structure.

Nanostructured silicon (Si) has long been in broader use than the original application in microchips and solar cells. One of the new and promising applications is diagnostics of tissue and body cells. A competitive technique that brings about such nanostructured Si is pulse laser ablation of silicon in liquids and gases.

A team at MSU's Department of Physics, Femtosecond Nanophotonics Lab, experimented with ablation techniques and has shown that porous silicon films serve perfectly as ablation targets

### **[New Antenna Brings Uninterrupted Internet To Crowds Of Fans And Passengers](#)**

Scientists at the NETI State Technical University in Novosibirsk, in Southern Siberia, have developed a new directional Wi-Fi antenna that is reported to send out a stable Internet signal in highly crowded places like stadiums or subway stations.

According to Prof. Maksim Stepanov who leads the development team, the key competitive advantage the new beam antenna brings is a combination of winning technical characteristics and its very compact dimensions.

The product features eight antenna arrays, four in each frequency range, and is powered by an advanced technology called MIMO 4x4 (Multiple Input Multiple Output, a method of spatial signal coding which considerably increases channel bandwidth).

### **[Russian Developers Come Up With Contactless Airborne Drone Recharging Tech](#)**

Researchers at the Nizhny Novgorod based Lobachevsky University (UNN) in the mid-Volga region have patented a new system that enables automatic contactless recharging of drones, Scientific Russia reported.

Unlike the international competition, the Russian approach is said to have shown high accuracy of mutual drone-recharger alignment, and there's no need for actual contact between the two.

“In our contactless drone charging technology, a special aerial transformer is used, where a magnetic field serves as a medium to transmit energy from the recharger to a drone.

## **World Economic Round Up**

Inflation was already a serious problem thanks to the bottlenecks in the global supply chain caused by the COVID-19 pandemic. But following Russia's brutal invasion of Ukraine, and the effect on oil and gas prices, inflationary pressures now look a whole lot worse. The big question is how central banks will respond. Raised inflation demands higher interest rates, but this risks compounding the global economic damage likely to be caused by the western sanctions against Russia. The Bank of England has been slightly ahead of the curve on tightening monetary policy, having raised the policy rate of interest twice in the last couple of meetings to reach 0.5 percent and also ending its quantitative easing (QE) programme for increasing the money supply back in December.

*The latest economic news by country to include USA, Europe, UK, Japan, China, Asia Pacific and India can be found each month in our [Semiconductor Monthly Report](#).*

## Industry Events 2022

### Future Horizons Events

- [Silicon Chip Industry Training Seminar](#) – London – September 2022
- [Industry Forecast Briefing](#), London – September 2022

*To book your place on any of our events please contact us on:*

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[Download Future Horizons Full Events Calendar Here](#)

### Industry Events

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**MARK YOUR CALENDER FOR THE NEXT**

**SILICON CHIP INDUSTRY WORKSHOP**

**MONDAY September 2022**

**AND**

**INDUSTRY FORECAST BRIEFING**

**TUESDAY September 2022**

**BOTH BEING HELD AT**

**HOLIDAY INN KENSINGTON FORUM, LONDON**

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