

# FutureHorizons



The Global Semiconductor Industry Analysts

## **Future Horizons Newsletter**

### **February 2023**

## **Contents Page**

<b>Industry News by Company</b>	<b>Page 03 - 05</b>
<b>Industry News &amp; Trends</b>	<b>Page 06 - 07</b>
<b>East European News &amp; Trends</b>	<b>Page 08 - 09</b>
<b>World Economic Round Up</b>	<b>Page 10</b>
<b>Future Horizons &amp; Industry Events</b>	<b>Page 11</b>

## **Industry News By Company**

### **[Research For The "Digital Ear" Of The Future: EU Project "Listen2Future" Starts At Infineon](#)**

Led by Infineon Austria, the European research project "Listen2Future" started with 27 partners from 7 countries to develop new and smallest microphone and ultrasound sensors for examinations in industry and medicine. Precise mini hearing aids, fast infection controls for infants or wearable ultrasound patches become possible.

Medical care, healthy aging, energy security and product quality are fundamental issues for our society. As sensory organs of technology, tiny sensors such as microphones and ultrasonic sensors play an important role in this. As a "digital ear", they record acoustic signals and allow rapid investigations. The research of "Listen2Future" will significantly improve the performance of existing systems and also produce completely new solutions that benefit society, people and health.

The aim is to bring the smallest micro-electro-mechanical sensors, or "MEMS sensors" for short, into high volume production at globally competitive costs and make them available for a wide range of applications for industry and medicine. The research will yield higher image resolutions in ultrasound probes, robust mini-hearing aids with first-class sound quality and low energy consumption. The focus will also be on wearable ultrasound patches for early detection of heart disease, for example, and ultrasound devices for rapid infection control in infants. In industry, continuous quality control of materials and intelligent monitoring of the energy infrastructure are to be implemented

### **[Intel Kills Its RISC-V Pathfinder Development Kit Programme](#)**

Intel has discontinued its recent programme that brought together a wide range of RISC-V technologies.

The Pathfinder programme includes FPGA boards and IP from Europe as well as a range of tools for verification and development.

“We regret to inform you that Intel is discontinuing the Intel Pathfinder for RISC-V program effective immediately,” said the company. “Since Intel will not be providing any additional releases or bug fixes, we encourage you to promptly transition to third-party RISC-V software tools that best meet development needs.”

The move comes as Intel reported full year revenues of \$63.1bn, down 20 percent on last year, with a profit of just \$8bn, down 60%. The company had announced cuts of \$3bn for 2023 and last week announced layoffs of 544 staff in California, with more expected.

### [Rohde & Schwarz Announces Major Boost For Phase Noise Analysis And VCO Measurements Portfolio](#)

Rohde & Schwarz has improved performance for phase noise analysis and voltage-controlled oscillator (VCO) measurements. Both the high-end R&S FSWP phase noise analyzer and VCO tester plus signal and spectrum analyzer in one instrument, and the R&S FSPN dedicated phase noise analyzer and VCO tester, are now upgraded. Simultaneous hardware and software upgrades improve the market-leading performance even further, reducing noise levels and measurement times, and increasing accuracy. Both analyzers include test sequence recording functions (SCPI recorder), unique for this class of instrument.

The new hardware basis common to both phase noise analyzers includes upgraded DC sources with reduced noise levels, further enhancing market-leading sensitivity. Users will appreciate the improved capacitive screen featuring higher color intensity and better antiglare properties, making the display brighter and clearer in all working conditions. In addition, multi-touch features like zoom are supported by the updated user interface.

### [Samsung Defies Pressure To Rein In Chip Investment Through Downturn](#)

Samsung Electronics is defying pressure to rein in spending on new chip production facilities, saying it expects demand to recover in the second half of this year.

While rivals in the semiconductor sector have cut production and capital expenditure plans to counter oversupply, the world's largest memory chip maker said on Tuesday it was committed to "a similar amount of capital spending this year to last year's". Its capex reached Won53.1tn (\$43.1bn) in 2022, including Won47.9tn for semiconductors.

The Korean company is sticking to its strategy of investing in a downturn in order to gain market share when demand picks up. In the meantime, its fourth-quarter revenues fell 8 per cent year on year to Won70.5tn and operating profit fell 69 per cent to Won4.3tn — an eight-year low, with the company also taking a hit from falling smartphone sales. Samsung expects handset demand to decline this year, due to the global economic slowdown.

### [STMicroelectronics Launches MCU Edge-AI Developer Cloud](#)

STMicroelectronics has expanded its solutions for embedded AI developers and data scientists with a new, industry-first set of tools and services to get edge AI technology on the market faster and with less complexity by aiding hardware and software decision-making. The STM32Cube.AI Developer Cloud opens access to an extensive suite of online development tools built around the industry-leading STM32 family of microcontrollers (MCUs).

“Our goal is to deliver the best hardware, software, and services to meet the challenges faced by embedded developers and data scientists so that they can develop their edge AI application faster and with less hassle,” said Ricardo De Sa Earp, Executive Vice President General-Purpose Microcontroller Sub-Group, STMicroelectronics. “Today, we are unveiling the world’s first MCU AI Developer Cloud, which works hand-in-glove with our STM32Cube.AI ecosystem. This new tool brings the possibility to remotely benchmark models on STM32 hardware through the cloud to save on workload and cost.

### **Volkswagen Signs Strategic Sourcing Contract With Onsemi**

With a supply agreement categorised as “strategic”, Volkswagen wants to secure power semiconductors for its next generation of electric cars. The focus is on modules and transistors in SiC technology from onsemi for VW’s drive converters.

The semiconductors from onsemi are part of an overall system optimisation and enable a solution that supports the traction inverters for both the front and rear axle drive in the VW models.

As a first step under this agreement, onsemi will supply its EliteSiC 1200 V traction inverter power modules. These are pin-compatible within the product family, so the solution can be easily scaled to different power levels and engine types. Teams from the two companies have been working for more than a year to optimise the power modules for the next-generation platform, with pre-production samples currently going through the development and evaluation phase.

### **Germany’s New Chip Factory Is A Boost To Europe’s Semiconductor Plans**

Wolfspeed — a US-based silicon carbide (SiC) semiconductor maker — is set to build a chip factory in Germany, Handelsblatt reports. That’s a significant step for both the country’s green mobility and Europe’s chip industry.

According to the newspaper, the over €2 billion-worth facility will be located at a site in southwest Saarland. Series production is expected to begin in four years.

German auto supplier ZF will hold a minority stake in the factory, but will be a majority shareholder in the accompanying research center.

Wolfspeed’s decision to build a plant in Germany is a boost for the domestic car industry, especially when it comes to electric vehicles. Although silicon carbide (a compound of silicon and carbon) is costlier than conventional silicon, SiC chips are considered more promising: they can increase EV range, reduce charging time, and bring down operating costs due to lower energy consumption.

## **Industry News & Trends**

### **[AI Must Be Secured at the Silicon Level](#)**

The idea of baking security into an application isn't new in the software world, nor are security features in semiconductor technologies, such as memory. But the value of data, particularly in artificial-intelligence (AI) workloads, means hardware-enabled security is getting more attention.

Many networking and memory technologies have built-in security features — the “S” in SD card stands for secure, and SSDs have long had the ability to encrypt data. The key challenges for enabling hardware-level security features, however, are educating users on how to implement them and ensuring that security doesn't hinder performance of the device and the overall system.

Although hardware-enabled security has been around for a while, securing AI workloads is a relatively new concept, said Carl Shaw, safety and security architect at Codaip, a company that focuses on processor design automation and RISC-V processor IP.

### **[CEA-Leti Demos Neuromorphic System with Low Power Consumption](#)**

Compact, low-latency, and low-power computer systems are required for real-world sensory-processing applications. Hybrid memristive CMOS neuromorphic architectures, with their in-memory event-driven computing capabilities, present an appropriate hardware substrate for such tasks.

To demonstrate the full potential of such systems, and drawing inspiration from the barn owl's neuroanatomy, CEA-Leti developed an event-driven, object-localization system that couples state-of-the-art piezoelectric, ultrasound transducer sensors with a neuromorphic computational map based on resistive random-access memory (RRAM).

The researchers collected measurement findings from a system comprising RRAM-based coincidence detectors, delay-line circuits, and a fully customized ultrasonic sensor. The team used the experimental data to calibrate the system-level models. Those simulations were then used to determine the object localization model's angular resolution and energy efficiency. In a paper published recently in Nature Communications, the research team describes the development of an auditory-processing system that increases energy efficiency by up to five orders of magnitude compared with conventional localization systems based on microcontrollers.

### **[Valens Semiconductor to Unveil Multiple Audio-Video Connectivity Solutions for Corporations, Education and Digital Signage at ISE 2023](#)**

Valens Semiconductor, a premier provider of high-speed connectivity solutions for the audio-video and automotive markets, today announced that it will be unveiling new products and capabilities at ISE 2023 in Barcelona, Spain that address growing needs in the corporate, education and digital-signage markets, among others.

The company will reveal a proof of concept for an innovative videoconferencing multi-camera solution, a professional grade extension solution for USB Type-C interfaces, a next-generation multi-user videoconferencing product.

“Valens Semiconductor is once again spearheading the advancement of the high-speed audio-video connectivity market globally as it continues to develop its product portfolio and will be highlighting its newest offerings at ISE 2023. The substantially larger number of manufacturers exhibiting HDBaseT 3.0-supported products is a testament to the market demand for Valens Semiconductor’s VS3000 products,” said Gabi Shriki, Senior Vice President and Head of Audio Video at Valens Semiconductor. “Furthermore, the new videoconferencing multi-camera VA7000 chipset is a good example of how we leverage our core technology across multiple business segments. Overall, demand for audio-video solutions is extending into new applications and verticals – from corporate, education, and government, to industrial, transportation, medical and more.”

### **UK Government Gives Millions To China-Backed Semiconductor Firm In Lincoln**

A British microchip-maker whose owner has alleged links to China’s military has reportedly been handed £3m in government support over the last decade.

Lincoln-based Dynex Semiconductor – a company ultimately owned by Beijing-headquartered CRRC Corporation – has applied for and been given millions of pounds in research grants from the government, according to The Telegraph.

Most of the funds were awarded by the Innovate UK agency, which receives taxpayer cash.

The China-backed company also secured multiple research contracts with UK universities to study new types of semiconductors for electric vehicles, batteries and renewable power generation.

Its most recent grant funding was secured last February and runs until 2024.

Dynex’s technology includes high power semiconductors and switches for trains, electric cars and industrial machines.

Its technology is also applicable for hydrogen power and nuclear fusion.

CRRC has full ownership of Dynex – snapping up a 75 per cent stake in the company in 2008, before buying the remaining shares in 2022.

## **East European News & Trends**

### **[Lithuania's Teltonika Sets Domestic Chip Production Goal Under Taiwanese Deal](#)**

RIGA, Jan 18 (Reuters) - Lithuanian tech firm Teltonika aims to launch domestic semiconductor production in 2027 using Taiwanese technology, it said on Wednesday, as a minister outlined ambitions for the EU state to become a major global player in the sector.

Taiwan has promised to help Lithuania withstand economic pressure imposed by China since the Baltic country allowed Taiwan to open a de-facto embassy in Vilnius in November 2021.

Teltonika said the 2027 production target was part of a cooperation agreement with Taiwan's Industrial Technology Research Institute, valued at 14 million euros (\$15.2 million) including a 10 million euro grant from Taiwan's foreign ministry.

### **[Digital Twins Come To Improve Oil And Gas Production](#)**

Russian scientists at Perm Polytechnic University (PPU) in the West Urals have developed new software that would enable improved resource management in oil and gas production.

At the heart of the project are digital twins for waterfloods at an oil field, a measure that would help use water resources more wisely and minimize or fully prevent the pollution of a local geological environment. By smartening up water consumption an oil producer could cut electricity consumption substantially while keeping production at levels required

### **[Neural Networks To Boost Safety At Airports And Train Stations](#)**

Scientists in St. Petersburg applied a new version of artificial intelligence to boosting safety at airports, train stations and like places. The solution comes from a team that brings together researchers from the St. Petersburg Federal Research Center, St. Petersburg State University, and their colleagues from the Novosibirsk State University in Siberia.

Whether it's safe enough for passengers and workers to be at a train station, airport, subway station or industrial site hinges to a considerable extent on whether the relevant personnel like dispatchers and information/alert services feel fit physiologically to do the job. The scientists developed their proprietary computer vision technology to lower the risk of hazardous situations at such sites..

### **[Nanotech Adds Visibility To 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.

## **World Economic Round Up**

The global economy is poised to slow this year, before rebounding next year. Growth will remain weak by historical standards, as the fight against inflation and Russia's war in Ukraine weigh on activity. Despite these headwinds, the outlook is less gloomy than in our October forecast, and could represent a turning point, with growth bottoming out and inflation declining. Economic growth proved surprisingly resilient in the third quarter of last year, with strong labour markets, robust household consumption and business investment, and better-than-expected adaptation to the energy crisis in Europe. Inflation, too, showed improvement, with overall measures now decreasing in most countries—even if core inflation, which excludes more volatile energy and food prices, has yet to peak in many countries. Elsewhere, China's sudden re-opening paves the way for a rapid rebound in activity. And global financial conditions have improved as inflation pressures started to abate. This, and a weakening of the US dollar from its November high, provided some modest relief to emerging and developing countries.

*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 – March 2022
- [Industry Forecast Briefing](#), London –May & September 2023

*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 March 2023**

**AND**

**INDUSTRY FORECAST BRIEFING**

**May & September 2023**

**BOTH BEING HELD AT**

**HOLIDAY INN KENSINGTON FORUM, LONDON**

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