FutureHorizons

The Global Semiconductor Industry Analysts

Future Horizons Newsletter

June 2017

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Industry News By Company

Tech Startup Raises £3.5million Pre-Seed Funding And Opens An Innovation Centre

After reaching 10.000 participants with its Crowd Sale reaching $4 Million, Humaniq is launching a new Innovation Centre in Cambridge.

This expansion will enhance the capabilities of Humaniq to solve critical and chronic issues of the world by repurposing Artificial Intelligence and DeepTech for social good and enabling leading scientists and entrepreneurs to solve the most critical problems facing humanity.

“This new innovation centre will provide an opportunity to be part of a lasting and growing ecosystem which has found success in many areas of innovation and which Humaniq will be able to contribute to and learn from as we grow” said Alex Fork, founder of Humaniq.

Cambridge is home to several innovation clusters, universities, leading academic research, and entrepreneurial institutes that provide the right environment and ecosystem for the AI and Blockchain Lab. Within this initiative there will be regular hackathons and conferences to attract the best talent and solutions with a focus on solving critical global challenges.

ADI Announces Tiny Ultra-Wideband Sige Mixer

Analog Devices (ADI) has announced the LTC5553, a double balanced mixer providing matched bandwidth capability from 3GHz to 20GHz.

The mixer (from Linear Technology, which ADI recently acquired) can be used either as an up- or down-converter. In addition, the LTC5553 delivers high linearity performance of 23.9dBm IIP3 at 14GHz, and 21.5dBm at 17GHz.

Applications including 5G microwave backhaul, broadband wireless services, satellite broadband radios, radar systems, active antenna arrays, X and Ku band transceivers, test equipment, spectrum analysis and satellite communications.

Unlike most microwave mixers, which are made of GaAs, the LTC5553 is constructed using a very high frequency advanced SiGe BiCMOS process, which has made it possible to integrate an on-chip LO buffer amplifier and ultra-wideband microwave balun transformers.

AMD Seeks Growth In Diversity

At its Financial Analyst Day, AMD presented their long-term growth strategy, focusing on delivering products and technologies for the PC, immersive device, and datacentre markets. These markets are estimated to be worth □3.88 lakh crore ($60 billion) combined.

"Our long-term technology roadmaps position AMD to take advantage of the major shifts in the technology industry and deliver significant financial returns," said AMD President and CEO Dr. Lisa Su, in a press release. "We are entering the next phase of our growth strategy through ramping our phenomenal new products across a diverse set of markets."

Imec Tips Novel AI Chips

ANTWERP, Belgium – The Imec research institute described machine learning accelerators using arrays of resistive and magnetic memory cells rather than neural networks to reduce cost and power. Initial results included an MRAM array that lowered power by two orders of magnitude.

It's early days for the promising work. Imec is withholding details of the chips' architecture and their performance until later in the year when it has its patents filed. The research institute started a machine learning group just 18 months ago as part of its ongoing efforts to expand beyond its core work on silicon process technology.

The introduction of the chips was among a handful of announcements at the opening day of the annual Imec Technology Forum here. Separately, researchers announced progress on a low-power eye-tracking system and an implantable chip to provide new levels of haptics feedback for a prosthetic limb.

High Power Density Discrete IGBT In TO-247PLUS Package

Munich, Germany – 6 June 2017 – Infineon Technologies AG (FSE: IFX / OTCQX: IFNNY) expands its 1200 V discrete IGBT product portfolio by offering up to 75 A. The devices are co-packed with a full rated diode in a TO-247PLUS package. The new TO-247PLUS 3pin and 4pin packages serve the growing demand for higher power density and highest efficiency in discrete packages. Typical applications with a blocking voltage of 1200 V requiring high power density are drives, photovoltaic, and uninterruptible power supplies (UPS). Additional applications comprise battery charging and energy storage systems.

Compared to a regular TO-247-3 package, the new TO-247PLUS package can provide double current rating. Due to the removal of the screw hole from the standard TO-247 package, the PLUS package has a larger lead frame area and thus can accommodate bigger IGBT chips. Now, up to 75 A 1200 V co-packed IGBTs with the same small footprint are available for the first time. The larger lead frame provides a lower thermal resistance of the TO-247PLUS package, leading to an improved heat dissipation capability.

Surface-Mount Intelligent Low-Power Modules From Stmicroelectronics Save Space In Energy-Efficient Motor Drives

STMicroelectronics has added five space-saving surface-mount intelligent power modules (IPM) to its SLLIMM™-nano family, giving the choice of IGBT or MOSFET outputs for in-motor or other space-constrained drives all the way from very low power ratings up to 100W. Surface-Mount Intelligent Low-Power Modules from STMicroelectronics Save Space in Energy-Efficient Motor Drives

The new modules deliver high conduction and switching efficiency, especially in hard-switching circuits at frequencies up to 20kHz. The integrated gate-driver circuitry is engineered to minimize electromagnetic emissions (EMI) by managing switching voltage and current slopes (dV/dt, di/dt). The thermally efficient package enhances reliability and allows heatsink-free design, while 2.7mm creepage and 2.0mm clearance ensure safety isolation within the compact dual-inline SMD footprint. The module pin configuration is optimized to simplify circuit-board layout.

A wide range of domestic and industrial appliances, such as small fans, roller shutters, refrigerator compressors, dishwashers, draining and recirculation pumps, and general low-power motor drives, can benefit from the small size, high energy efficiency, excellent reliability, and safe, low-noise performance of ST's new IPMs.

Awgs Offer Cost Effective 6 To 24 Channel Signal Generation | Spectrum

Advanced electronic systems are increasingly turning to parallel design architecture to increase their overall performance in applications such as MIMO, radar, quantum computing and multi-lane serial bus testing. To develop these systems, and those with similar multi-receiver/emitter or multi-sensor technology, it is helpful to have the ability to generate multiple synchronized waveforms. Fast Arbitrary Waveform Generators (AWGs) have become the instruments of choice as they allow easy and flexible signal generation. However, most high-performance AWGs only provide a limited channel count (1 to 4), which can make creating larger test systems quite expensive. In addition, these AWGs face serious problems when systems are scaled up for higher channel count applications as they typically present numerous synchronization issues. Spectrum's DN6.66xx series of AWGs overcomes these challenges by offering up to 24 fully synchronized channels. The series allows engineers to select from an extensive range of products that are cost effective and specifically designed for multi-channel, signal generation applications.

The DN6.66xx series adds eight new instruments (Table 1) to the company's generatorNETBOX line of AWGs. LXI compliant, they are easily integrated into any test system by a simple Ethernet connection to a PC or local area network (LAN). Using state-of-the-art 16 bit digital to analog technology (DAC), the AWGs offer from 6 to 24 fully synchronous channels, output rates up to 1.25 GS/s, analog bandwidth as high as 400 MHz, large on-board memories (up to 1 GSample per channel) and generous output voltage ranges of up to ±5 V into high impedance and up to ±2.5 V into 50Ω.

Ultrasoc Attracts Fresh Investment As Technology Industry Recognizes Huge Potential For Embedded Intelligence

UltraSoC today announces the completion of a £5m ($6.4m) funding round to drive continued deployment of its technology and realize its vision of embedding intelligent analytics capabilities into every chip. Atlante Tech leads a strong line up of new investors including Enso Ventures, Oxford Capital, and successful CEO and serial entrepreneur Guillaume d'Eyssautier, who join existing investors Octopus Ventures and South East Seed Fund (FSE Group).

“Hard tech is back in favor with the UK and global investment community, with recent funding for Ultrahaptics, Graphcore and SiFive (a fellow RISC-V proponent), plus successful exits at Movidius and Mobileye,” said Rupert Baines, UltraSoC CEO. “Our investors are excited by the potential of UltraSoC’s technology and are committed to supporting our aim of putting intelligent analytics into every chip.”

Industry News & Trends

Samsung Targets 4nm In 2020

SAN FRANCISCO—Samsung Electronics Co. Ltd. Wednesday (May 24) updated its foundry technology roadmap, including detailing its second-generation FD-SOI platform, several bulk silicon FinFET processes down to 5nm and a 4nm "post FinFET" structure process set to be in risk production in 2020.Samsung, which formally broke its foundry operation into a separate business unit called Samsung Foundry last week, also reiterated previously announced plans to put extreme ultraviolet (EUV) lithography into production in 2018 at the 7nm node.

"We are extremely aggressive with our roadmap, not only in planning, but in announcing what we are going to be doing in the next three to four years," said Kelvin Low, senior director of foundry marketing at Samsung, in an interview in advance of Wednesday's announcement.

Researchers Print Stretchable Battery To Light Wearables

LAKE WALES, Fla. - Printable, stretchable, flexible battery technologies could enable wearable fabrics and stretchable LED displays to carry their own power source. Researchers at the University of California at San Diego recently demonstrated an example of a self-powered wearable that features a newly formulated zinc-silver-oxide rechargeable battery technology.

The stretchable battery (here the can be printed onto any fabric and stretched up to twice its size without affecting its storage capacity, current delivery or rechargability.

The stretchable battery (here the "Nano" letters) can be printed onto any fabric and stretched up to twice its size without affecting its storage capacity, current delivery or rechargability.

The current demonstration was described in detail in the journal Advanced Energy Materials.

Dual Cameras For Image Fusion

Dual camera smartphones are here, faster and in larger volumes than analysts expected.

Smartphone manufacturers integrate a second camera for several reasons, primarily to improve image quality and to be able to extract depth information for applications such as DSLR-like shallow depth-of-field effect (Bokeh).

Adding a second camera brings forth new challenges. Among these challenges are how to calibrate such dual cameras, one with respect to the other, how to switch between cameras in a way that enhances the user experience and how to optimize the image quality of this new and innovative mobile imaging hardware using advanced algorithms and software tools.

Wearables Shipments Swell As Consumer Tastes Shift

SAN FRANCISCO—Worldwide shipments of wearable devices surged by nearly 18 percent in the first quarter as both the high-end Apple Watch and a slew of low-cost devices gained traction among consumers, according to market research firm International Data Corp. (IDC).

Apple Inc. and Xiaomi Inc. have surpassed Fitbit Inc.—the early leader in wearables shipments—and now control nearly 15 percent of the market apiece, IDC (Framingham, Mass.).

Ramon Llamas, research man ager for IDC's Wearables team, said through a press statement that consumer tastes in wearables have evolved from fitness bands to smartwatches and other products, fueling growth for the product category.

Expectations Rise As Chip Sales Keep Climbing

SAN FRANCISCO—Forecasts for semiconductor industry growth keep climbing as the memory chip market booms and expectations for the remainder of the year rise.

The World Semiconductor Trade Statistics (WSTS) organization Tuesday (June 6) increased its forecast for the year, saying it now expects chip sales to grow 11.5 percent to reach $378 billion. This would represent the highest annual growth for the semiconductor industry since 2010.

WSTS, an organization of chip vendors that tracks sales data from more than 45 members, had previously said it expected chip sales to increase by 6.5 percent this year.

The revised forecast is the latest indication that optimism about the strength of chip sales in 2017 continues to grow as the year moves on. Market research IC Insights Inc., for example, recently raised its 2017 forecast, saying it now expects the total semiconductor market to grow by 14 percent this year.

IBM Claims 5nm Nanosheet Breakthrough

LAKE WALES, Fla. — IBM researchers and their partners have developed a new transistor architecture based on stacked silicon nanosheets that they believe will make FinFETs obsolete at the 5nm node.

The architecture, which was described Monday (June 5) at the 2017 Symposia on VLSI Technology and Circuits conference in Kyoto, Japan, is the culmination of 10 years of research on nanosheets by IBM, its Research Alliance partners GlobalFoundries and Samsung, and equipment suppliers. Compared to FinFETs, the new architecture consumes far less power, according to the researchers.

The Alliance breakthrough should enable battery powered devices like smartphones and other mobile devices to run for 2-to-3 days on a single charge, as well as boost performance of artificial intelligence (AI), virtual reality and even supercomputers, they say.

Less than two years after developing 7nm test chips with 20 billion transistors, the researchers say they have paved the way for 30 billion transistors on a fingernail-sized chip with quadruple all-around nanowire gates. Test results indicate a 40 percent boost in performance (at the same power as 7nm FinFETs) or up to a 75 percent savings in power compared with today's advanced 10nm transistors.

How Device Manufacturers Are Building A New Future With Smart Connected Devices

The Internet of Things (IoT) has split the manufacturing business wide-open, blurring the distinction between hardware and software and creating a once-in-a-lifetime opportunity for original equipment manufacturers (OEMs). For OEMs who have experienced cost and commoditization pressures, the news couldn’t be better. Finally, they have the tools and ability to reinvent their businesses.

OEMs can empower their developers to innovate quickly, using Windows 10 IoT, a common platform to scale expertise and investments across a wide range of devices. OEMs have the opportunity to use smart, interoperable components that integrate with existing infrastructure, building on existing technology investments. By integrating cloud technology and the Microsoft Azure platform they can provide anywhere, anytime access to a wealth of operational data, enabling informed decision making and driving business results.

East European News & Trends

Huawei To Invest $3 Million In Joint Projects With Russia In 2017

China's Huawei plans to spend $3 million on implementation of joint projects in Russia in 2017, head of Huawei Enterprise Business Group in Russia Cao Chong said as quoted by China's International Radio, TASS reports.

"We intend to invest at least $3 million in joint projects with Russian partners, and also to focus on developing cooperation in the regions of Russia, to hold a conference in Moscow and a series of events in seven cities of Russia," Cao Chong said.

Russian IT Exports Grow Rapidly As Tech Startups Go Global

While a student at Moscow State University, Andrei Sviridenko created artificial intelligence software, and when he went to Heidelberg, Germany as an exchange student he started looking for buyers. Riding his bike to visit small local computer companies he eventually found GTS GmbH, which liked his software solution and bought a license for it. That's how Sviridenko launched Spirit DSP.

Today, Spirit DSP is a global leader in the production of devices for voice and video communications in IP networks. They are used in more than 60 percent of smartphones in the world, including Apple's iPhone and Samsung's Galaxy. Among other clients are Skype and Viber, as well as the largest telecommunication operators in the world - AT&T, China Mobile and Korea Telecom.

Russians And Chinese Team Up For Next Gen Li Batteries

A collaborative team of chemists from Russia's Moscow Lomonosov State University (MSU) and China's Soochow University has come up with new material to be used as the basis for high-efficiency lithium power cell development, portal Indicator.ru reported. The results of the research have been published in English in Materials Research Bulletin.

"We aim to develop molybdenum sulfide and oxide based material that could be used "as is," without any further processing, in energy storage systems," said Sergei Savilov, a senior research fellow at MSU's physical chemistry department and one of the authors of the article published.

The Danube Valley: Central Europe's Answer To Silicon Valley

Peter Thiel, co-founder of PayPal and a prominent Silicon Valley investor, once complained that "we wanted flying cars, instead we got 140 characters".

But those who, like Mr Thiel, feel the tech industry lacks the ambition to tackle real problems in the world, should visit Bratislava.

The Slovak capital, whose medieval churches and cobbled streets bear scarce resemblance to the sprawl of San Francisco, is part of a network of cities in this region that hope to become central Europe's answer to Silicon Valley. They even have a name to fit the vaulting technological ambitions — The Danube Valley.

New Glass Ceramics For Eye-Friendly Lasers

Super-hard and durable glass ceramics with potentially market-winning nonlinear optical properties is being developed in St. Petersburg. It will be used in passive Q switches of human eye friendly lasers and is said to have no volatile and toxic components, announced Shvabe, a large Russian technology holding company. The developers are scientists at the S. I. Vavilov State Optical Institute, which is part of Shvabe.

Using the new patented synthesis method is expected to produce good enough glass ceramics for a range of heavy-duty applications in optical devices for environmental monitoring, rangefinding, and remote diagnostics of industrial and environmental objects. "The discovery will upgrade 1.5µm lasers, a spectral range safe enough for the human eye. Unlike the competition, the new St. Pete method enables production of glass ceramics with high homogeneity, nonlinear optical and luminescent properties, superb mechanical durability, and chemical resistance. Its production process is also 100% safe," said Sergei Shchukin, the CEO of the S. I. Vavilov State Optical Institute.

Government Backs Tech Entrepreneurship At Universities

By September 1, 2017 the Russian Ministry of Education and Science and a pool of experts promise to develop a roadmap for support of technology entrepreneurship in Russian universities, Firrma.ru reported, citing a verbal mandate government officials received from Russian Prime Minister Dmitry Medvedev.

At Phase 1 of the pilot program, five universities will be involved: ITMO (St. Petersburg), MIPT (Phystech, Moscow), and the state universities in Moscow (MSU), Novosibirsk (NSU), and Tomsk (TSU). Over the next five years a total of 30 Russian universities are expected to join in the $3.5m program. The pilot universities will receive as much as $530,000 each.

World Economic Round Up

The Organization of the Petroleum Exporting Countries (OPEC) renewed an agreement to withhold some crude-oil supplies into March 2018, doubling down on its bet that it can raise prices despite soaring output from American shale producers. With over a dozen other countries expected to join the cartel's efforts, the agreement is likely to cut off about 2 percent of the world's oil supply through March 2018, extending a decision the OPEC-led coalition reached in 2016. Noting that India is recovering from the temporary adverse effects of demonetisation, the World Bank has projected a strong 7.2 percent growth rate for India this year against 6.8 percent growth in 2016.

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 2017

Future Horizons Events

- Silicon Chip Industry Training Seminar – London – 13 November 2017
- Industry Forecast Briefing, London – 19 September 2017

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

Telephone: +44 1732 740440
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Download Future Horizons Full Events Calendar Here

Industry Events

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MARK YOUR CALENDER FOR THE NEXT

INDUSTRY FORECAST BRIEFING
TUESDAY 19TH SEPTEMBER 2017
AND
SILICON CHIP INDUSTRY WORKSHOP
MONDAY 13th NOVEMBER 2017

BOTH BEING HELD AT

HOLIDAY INN KENSINGTON FORUM, LONDON

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