FutureHorizons

The Global Semiconductor Industry Analysts

Future Horizons Newsletter

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Industry News By Company

Broadcom Sells Wireless IoT Biz, This Time to Synaptics

Broadcom pulled off a rare corporate double-play, selling some of the same assets it sold to Cypress Semiconductor in 2016 to Synaptics Tuesday. Synaptics said it will be paying approximately $250 million cash for "certain rights" to Broadcom's Wireless IoT Connectivity business, which includes Broadcom's Wi-Fi 6 and 6E, Bluetooth 5.2, and GPS L5 products, underlying IP, and its business in the Internet of things (IoT) market, as well as "access to two additional roadmap products without the additional opex spend," according to CEO Michael Hurlston.

The move strengthens Synaptics' hand in the IoT market, which it had been addressing with its SyNAP edge system on a chip. That SoC integrates voice, audio, video, computer vision, machine learning and security. The company has had to bundle SyNAP with wireless connectivity options from third-party suppliers, however. Synaptics plans to pair its edge SoCs with the wireless technology it's getting from Broadcom, giving it a good opportunity to gain significantly more revenue with each sale. In total, the additional business might be as much as $65 million per year at the outset, Synaptics said.

Arm To Focus On Core Semiconductor IP Business

Arm has announced proposed strategic organisational changes that are intended to strengthen its focus on growth and profitability.

The company is proposing to transfer its two IoT Services Group (ISG) businesses, IoT Platform and Treasure Data, to new entities that would be owned and operated by the SoftBank Group Corp. and its affiliates. Once the proposed transfer is completed, Arm said that it would look to deepen its focus on its core semiconductor IP business and expects to continue collaborating with the new ISG businesses.

"Arm believes there are great opportunities in the symbiotic growth of data and compute," said Simon Segars, chief executive officer, Arm. "SoftBank's experience in managing fast-growing, early-stage businesses would enable ISG to maximize its value in capturing the data opportunity. Arm would be in a stronger position to innovate in our core IP roadmap and provide our partners with greater support to capture the expanding opportunities for compute solutions across a range of markets."

DSP Group Acquires SoundChip, Enters Earbuds Market

Fabless semiconductor company DSP Group has acquired SoundChip, the Swiss electroacoustic engineering firm with significant active noise cancellation expertise, for $14.5 million.

While DSP Group has been creating SoCs for voice applications for decades, particularly for cordless phones, this move marks the company's entry into the rapidly growing wireless earbud sector.

The combination of DSP Group's SmartVoice technology, which includes algorithms and codecs as well as voice SoCs, and SoundChip's active noise cancellation (ANC)

technology is already found in Google's Pixel Buds 2, and ANC-enabled true wireless stereo headsets from Technics and Panasonic.

Trusted DoD Fabs GloFlo, SkyWater Join Forces

As the revival of U.S. chip manufacturing gathers momentum, pure-play technology foundry SkyWater Technology and GlobalFoundries will collaborate to extend domestic IC manufacturing capabilities sought by the Defense Department.

A memorandum of understanding between the GlobalFoundries, a long-time chip supplier to the U.S. military, and the U.S.-owned and Minnesota-based trusted foundry includes cross-licensing provisions and the prospect of a "wide spectrum" of specific IC projects.

The agreement along with parallel efforts could eventually help repatriate diminished chip capabilities such as test and assembly as well as advanced IC packaging, said SkyWater President Thomas Sonderman.

The foundry agreement follows a $170 million DoD contract award to SkyWater last October that funds a multi-phase project to manufacture radiation-hardened chips for military and aerospace customers. The initial $80 million phase includes development of a 90-nm rad-hard electronics manufacturing capability. The privately-held company also will integrate new copper interconnect technology into the facility as it seeks to advance its mixed-signal and interposer products.

Israeli CMOS Image Sensor Startup Sees the World in 3D

What if machines could see in depth and more accurately for enhanced safety on the roads and in industrial environments? Israel-based Newsight Imaging Ltd., a developer of CMOS image sensor chips for 3D vision and spectral analysis, announced a $7 million round of financing to expand its sales and accelerate the product development process for automotive and machine vision applications.

"Machine vision is very important and key for itself, but machine vision together with AI or spectral with AI like we support in our chip, will surely change the world," Eli Assoolin, CEO and co-founder of Newsight Imaging, told EE Times Europe. "Our technologies are key to monitor production lines, to avoid the spreading of viruses, and to allow the higher class of autonomous cars."

Founded in 2016 and based in Ness Ziona, Israel, Newsight Imaging develops advanced CMOS image sensor chips for automotive visual safety solutions, autonomous robotics, and drones. "The CMOS technology allows us to put all in one piece of silicon, pixels, analog-to-signal and digital processing," said Assoolin. "This allows us to have a very low-cost solution, and with our patented enhanced Time-of-Flight (eToF) technology, we make it high performance too."

NI Acquires OptimalPlus, Doubling Down On IC Market

National Instruments rebranded last week. Like IBM and KFC before it, it will now be known by just its initials — which is the way a lot of people refer to NI anyway. The renaming caps a string of changes at the company. Late last year National Instruments partnered with Cadence. Though former president Eric Starkloff was promoted from president to CEO last year, he didn't take over until February, upon the departure of former CEO Alex Davern. And then at the beginning of this month, the company purchased OptimalPlus, a data analytics software company.

Ordinarily this much activity and a name change comes with a change in strategy. Starkloff says that's not the case — just the opposite in fact. "We've always been software-oriented. The world has moved in our direction," he said.

NIWell, there was a change in strategy at NI, but that came during Davern's 4-year tenure — with Starkloff and a cadre of other NI execs at his side.

Qualcomm Launches 5G and AI Robotics Platform

Qualcomm Technologies launched Wednesday a premium 5G and AI-enabled robotics platform with advanced high-performance edge computing and computer vision capability. The move follows the company's launch of its entry-level robotics platform just over a year ago

The new Qualcomm Robotics RB5 platform is its most advanced, integrated, comprehensive offering designed specifically for robotics. Building on the Qualcomm Robotics RB3 platform and its broad adoption in a wide array of robotics and drone products, the RB5 platform is comprised of hardware, software and development tools, which can be configured with multiple options for vision, sensors, communications, and motor control to address a wide range of industrial grade and commercial robotics applications.

Explaining the new platform, Dev Singh, senior director at Qualcomm Technologies, said, "In the age of 5G and AI, robotics will be a key beneficiary. In particular, 5G will take Industry 4.0 to the next level, not overnight but progressively in phases. Our Qualcomm Robotics RB5 platform will be game changing for this industry." Singh is responsible for business development and Qualcomm's autonomous robotics, drones and intelligent machines.

Industry News & Trends

Ultrasonic For Social Distancing Tags

Ultrasonic sensors might just be the wireless technology best suited to enabling contact tracing and social distancing. It does so "more accurately, reliably and much more power- and cost-efficiently," claimed Joseph Bousaba, president of Chirp Microsystems, a TDK group company, in an interview with EE Times.

Fortune 500 companies, eager to get employees back to warehouses and manufacturing floors, are looking for apps and wearable devices that can alert workers when they violate social distancing precautions and come too close to one another. The companies also want these wearable devices to keep track of which workers have come into close contact with whom, when and for how long.

Underwater Wifi And 4G LTE In The Air: No Escape From The Network

Want 4G services at 10,000 feet in the air? Or how about sending images in real-time while you are scuba diving? We seem to be getting there slowly, with two recent announcements, though at the moment they are still for specialized use.

For air-to-ground communications, UK-based mobile network operator EE and Nokia said they are going to build the world's first 4G LTE air-to-ground connectivity network for emergency services. And for underwater WiFi, a research team from KAUST (King Abdullah University of Science and Technology) has built a prototype 'Aqua-Fi' underwater wireless internet service using LEDs or lasers.

Underwater WiFi

Connecting to the web underwater is a struggle, especially for scuba divers who want to send sea life data images in real-time. "People from both academia and industry want to monitor and explore underwater environments in detail. Wireless internet under the sea would enable divers to talk without hand signals and send live data to the surface," explains Basem Shihada, associate professor for computer science at KAUST and co-author of a paper published in IEEE Communications Magazine.

Alot Chip Slashes Power Consumption For Person Detection

A proof-of-concept chip from French research institutes CEA-Leti and LIST, presented at VLSI Symposium 2020, incorporates a low-power IoT node and an AI accelerator and demonstrates ultra-fast wake up time with a 15,000X peak-to-idle power consumption reduction. The node delivers up to 1.3 tera operations per second per Watt (TOPS/W) or 36 GOPS for machine learning tasks.

The chip, named SamurAI, was tested in an occupancy detection system with off-the-shelf components including a PIR sensor, 224×224 pixel black and white camera, FeRAM and a low power radio. The daily average system power consumption was 105µW, with SamurAI consuming 26% of that budget. The system used the PIR sensor with a 5s interval during room occupation 8 hours per day, the camera at 1 frame per second and the radio 10x per day.

SamurAI uses two on-chip sub-systems: a low-power clockless event-driven wake-up controller which can start up in 207 ns, and an on-demand subsystem comprising a RISC-V CPU with deep sleep mode plus PNeuro AI accelerator and cryptography accelerators.

Imec Develops Efficient Processor In Memory Technique for GloFo

Imec and GlobalFoundries have demonstrated a processor-in-memory chip that can achieve energy efficiency up to 2900 TOPS/W, approximately two orders of magnitude above today's commercial processor-in-memory chips. The chip uses an established idea, analog computing, implemented in SRAM in GlobalFoundries' 22nm fully-depleted silicon-on-insulator (FD-SOI) process technology. Imec's analog in-memory compute (AiMC) will be available to GlobalFoundries customers as a feature that can be implemented on the company's 22FDX platform.

Since a neural network model may have tens or hundreds of millions of weights, sending data back and forth between the memory and the processor is inefficient. Analog computing uses a memory array to store the weights and also perform multiply-accumulate (MAC) operations, so there is no memory-to-processor transfer needed. Each memristor element (perhaps a ReRAM cell) has its conductance programmed to an analog level which is proportional to the required weight.

Applying a voltage proportional to the input activation (via digital-to-analog conversion — on the left of the diagram below) means the current through each element is proportional to the product of the activation and the weight. The current through each vertical bit-line (vertical lines in the diagram below) is the sum of these activation-weight products, which can be fed through an analog-to-digital converter. This sum of the activation-weight products is critical to the calculation of neural network algorithms.

AMD Achieves 25x Energy Efficiency Goal from 2014

AMD kicked off its energy efficiency program six years ago when it set a challenging goal of improving notebook power efficiency by 25 times by the year 2020 (25×20). Well, it is now 2020 and AMD announced that not only has it met its goal but has, in fact, exceeded it. The 2020 result is based on testing of the Ryzen 7 4800H Renoir processor running in 35W programmable TDP mode.

The news that Apple was dropping Intel processors for its own internally developed Arm processors has dominated the news for the last two weeks, but intel's problems are not limited to losing Apple. It is also losing market share in the PC business to AMD. AMD is making great strides in market share on high-performance computers, and it is also been making market share gains in notebook computers, which has been a weak spot for the company in the past.

The reason AMD is doing considerably better in notebook computers is that the company has focused heavily on improving performance and energy efficiency of its processors.

Samsung Leads Semiconductor Paradigm Shift With New Material Discovery

Researchers at the Samsung Advanced Institute of Technology (SAIT) have unveiled the discovery of a new material, called amorphous boron nitride (a-BN), in collaboration with Ulsan National Institute of Science and Technology (UNIST) and the University of Cambridge. Published in the journal Nature, the study has the potential to accelerate the advent of the next generation of semiconductors.

2D Materials – The Key to Overcoming Scalability Challenges

Recently, SAIT has been working on the research and development of two-dimensional (2D) materials – crystalline materials with a single layer of atoms. Specifically, the institute has been working on the research and development of graphene, and has achieved groundbreaking research outcomes in this area such as the development of a new graphene transistor as well as a novel method of producing large-area, single-crystal wafer-scale graphene. In addition to researching and developing graphene, SAIT has been working to accelerate the material's commercialization.

East European News & Trends

Digital Passport Ensures Pharma Products' Authenticity

Two Russian companies, ANO Airalab Rus and Innocolloid, Inc., have teamed up in their joint R&D project aimed at creating what they refer to as "digital passport" for their new anti-viral blocker called Blokator.

The word came from the website of Zhigulevskaya Dolina, a large technopark and business incubator in Samara Oblast, in Russia's Lower Volga region, which hosts ANO Airalab Rus as one of its numerous resident companies. Airalab's partner in the effort, Innocolloid, is the co-founder of ITMO, one of the newest and most innovative universities in St. Petersburg.

The Blokator reportedly demonstrates disinfectant properties and is designed to thwart viral and microbial activity. Tests are said to have proved its efficacy in inhibiting human respiratory viruses—but the solution is not a drug in a strict therapeutic sense of the word. The Russian solution is meant to compete with Japanese anti-viral blockers that currently dominate the blockers market.

3D Printing To Help Regenerate Bones

Russian scientists appear to have succeeded in developing new 3D printing technology that enables the creation of personalized bioactive ceramics based items, Indicator.ru reported.

Following what is reported to be a successful series of preclinical tests on big animals, the researchers now claim their experimental samples of gene-activated materials could be used in targeted regeneration of human bone tissue.

Researchers Grow New Nanocrystals Of Given Shape

Scientists at the Krasnoyarsk-based Kirensky Institute of Physics in Siberia have come up with a new method of obtaining iron silicide nanocrystals shaped as rectangular and triangular nanodimensional plates. The results of the research have been published in English in CrystEngComm.

Nanostructures developed in such a way could be used to make nanowires and nanodimensional electric contacts; they could also lay the foundation for the synthesis of brand new materials.

Russia Ponders New Incentives For IT Sector

The Russian Government last week announced a new stimuli package to develop the IT sector between now and 2024, the USRBC reported, citing the Russian business daily Kommersant.

Earlier this summer a "tax maneuver" was proposed, reducing IT firms' social security contributions from 14% to 7.6% and income tax from 20% to 3% while re-imposing a 20% VAT on certain IT products. The new program expands that to include $564.5m in grants for R&D and start-ups; developing Public Private Partnerships (PPPs) in "digital

government"; and subsidies to Russian higher education institutions to triple the total number of IT students to 150,000.

By 2024, the program envisions a doubling of IT sector employment to 750,000 workers; a doubling in domestic demand for Russian IT products to $18.3bn per year; an annual increase in IT product exports to $9.9bn; and a doubling of the IT sector's share in GDP to 2%.

Russian Covid-19 Vaccine Tested On People, Good Effect Reported

A Russian Covid-19 vaccine has been unofficially tested on humans. Scientists at the Gamaleya National Research Center of Epidemiology and Microbiology (NRCEM) in Moscow tested their new vector vaccine on themselves, and the experiment is said to have been successful as immunity showed enough strength, the Russian news daily Interfax reported, citing NRCEM CEO Academician Alexander Ginzburg.

When asked if any adverse side effects were detected, the scientist said, "No, all are safe and sound, and happy." He stopped short of specifying how many colleagues had injected the vaccine in themselves, but said that this was a "wide circle of employees, including the actual developers, preclinical trials managers, and technologists."

Russian Software Comes To Match Russian Computer Hardware

A Russian Linux-based operating system has been developed to power computers driven by the Baikal chips from a domestic company called Baikal Electronics.

In this project, Baikal Electronics teamed up with Bazalt-SPO, the developer of the Alt family of operating systems.

"We are glad to watch our partnerships in promoting a national hardware ecosystem bear fruit and generate operating systems compatible with our processors. The doors are being opened to creating 100% domestic products in a near future. We hope to already see examples of 100% Russian items based on both Russian hardware and Russian software emerge in the market in Q3 2020," Baikal Electronics CEO Andrei Evdokimov said in a comment to the news.

World Economic Round Up

The damage caused by the worst global health crisis in a century is vast. The new coronavirus has travelled far and fast, infecting more than 8.7 million people and killing more than 460,000. One after another, economies have gone into lockdown to slow down the spread of the disease. T he combined supply and demand shocks have ravaged the world economy with the most severe downturn since the Great Depression; anticipated drops to international trade and investment flows of 30 percentand 40 percent, respectively; and unemployment spikes in many 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 2020

Future Horizons Events

- Silicon Chip Industry Training Seminar – London – 9th November 2020
- Industry Forecast Briefing, London – 15th September 2020

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

Telephone: +44 1732 740440
Email: mail@futurehorizons.com

Download Future Horizons Full Events Calendar Here

Industry Events

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MARK YOUR CALENDER FOR THE NEXT

SILICON CHIP INDUSTRY WORKSHOP
MONDAY 9th November 2020
AND
INDUSTRY FORECAST BRIEFING
TUESDAY 15th September 2020

BOTH BEING HELD AT

HOLIDAY INN KENSINGTON FORUM, LONDON

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