FutureHorizons

The Global Semiconductor Industry Analysts

Future Horizons Newsletter

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Contents Page

Industry News By Company

Japan Forms Alliance To Promote IoT In Factories

A group of companies in Japan has formed the Flexible Factory Partner Alliance to promote the formulation of standards for coordination control technology.

Due to fierce international competition, labour shortages and a reduced number of skilled workers due to falling birth rates and aging population, companies in Japan are turning to information communication technology (ICT) for manufacturing to improve productivity. And in order to achieve greater flexibility, there are rising expectations for wireless communications as an important technology. In fact, there has been an increasing trend of manufacturing facilities deploying wireless communications on a trial basis, and then based on these trials, fully implementing such wireless systems.

At the same time, a major issue in wireless communications in factories where various wireless systems coexist is communication instability due to interference between wireless systems and the impact that has on equipment operation. However, there had previously been few efforts to resolve this sort of wireless communication issue in manufacturing facilities.

IBM Processor Claims New Level of Data Encryption

LAKE WALES, Fla. — IBM claims its new z14 microprocessor is the fastest in the world, enabling encryption of "all-data all-the-time."

Encryption accelerators encode all data used by real-time analytics, interactions with Internet of Things (IoT) devices and in-house or cloud applications, all within the same transaction, and without changing a single line of application code or impacting throughput, according to IBM. More than 12-billion encrypted transactions per day can be performed by the z14, compared to 2.5 billion for the z13, which was accomplished by a 400 percent increase in z14 silicon real-estate dedicated to cryptography plus an accelerated PCI-bus Crypto Express card.

"Of the 9 billion records breached in the past five years, only 4 percent were encrypted, leading to a predicted $2 trillion in losses to cybercrime worldwide by 2019," Mike Desens, vice president of IBM Z Systems, told EE Times in an exclusive interview.

Infineon Introduces Packaged MEMS Microphones With A 70 dB Signal-To-Noise Ratio

Munich, Germany – 25 July 2017 – Infineon Technologies AG (FSE: IFX / OTCQX: IFNNY) is entering the packaged silicon microphone market. With this it is addressing the needs for high performance, low noise MEMS microphones. The analog and digital microphones are based on Infineon’s dual backplate MEMS technology and distinguish themselves with a 70 dB signal-to-noise ratio (SNR). This is combined with an exceptionally low distortion level of 10 percent at a 135 dB sound pressure level (SPL). In a 4 mm x 3 mm x 1.2 mm MEMS package, the microphones are very well suited for high-quality acoustic recordings and far field voice capturing applications.

“This is an expansion of the established high volume bare die MEMS and ASIC business model with our packaging partners around the world,” said Dr. Roland Helm, Senior Director and Head of Product Line Sensors for Infineon’s Power Management and Multimarket Division. “We will continue to strengthen and grow our business with our partners with bare dies; additionally we now address low noise high-end use cases with our two new packaged microphones.”

Intel Strikes Back In X86 Server CPUs

Skylake server processors sport an average 65% performance boost over its prior Broadwell chips, according to Intel, while top-end versions of the new Xeon Scalable family nudge ahead of rival AMD’s recently released Epyc CPUs in performance but don’t pack as much I/O.

The results suggest that Intel will have no problem maintaining its dominance in the lucrative data centre. Nevertheless, AMD’s Epyc and a rising tide of ARM-based server chips from Qualcomm and others are expected to find significant footholds in the broad and diverse cloud computing sector.

Platinum 8180 and 8160 versions of Skylake edged AMD’s Epyc 7601 by 2% to 28% in performance and by 12% to 22% in performance/watt on the Specint_rate2006 benchmark. The results could be skewed by Intel’s tendency to use optimised compilers for its benchmarks compared to standard ones that AMD uses.

Invecas Acquires Lattice's HDMI Design Team

Invecas Inc., a silicon proven IP and design services provider, has agreed to acquire Lattice Semiconductor Corp.’s HDMI design team and Simplay Labs subsidiary, which oversees standards compliance and interoperability testing services.

Design asset acquisition

Invecas, headquartered in Santa Clara, California, offers design services including ASICs optimised for advanced process technologies, embedded software and system-level solutions. With this transaction Invecas will gain aout 150 R&D staff, labs and other assets from Lattice’s operations in San Jose, California, Hillsboro, Oregon, Hyderabad, Shanghai and Shenzhen.

Invecas told EE Times India that 32 staff in the United States, 21 in China (the Shanghai and Shenzhen locations) and 100 in India are affected by the acquisition. "We have acquired Simplay Labs subsidiary and the staff will work from the same Simplay Labs," confirmed Dasaradha R. Gude, founder and CEO of Invecas, in an email exchange (in photo above). A new HDMI team lead from Invecas is yet to be announced.

Kumu Preps Full Duplex Chip

SAN JOSE, Calif. — Five years into its life as a startup, Kumu Networks hopes a chip still in an early design phase will drive to volume markets its full-duplex network technology. Full duplex standards are in the works at CableLabs and 3GPP, and a handful of competitors are active in the field.

Kumu developed an interference cancelation technology to enable systems to transmit and receive over the same frequency band. It is backed by 20 patents and has been tested by a handful of companies including Cellcom, a cellular carrier in Israel.

An RF CMOS chip the startup will make at Globalfoundries aims to pack the technology into a 50mm2 chip consuming about 2W max for use in Wi-Fi access points and LTE base stations. It will support delays of hundreds of nanoseconds to better adapt to wireless reflections. However the chip will not tape out until late this year or early next year, and Kumu is still determining whether it will use a 130 or 45nm SOI process.

ST Sprints While Q'Comm Deal Hobbles NXP

ROUSSET, France — STMicroelectronics is sprinting toward the winner's circle in microcontrollers, near field communications (NFC) chips and sensors, while NXP Semiconductors is hobbled by its pending acquisition by Qualcomm.

ST, which just announced its Q2 financial results with net revenues of $1.92 billion, up 12.9 percent year over year, is invigorated.

Although ST remains mum about any upcoming design wins, the positive glow at the Franco-Italian company today is fueled by growing speculation among market analysts that ST's time of flight (ToF) imaging sensors and NFC chips are getting designed into leading smartphones.

In a sharp contrast to its shrinkage in the last decade, ST is today regaining its confidence. It has narrowed its product portfolio, identified strengths, capitalized on its fabs, and is quietly expanding its market share in key product segments such as MCUs.

Industry News & Trends

Self-Interference Cancellation Doubles Bandwidth

A start-up founded by Sriram Vishwanath has developed a signal cancellation technology, which may become an integral element of just about every communications system moving forward.

Kissing contention goodbye in open bands may not be possible yet, but a self-interference cancellation technology promises to change the wireless game.

Start-up GenXComm spent the last five years developing the technology, which claims to support the use of single-frequency full-duplex communication, or adjacent and overlapping channels, and even reduce all those bandwidth and latency compromises. If it proves out, signal-cancellation technology could become an integral element of just about every communications system moving forward.

The company got its first round of financing—□10.20 crore ($1.5 million)—from FAM Capital Partners, the UT Horizon Fund (GenXComm grew out of research performed at the University of Texas) and others. It is using the funding to produce prototype chips. Co-founder and president Sriram Vishwanath (pictured above, source: GenXComm) told EDN his company also just got a design win with a "massive" OEM—which he, of course, could not identify.

Processor Delivers Live Rear-View Video 0.5s From Start-Up

Intersil, a subsidiary of Renesas Electronics Corp. since February 2017, has claimed it has the automotive industry's first full HD (1080p) LCD video processor that provides the reliability needed to ensure rear-view camera systems compliant with the U.S. Federal Motor Vehicle Safety Standard (FMVSS-111) for preventing injury or death caused by such accidents.

The TW8844 enables the migration from analog to digital camera systems and supports a variety of video interfaces and LCD panel resolutions up to full HD 1920 x 1080. The video processor with MIPI-CSI2 output and TW8845 video processor with BT.656 output exceed the requirements of the FMVSS-111 law displaying live video with graphics overlay in less than 0.5s after vehicle ignition.

The TW884x provide a rear-camera architecture to overcome the fast boot reliability issues. Today's head units are prone to OS software freezes and hang-ups that display a frozen image or prevent the rear camera from displaying live video. With SoCs running increasingly complex operating systems software freezes and hang-ups are more common. The TW884x eliminates this problem by monitoring the SoC and camera output to determine if they are in a frozen or corrupted state. If the TW884x detects any issue it bypasses the SoC and instantly displays the rear-view camera video.

Evolving Radio/Audio for Connected Cars

Changes in antennas, displays, in-vehicle networks and new digital radio standards have made car radios much more versatile, while bringing new challenges to car radio vendors.

New technologies are challenging automotive radio vendors to improve radio reception while meeting different sets of requirements and cost targets. Let's consider some of these challenges and how new integrated circuit (IC) devices can help radio vendors tackle them.

Modern car radios look quite different from radios deployed in cars even ten years ago. Changes in antennas, displays, in-vehicle networks and new digital radio standards have made car radios much more versatile, but have also given rise to a suite of new challenges for car radio vendors. Here are some of the technological trends of modern radio systems in new vehicles.

Start-Up Brings Solar Power To UP Village

At least 100 homes in central northern India are now harnessing the sun's power, thanks to social enterprise start-up company Oorja.

The company, founded in 2015 by social entrepreneur Amit Saraogi and Imperial College London PhD student Clementine Chambon, recently installed an 8kW mini solar grid in the village of Sarvantara, which is located in Uttar Pradesh.

Sarvantara was nominally electrified by the state government nine months ago during election season when electricity poles from the local grid operator were placed in the village. However, the poles were never connected to the grid. Oorja's mini-grid is the first time that the village has had access to a reliable source of electricity.

Spin Wave Breakthrough Solves Signal Propagation Challenge

TORONTO – Spin wave technology goes back decades, but as an alternative to semiconductor circuits that transmit information by electric charges, it's been hampered by the fact that the properties of its signal propagation vary in different directions — until now.

Researchers at the National University of Singapore (NUS) have developed a method of propagating spin waves that lead to the development of high speed, miniaturized data processing devices, which could have huge potential as memory devices that are more energy efficient, faster and higher in capacity.

Spin wave based devices use collective excitations of electronic spins in magnetic materials as a carrier of information. But as Professor Adekunle Adeyeye from NUS' department of electrical and computer engineering explained in an interview with EE Times, the technology's anisotropic signal propagation creates challenges for practical industrial applications of spin wave-based devices.

Device Senses Breath For Disease Diagnosis

A research team from the Department of Materials Science of Korea Advanced Institute of Science and Technology (KAIST) led by Prof. Il-Doo Kim has developed diagnostic sensors using protein-encapsulated nanocatalysts. The sensors can diagnose certain diseases by analysing human exhaled breath. According to the researchers, the technology enables early monitoring of various diseases through pattern recognition of biomarker gases related to diseases in human exhalation.

The protein-templated catalyst synthesis route is very simple and versatile for producing not only a single component of catalytic nanoparticles, but also diverse heterogeneous intermetallic catalysts with sizes less than 3nm. The research team has developed ever more sensitive and selective chemiresistive sensors that can potentially diagnose specific diseases by analysing exhaled breath gases.

Expanding Optical Horizons

LAKE WALES, Fla. — Russian and Finnish researchers, collaborating on a proof-of-concept project to expand the uses for large-core-diameter, multimode optical fiber, used high-power lasers and anisotropic materials to develop a fiber that preserves the coherent properties of the light passing through it. Such preservation is a necessity for enabling quantum computing and sensor networks as well as for replacing costly single-mode fiber in longer-range communications applications.

The researchers have published their results in the Optical Society (OSA) journal Optics Express.

Optical fiber is the backbone of modern communications. Single-mode fiber predominates in long-distance applications because of its reliability; but such fiber, with an inner diameter measuring just 10 microns, is expensive. Lower-cost, multimode fiber, with an inner diameter as wide as 100 microns, is used today for communications over short distances, typically 1,000 meters for 1-Gbit/second transmissions. Researchers are working to expand the utility of multimode fiber, not only to replace single-mode fiber for long-range communications, but also to enable quantum computers and to build distributed sensor networks that would require little or no power to run.

Russian Fintech Start-Up In UK Raises Funds And Plans Expansion

Revolut, a UK-based start-up of Russian origin operating in the fintech sector, has raised $66m from a consortium of venture funds. The investment will be used to prepare a major expansion in Asia and North America, and also to develop new services enabling customers to use cryptocurrencies, Firrma.ru reported, citing Bloomberg.

Revolut offers a MasterCard banking card with accounts in three different currencies which are managed through a mobile app. Using the Revolut solution also enables clients to send money to a variety of MasterCard and other accounts.

Siberians Create Semiconductors 5,000 Times Thinner Than Hair

Scientists at the Tomsk State University (TSU) in Siberia have pioneered the growing of semiconductors from organic molecules in the gas phase in Russia. Their super-thin films are reported to be 5,000 thinner than a human hair.

The self-assembly of molecules is said to have led to the emergence of semiconductor structures that provide increased speed of devices with minimal energy costs, thus paving the way for the development of a new family of molecular nanoelectronics.

“The main technical problem of producing devices based on organic semiconductors created by traditional methods of sputtering is that they have low conductivity, because individual molecules interact poorly with each other. Overcoming this barrier is possible with the help of molecular epitaxy, a method of layer-by-layer application which

provides chemical binding of molecules and thereby increases charge transport," said Tatyana Kopylova of TSU's Laboratory of Organic Electronics.

World Economic Round Up

A week after President Donald Trump grudgingly approved fresh US sanctions against Russia, domestic companies and foreign investors are struggling to make sense of their exact consequences but they already see enough to fear the longer-term chilling effect on an economy starting to recover after two years of recession. Even those sceptical of the sanctions' true reach are concerned by the threat as guarded investors reassess their exposure to Russia.

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 – 13th November 2017
- Industry Forecast Briefing, London – 19th September 2017

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

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Industry Events

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MARK YOUR CALENDER FOR THE NEXT

SILICON CHIP INDUSTRY WORKSHOP
MONDAY 19th November 2017
AND
INDUSTRY FORECAST BRIEFING
TUESDAY 19th September 2017

BOTH BEING HELD AT

HOLIDAY INN KENSINGTON FORUM, LONDON

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