



Future Horizons Newsletter

November 2016

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Industry News By Company

[UK Chip Start-Up Graphcore Raises £30m For Take On AI Giants](#)

A Bristol-based computer chip start-up has raised more than \$30m to take on industry giants Intel and Nvidia, in the fast-growing market for artificial intelligence hardware.

Graphcore intends to design hardware specifically for machine learning applications, from cloud computing to robotics and autonomous driving, but with up to 100 times more processing power than today's chips.

Among its early backers are technology group Samsung, German engineer Bosch and Hermann Hauser, the founder of Cambridge-based chip designer Arm.

[IBM Weaves New 25G Link](#)

SAN JOSE, Calif. – IBM provided more detail on a new 25 Gbit/second interconnect that will link its Power 9 processor to accelerators and next-generation memories. OpenCAPI is a new physical-layer and protocol serving the same functions as 25G interfaces announced earlier this week by the CCIX and Gen-Z groups.

IBM claims OpenCAPI will provide wider bandwidth and lower latency than the alternatives and have a road map that carries it to even higher performance. However, so far OpenCAPI has attracted eight partners compared to about 20 each for CCIX and Gen-Z.

OpenCAPI targets a raw bandwidth of 150-160 GBytes/s about five times that of PCI Express Gen 4 which is the basis of CCIX. The cache-coherent interface should be able to implement load/store memory operations with a round trip latency of about 100 nanoseconds.

[LG Display Sets Sights On Ultra-Thin TV Screens Despite Losses](#)

LG Display, the world's largest flat panel maker, is standing by its ultra-thin OLED television screen technology despite slow take-up by consumers and losses estimated at Won60bn (\$53m) in the past quarter.

The company says it will convert more of its production lines from traditional LCD screens and predicts that its OLED division will be making money in three years and will account for half of all its revenues by 2020.

While rivals have steered clear of big investments in OLED TVs, Yeo Sang-duk, the president of LG Display's OLED business, says that the new technology would save the company from a price war that is ravaging LCD manufacturing margins.

[China-Backed Canyon Bridge Buys Lattice For 8,666 Crore](#)

Programmable chip maker Lattice Semiconductor, considered to be one of the last independent FPGA companies today, is being acquired by Canyon Bridge Capital Partners for an estimated ₹8,666.09 crore (\$1.3 billion). The price is inclusive of Lattice's net debt, or ₹553.30 (\$8.30) per share in cash, representing a 30% premium to Lattice's final trade price prior to the announcement.

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Canyon Bridge Capital Partners is a newly formed, global private equity buyout fund that is headquartered in Palo Alto, California. Its limited partners in the fund come from Beijing-based China Reform Fund, according to a Reuters report.

This latest acquisition leaves Xilinx as "the last man standing" with regard to the larger FPGA players. Actel was acquired by Microsemi in 2010 and Altera was acquired by Intel in 2015. In both of those cases, there was a technology play behind the story. Microsemi is big in security, and Actel's Flash-Based SmartFusion SoC FPGAs can play a big role in the secure boot process, for example. Meanwhile, Intel is huge in CPUs, and the combination of these CPUs with Altera's FPGAs—as separate devices, mounted in the same package, or, ultimately, fabricated on the same die—will be very important with regard to applications like high-performance computing (HPC).

Qualcomm Tips 28 GHz 5G Chip

Qualcomm announced plans for a 28 GHz modem that will be used in separate pre-standard 5G cellular trials by Verizon and Korea Telecom. The news is the latest indication some vendors want to speed up the roll out of elements of 5G, a move one source said comes “at the expense of innovation.”

The Snapdragon X50 delivers 5 Gbits/second downlinks and multiple gigabit uplinks for mobile and fixed-wireless networks. It uses a separate LTE connection as an anchor for control signals while the 28 GHz link delivers the higher data rates over distances of tens to hundreds of meters.

The X50 uses eight 100 MHz channels, a 2x2 MIMO antenna array, adaptive beamforming techniques and 64 QAM to achieve a 90 dB link budget. It works in conjunction with Qualcomm's SDR05x mmWave transceiver and PMX50 power management chip. So far, Qualcomm is not revealing more details of modem that will sample next year and be in production before June 2018.

Samsung Electronics Acquires U.S. Mobile B2B Startup

Kaprica Security, a U.S.-based mobile security firm, announced on October 28 that Samsung Electronics has acquired its spinoff “Tachyon.”

Virginia-based Tachyon is an enterprise mobile device configuration and development software developer. Moreover, the company provides data management services that allow firms and institutions to exchange data one another fast and safely. It has a variety of customers, including the federal law enforcement like the Department of Defense (DoD), and hospitals and vehicle fleets in the U.S. and Europe, according to Kaprica. The financial terms of the acquisition are not being disclosed.

Samsung Electronics will acquire Tachyon's existing customers as well. The company plans to combine its own Knox mobile security system with Tachyon's solutions to improve the safety further and take the lead in the mobile B2B market that requires a strong data security, Kim Jong-shin, vice president of the global mobile B2B team at Samsung Electronics, said, “Tachyon is a game changer in the enterprise mobile market.”

Samsung To Invest More Than \$1 Billion In Texas Chip Factory

SEOUL— Samsung Electronics Co. said that it would invest more than \$1 billion in its Austin, Texas, semiconductor factory, as the South Korean technology giant seeks to bounce back from its recent smartphone recall by redoubling its efforts in smartphone components.

Samsung, which reported its worst quarter of operating profits in two years in the three months ended Sept. 30, said last week that it would spend more than 27 trillion Korean won (\$23.65 billion) on capital expenditures this year, a record high, to beef up its capabilities in semiconductors and display panels.

The emphasis on components sales comes as the company has been reeling from a spate of reported fires that forced it to discontinue its Galaxy Note 7 last month.

Industry News & Trends

[Ultrasound Proximity Solution Captures Xiaomi's Heart](#)

Beauty, developed by Norwegian start-up Elliptic Labs, is a software-based ultrasound proximity solution that leverages smartphones' existing microphone and speakers to remove hardware-based—and often infrared-based—proximity sensor.

Now, the company said it is able to not only to remove the proximity sensor, but also hide the speaker behind the phone's glass screen. The new feat, marketed as "Inner Beauty," won the heart of Xiaomi and is what enabled the smartphone manufacturer to considerably extend the functional area of the screen on the newly released MIX smartphone.

During MIX's official launch, Xiaomi pointed out that by removing the holes typically required in the faceplate to accommodate for speakers and optical IR sensors, the new phone was able to have its screen extended, with a functional area covering 91.3% of the faceplate, compared to 67.7% for the iPhone 7 Plus.

[5G Tech Solution Fits More Data Into Network Fibre](#)

Integrated Device Technology has introduced the RapidIO Gen3 interoperability with Xilinx FPGAs, enabling a key technology for global rollout of 5G and other advanced network systems. IDT's RapidIO RXS switches, coupled with Xilinx UltraScale FPGAs, deliver a combination of ultra-low 100ns latency interconnect and programmable computing with application-specific accelerators needed for 4G advanced and 5G programs.

IDT has also developed a wireless data compression solution on Xilinx Zynq-7000 All Programmable SoCs, which allows more data to fit into a network fibre or link. This solution is targeted for remote RapidIO units, repeaters and base stations in the front haul of networks to increase front haul capacity with compression ratios ranging from 2:1 to 3:1. IDT has also developed high-performance timing solutions on Xilinx devices, including IEEE 1588 high-performance time synchronisation products to meet time alignment error requirements between 5G RRUs in Cloud Radio Access Networks (C-RAN).

[Tech Achieves 100G Switch Connectivity Over Copper](#)

Industry watchers have projected that only optical connectivity will serve the needs of 100Gbit/s and beyond. However, most direct server and storage Ethernet network connections in "hyperscale" data centres are currently within 3m, according to Crehan Research. Responding to this industry trend towards higher density switch and server configurations, a number of optical solutions have already been proposed for 100G. But optical interfaces are relatively expensive.

Now, Aquantia Corp. has announced its QuantumStream technology, which offers a complementary 100G product for mass server and switch connectivity at shorter reaches over copper lane implementations. This delivers lower cost per gigabit compared with

optical fibre. And the lower prices will transform the economics of in-rack connectivity in hyperscale data centres, according to the company's press statement.

Microsoft Speeds Open Hardware

SAN JOSE, Calif. – Microsoft's has posted early specifications for a next generation data center server called Project Olympus. It also called for an open hardware process that more closely mirrors the speed and flexibility of open source software.

The current process of contributing data center hardware designs to the Open Compute Project (OCP) when they are production-ready is too slow, Microsoft argued in a blog posted Monday. It "delays the development of derivative designs, limits interactive community engagement and adoption, and slows down overall delivery," wrote Kushagra Vaid, general manager of hardware for Microsoft's Azure service.

So the company released specs on Git Hub for its next-generation server design although they are only half done. It also called for designers to fork designs in different directions as they see fit to heighten innovation.

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Automotive Tech Tunnels Up To 6Gbps Of Video, Data

STMicroelectronics has collaborated with Valens to introduce HDBaseT Automotive, a technology that optimises in-vehicle connectivity by enabling the transmission of reliable 6Gbps high-throughput infotainment, road safety and automotive-control content over a low-cost infrastructure with near-zero latency.

Under the partnership, Valens, as the inventor of HDBaseT and founder of the HDBaseT Alliance, brings the technology and expertise to accomplish the goal of commercialising HDBaseT-enabled vehicles, while STMicroelectronics will contribute its extensive design and manufacturing experience and know-how in compliance with the strict automotive quality and reliability requirements.

NXP Semiconductor Expects Self-Driving Cars To Help Consolidation In Chip Sector

NXP Semiconductor, the world's largest chip supplier to the automotive industry, expects efforts to make self-driving cars will lead to more consolidation in its sector, the company's automotive head told Reuters. "Automotive has been driving M&A and will be the force behind M&A in the chip sector for some time. Maybe in a broader perspective, all things connected to the internet," Kurt Sievers, NXP's general manager Automotive said.

The chip industry has been undergoing rapid consolidation as companies try to capture market share, much of it related to connected devices and cars, as smartphone sales growth flattens. Meanwhile, car and truck makers are racing to develop autonomous vehicles as they seek to head off a potential threat to their industry from technology firms.

Infineon Seeks To Break Rubik's Cube World Record

A 20-year-old Dutchman called Mats Valk on Sunday set a new world record for solving a Rubik's Cube puzzle, completing the task in just 4.74 seconds, according to the World Cube Association.

But the fastest robot can perform the same feat in less than one second, then do it again, and again, and again.

Infineon, the German semiconductor maker, is hoping to demonstrate how the speed and reliability of these machines will make for a safer world.

East European News & Trends

Russia's Leading Telecom Retailer: VAT For Foreigners Or Farewell To Russia

Euroset, one of Russia's largest telecom retailers, is considering relocating to the neighboring Baltic states (Lithuania, Latvia and/or Estonia) with its entire online business early next year unless value-added tax (VAT) regulation is made equal for Russian firms and international companies operating in Russia, Firma.ru reported, citing Euroset president Alexander Malis.

Currently, international online retailers do not pay VAT in Russia. According to Mr. Malis, that adds another 15% to the cost of doing online business for domestic players, increasing profit margins for foreign retailers, including those from China, as the Russians simply can't compete with the foreigners in pricing policy.

Russia's First Driverless Electronic Bus Unveiled At Skolkovo

At Moscow's Skolkovo Innovation Center, "Matrëshka" ("Matryoshka") the first electronic driverless bus was revealed. This is the first vehicle of its kind in Russia, and it is designed to carry up to eight passengers. The debut took place at the annual international forum of innovative development, "Open Innovation", which runs Oct. 26-28, 2016, reports the news agency Moscow.

The bus is controlled by computers and is equipped with self-learning software. There are specialized sensors and cameras on board which are able to observe the situation on the road in real-time. With a full battery, the bus can travel 80 miles, with a maximum speed of 20 mph. Testing for the bus was supposed to start in October this year, it was earlier reported, in a closed area of the Skolkovo Innovation Center. Production of the bus is planned for 2017 at the Volgabus factory in Vladimirsky Region. It was also reported that the Volgabus factory created the first Russian self-driving bus.

Private Investor And Russia's Skolkovo Back Additive Tech

Anizoprint, a young Russian company, has raised \$266,000 in private funds from HK4, a domestic corporate investor, for the development of advanced additive technologies, the Skolkovo Foundation announced. The Anizoprint founders all come from the Skolkovo Technopark project.

It's the start-up's first round of funding. Over the next month the partners expect to close their investment deal, thus making Anizoprint eligible for a \$230,000+ government grant from the Skolkovo Foundation on top of that.

According to Anizoprint CEO Fyodor Antonov, his company will funnel the investment and the grant into the fine-tuning and commercialization of a line of household printers that would print out composite-based products. "We expect to take two years to tweak the product, bring it to market, and break even," the CEO said.

World Economic Round Up

In the wake of the U.S. general election, global attention is on President-elect Donald Trump as he begins to fill key positions and set forth policy priorities. Meanwhile, fresh data and central-bank chatter will illuminate the economic outlook in the U.S. and Europe. The main short-term risk to Europe looks to be political rather than economic. Matteo Renzi's left of centre government may struggle to win a referendum on constitutional change in Italy next month.

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 – 6th March 2017
- Industry Forecast Briefing, London – 17th January 2017

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 6th March 2017

AND

INDUSTRY FORECAST BRIEFING

TUESDAY 17th January 2017

BOTH BEING HELD AT

HOLIDAY INN KENSINGTON FORUM, LONDON

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