Radar Scope

Confluence Solar

Confluence Solar was founded in 2007 to produce premium quality single crystal silicon at a cost below that of multi-crystal silicon. The company has raised $12.7 million in Series A funding led by Convexa Capital with additional investments from DC Chemical Co., Scatec Adventure AS, Oceanshore Ventures and others. Confluence anticipates a Series B financing round in Q1'09 of approximately $100 million. The company has 22 employees.

According to the National Renewable Energy Laboratory (NREL), greater than 90% of solar cells are made on silicon. With the development of HiCz™ manufacturers of solar products can receive greater watt output than from traditional multi crystal silicon platforms.

Confluence is opening a new facility in Hazelwood, Missouri to develop its HiCz single crystal silicon product. The company has developed strategic relationships with key suppliers for all critical raw materials, supplies and equipment including polysilicon.

Confluence believes the market for silicon substrates within the solar industry will grow from $3 billion in 2008 to more than $7 billion in 2012. Competitors include LDK, REC, Jinglung, Yingli and Renesola. Confluence argues that its premium quality HiCz™single crystal silicon will maximize the output of high efficiency solar cells at a cost competitive to conventional lower quality, multi-crystal silicon.

The company anticipates providing initial samples in Q4 with commercial introduction in Q2'09. Confluence anticipates a significant degree of customization to compliment the high efficiency solar cell designs of its customers. Products in 125mm^2 format and 156mm^2 format will be available in Q1 and Q2 respectively.

Tom Cadwell, CEO (previously president & CEO of Integrated Materials, Board member of Solaicx and Evergreen Solar, and president of MEMCC Asia)

1600 Park 370 Place, Bldg. A, Suite 2
Hazelwood, MO 63042
Tel: 314.298.1421
Fax: 314.298.1414
www.confluencesolar.com

Immedia

Immedia Semi "is dedicated to bringing quality video into the home on demand."

Peter Besen, CEO (previously GM at Broadcom via the acquisition of Sand Video where he was founder & CEO)
Don Shulsinger, VP of Sales & Marketing (previously VP of bus. dev. at Broadcom via the acquisition of Sand Video)

100 Burtt Road, Suite 125
Wilmington, MA 01887
Tel/Fax: 781.915.1920
www.immediasemi.com

Lakota Technologies

Lakota Technologies is a "next-generation power electronics semiconductor company." The company is developing "diodes for power-electronics, with some amazing technology."

Ben Quinones, CEO

www.lakotatech.com
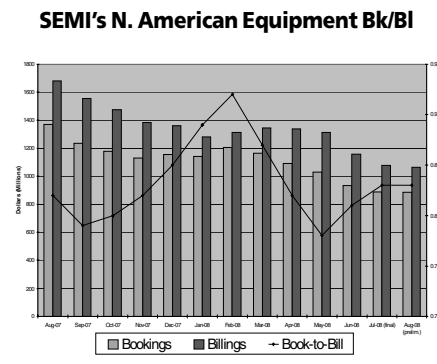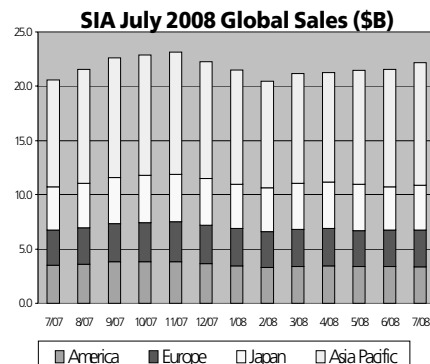
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SIA July 2008 Global Sales ($B)

SEMI's N. American Equipment Bk/Bl

Cliff Rants

In the midst of the worst financial crisis in recent history, what is the state of the semiconductor industry? Turmoil – right? Focus Enhancements has filed for Chapter 11, Neomagic and Alliance are winding down, several memory makers are on the ropes, and more than a handful of companies are trading at or below book value. Doom and gloom, some may say. Blame it on the economy. The industry is mature. Semiconductor startups are a thing of the past…

Enough with the banter. What is the reality? Q2 financials were actually remarkably good. If you want to read something into them at the 30,000-foot level, what did they say? Large cap semiconductor companies generally did better than their smaller counterparts. If you know a thing or two about each company, a quick scan indicates that the strong got stronger. Are these surprises? Big fish generally get bigger, and only the strong survive. That's the law of the jungle – nothing new here.

As a contrarian, I believe this is a great time for "semiconductor-centric" investing. The natural process of culling the herd is taking its course. Low stock prices create little incentive for talent to stick around, and, most importantly, there's no shortage of game changing discontinuities in the market today, like skyrocketing energy costs, revolutionary display technologies, the ever expanding demand for mobility and more. These all require semiconductor – if you define the term loosely – innovation, which translates into startup activity. This issue has a vast array of startups, chasing myriad market opportunities, and there are at least a half dozen more very early stage companies that I wanted to include but am under NDA. Innovation lives on…stay tuned…

Achronix – *Ultra High Performance FPGAs*
There has been little precedent for startup success in the FPGA arena, thus any new development in this arena leaves me skeptical. What is it about this space that has made it nearly impossible for anyone to compete against the Altera/Xilinx oligopoly? So as not to upset my many friends, certainly over the years competitors like Actel, Lattice, Cypress, Lucent, have had varying degrees of success. But in general the field has been shrinking, not expanding.

Is it the patents, tool flows, raw sales muscle, actual device attributes, or "no one gets fired for choosing IBM syndrome"? Whatever the issue, be wary… But Achronix does have a wicked – as we say in Boston – solution. It's not just the 1.5GHz speed, it's the underlying picoPIPE architecture that makes that speed possible. There's some serious technology happening here, with years of university and self-funded research behind it – and I like that.

Is it a slam dunk? Definitely not. All those tangible and intangible factors that have made it so difficult for others in the past still remain. Furthermore, is the market for a 1.5GHz device large enough to sustain a startup? To IPO – unknown; to acquisition – probably. And at this performance level, the competition isn't just FPGAs, its ASICs, other emerging course-grained device, alternative processor architectures, etc. – all competing for a slice of the high-end market.

Confluence Solar – *Premium Quality, Low-Cost Single Crystal Silicon*
One VC recently told me "the demand for solar is unlimited." That sets of my bubble alarm, but I do think there are many angles for making a buck in the solar arena. And it starts with the base silicon. Several startups are working on the unique cost and performance requirements of solar grade silicon. It's a large, capital-intensive market, but remember – the demand is unlimited!

Enphase – *Micro-Inverter-based Solar Energy Management Systems*
Enphase Energy just leaves me jazzed. Why? First, its a solar PV play, without jumping on the solar PV manufacturing bandwagon. It's a win, regardless of the underlying PV cell technology – purely additive, improving the efficiency of all solar modules. What's not to like about that?

Second, I actually like the fact that the founders hail from the networking world. It's a twist…an outside view, and an approach that lends a comprehensive, large-scale systems view to the problem, in contrast to myopic, PV-cell efficiency efforts. Sure, you could say that outsiders don't know what they don't know. In time, we'll discover if that's the case.

While others spend vast sums trying to pick up a percentage point or two gains in PV efficiency, Enphase focuses on the balance of the energy conversion chain, an area that has lacked significant innovation. There's huge value here; it's not difficult to grasp…or sell, it scales easily, etc. I could go on, but you get the point – I think Enphase is a winner.

Powervation – *Auto-control™Digital Power ICs*
Powervation hasn't revealed a great deal about its technology, but the little it has sounds interesting. There are numerous companies, both large and small, chasing the digital power IC market, with mixed results to date. Powervation argues that its Auto-control digital power IC technology delivers a truly adaptive Plug-and-Power solution that results in system efficiency gains of up to 30%, a 50% improvement in transient response, and a 65% reduction in overall component count.

The story sounds great, but as we have seen repeatedly in this sector, the proof is in the pudding. Many digital power companies have made great promises, but few have delivered. Powervation makes great claims, but we need to see tangible proof from customers. This market is also evolving rapidly, so Powervation will need to move fast as others innovate as well.

SandLinks – *Active-RFID Networks Using UWB*
I have repeatedly said that UWB is a solution searching for a problem. What I haven't said is that it's a pretty darn good solution. At its core, UWB has several compelling advantages over narrow-band radio technologies. Sandlinks was formed to develop UWB-based Active-RFID (Class 4) solutions that capitalize on those advantages. To me, that makes sense. Take an existing problem – RFID – and apply whatever technology is appropriate to develop the best solution. And in this case, UWB fits that bill. ∎

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(Continued from page 3)

Passif

Passif Semiconductor received $1.6 million from Khosla Ventures in Q2'08.

Axel Berny, founder (previously an RF & mixed-signal designer at Siport)

Quantum Semi

Quantum Semiconductor is a private semiconductor company developing silicon-based chips for light absorption and emission.

Lynn Forester, Co-Founder and CEO

4320 Stevens Creek Blvd., Suite 212
San Jose, CA 95129
Tel: 408.243.2262, Fax: 408.243.2272
www.quantumsemi.com

SandLinks

Founded in 2005, Sandlinks (formerly InfoRange) develops next generation Active-RFID (Class 4) networks using UWB technology, including tags, readers, and communication software. Sandlinks has raised approximately •4.1 million ($5 million) in financing led by Vertex Management and including StageOne Ventures and Star Ventures.

SandLinks argues that its next generation Active-RFID (Class 4) solutions offers superior performance and scalability at significantly lower cost. The company recently received functional silicon of its low-power RFID tag device, which was implemented using the Common Power Format (CPF)-enabled Cadence Low-Power Solution.

For the design and implementation of the radio part of its UWB transceiver, SandLinks used the Cadence Virtuoso custom design platform. Using CPF, Sanlinks engineers described the power intent as part of the RTL delivery to the back-end design house. SandLinks was able to achieve key requirements for this chip, including ultra-low-power consumption and longer battery life for the active RFID tag.

Avi Menkes, Co-Founder and CEO
Dr. Gideon Kaplan, co-founder, VP, R&D
Dr. Dan Raphaeli, Co-Founder

P.O.Box 4629, Petah Tiqwa
Hamerkaz, 49277 Israel
Tel: 972 2 212 1130
Fax: 972 3 919 1930
www.sandlinks.com

SiTune

SiTune was founded in September 2006 to develop "high performance single chip solutions for mobile multimedia applications in mobile handsets, portable media players, personal navigation devices and other consumer electronics." SiTune's

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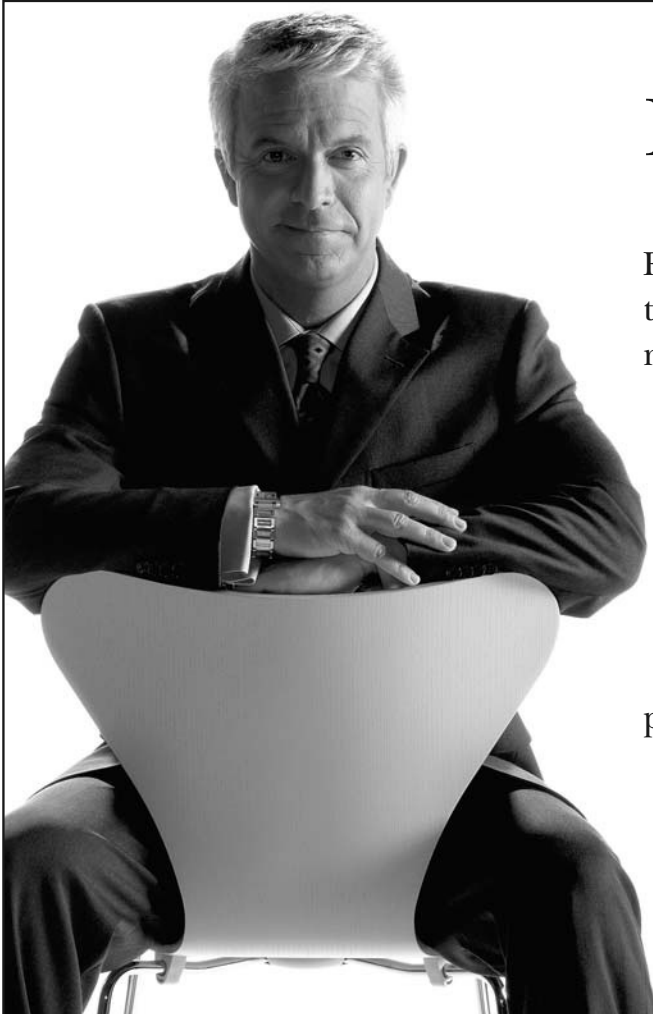*(Continued from page 3)*

mission is "to become a prominent developer of RF and mixed-signal SOCs with the highest performance for receiving video, voice, and data over wireless medium." The company has received funding from Greenlane Investments.

SiTune recently unveiled the STN-25T1000 Hybrid (universal) CMOS TV tuner. The device is a highly integrated tuner that exceeds all global digital and analog TV standard requirements, while consuming less than 150 mW. The STN-25T1000 has the world's lowest power consumption and is the most highly integrated Silicon TV Tuner, according to the company. The device supports both analog (NTSC, PAL, SECAM) and Digital (ATSC, DVB-T, ISDB-T) TV reception.

Samples in Q4; production in Q1.

Vahid Toosi, founder and CEO (previously a senior technical staff member at Ikanos and Dir. of Engineering at BroadNav Integrated Products)

Majid Hashemi, Ph.D., VP of Engineering (previously director of RFIC at Entropic and director of RFIC and mixed-signal design at SiRF)

Gill Heydari, VP of Sales and Marketing (previously Director of Sales at Ericsson AB)

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www.situne-ic.com

TJet

TJet Technologies was founded in October 2007 to develop "the next generation manufacturing equipment that will allow the emerging organic light emitting diode (OLED) display to compete with and ultimately replace the liquid crystal display (LCD)." The five MIT co-founders, Dr. Conor Madigan, Dr. Valerie Leblanc, Dr. Gerry Chen, Prof. Vladimir Bulovic, and Prof. Martin Schmidt, decided to locate the company

in Silicon Valley. In March 2008, TJet finalized terms for a Series A round co-led by Sigma Partners and Spark Capital along with a small strategic investment from Varian Semiconductor Associates.

Compared to LCDs, OLED displays have superior viewing angle, contrast ratio, color saturation, brightness, power efficiency, and pixel response time. If OLED displays can become cost competitive with LCDs, OLED will become the dominant display technology. However, the equipment and process technology does not yet exist to support large volume, low cost manufacturing.

Building upon a printhead concept developed at MIT by the company co-founders, the TJet approach overcomes the problems inherent in other OLED printing technologies (such as inkjet and laser transfer) and enables the printing of OLED displays having high power efficiencies and long lifetimes. By leveraging the intrinsic low-cost and large area scalability of printing, TJet OLED tools and process technology will allow display makers the manufacture OLED displays at substantially lower cost than LCDs.

Dr. Conor Madigan, Co-Founder and CEO

Dr. Sass Somekh, Co-Founder and Executive Chairman (former president of Novellus and EVP of Applied Materials)

Manush Birang, VP of Technology
Eli Vronsky, VP of Engineering

1430 OBrien Drive, Suite A
Menlo Park, CA 94025
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www.tjet-tech.com

Vubiq

Vubiq was incorporated in 2003 and received Series A funding in 2006, led by a Fortune 20 company.

Vubiq recently introduced its 60 GHz integrated radio solution, enabling commercial, government, and academic institutions to utilize the unlicensed 57-64 GHz band for application development.

Vubiq has developed 60 GHz transmitters and receivers complete with high efficiency antennas and low-loss radomes integrated into standard BGA packages. Vubiq's technology is based on SiGe and CMOS. High speed baseband signals can be interconnected directly to the radios, allowing up to 1 GHz modulation bandwidth at 60 GHz.

The V60DSK01 development system enables experimentation and development in the 57-64 GHz millimeter wave band, allowing developers to define the baseband technology of their choice. Users have a selection of differential interfaces for I/Q (vector) modulation, FM or AM. Vubiq's development system includes a 60 GHz transmitter board and 60 GHz receiver board, each with a USB controller. The basic development system will cost $12,500.

Adam Button, CEO (previously worked in investment banking and strategy consulting)

Mike Pettus, CTO (previously Director of Systems Engineering at Metricom)

65 Enterprise, Aliso Viejo, CA 92656
Tel: 949.226.8482, Fax: 815.572.0386
www.vubiq.com

Wi-Chi

Dr. Terri Fiez recently took a leave of absence as Professor and Head, School of EECS at Oregon State University to start a mixed-signal fabless semiconductor company, along with some of his former graduate students and colleagues.

The company, Wi-Chi (pronounced Y-Chee for wireless energy) is focused on energy harvesting technology. In Q2'08, New Enterprise Associates and individual investors provided $9 million in Series

A funding to support about a dozen people this year and ramping up the following year. Wi-Chi is currently looking for experienced analog designers.

Dr. Terri Fiez, CEO and Co-founder (Professor and Head (on-leave), School of EECS at Oregon State)

7646 SW Mohawk, Tualatin, OR 97062
Tel: 541.740.3970
www.wi-chi.com

WideSail

WideSail Technologies was founded in 2007 as a spin-off from McGill University to develop high performance error correction semiconductor IP for developers of digital communications ICs. In May 2008, MSBi Valorisation, an entity dedicated to commercializing innovations and building companies based on technological advancements and inventions originating from McGill University, Université de Sherbrooke and Bishop's University, as well as their affiliated hospitals and research institutes, made an investment in WideSail.

All modern communications rely on error correction of some form. WideSail's technology addresses the errors that occur during wired and wireless digital communications, as well as in semiconductor and magnetic storage devices. Its products provide excellent error correction performance at very high speeds with much lower power than competing technologies.

Low Density Parity Check (LDPC) is being applied to a wide range of communications standards, including established standards such as WiFi and WiMAX where it is often treated as a high-performance option as well as new standards like 10 Gigabit Ethernet, Digital Video Broadcast, and Ultra Wide-Band that rely on LDPC for improved range and robustness.

WideSail has created a new approach to LDPC decoders that provides error correction closer to the Shannon limit than any other coding method. Its architecture also offers low gate count and extremely low power compared to traditional implementations.

The company offers ASIC-targeted RTL with test-benches, verification IP and demonstrator cards using FPGAs in a variety of communications protocols including WiFi (802.11n), WiMAX (802.16e), DVB-S2, 10 Gb Ethernet, UWB, and 4G telephony (UMTS Long Term Evolution or LTE).

Gord Harling, President and CEO (previously founding CEO of Goal Semiconductor, which was sold to Ramtron, and Elliptic Semiconductor, a provider of security SIP)

Dr. Shie Mannor, Chief Scientist (a faculty member at McGill University where he holds the Canada Research Chair in Machine Learning and previously co-founder and Chief Scientist of Kashya, which was acquired by EMC)

Dr. Warren Gross, Chief Architect (a professor at McGill University where he leads a research team focusing on ultra-low complexity iterative decoders and custom high performance architectures)

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Startup Profiles

Achronix

Achronix Semiconductor was formed in 2004 with a mission to develop ultra high performance (>1 GHz) and extreme environment (-260°C to +130°C and radiation hardened) FPGAs and ASICs based on synchronous and asynchronous designs. The company has an exclusive license to four patents from Cornell. When we first talked with the founders,

Achronix had 4 employees, was self funded ($2.5 million) and did not plan to seek additional capital.

After 2+ years of self-funded development, Achronix raised $34.4 million in Series A funding led by New Science Ventures and Battery Ventures and including Entrepia Ventures and Easton Capital Investment Group. Achronix has 60 employees, HQ in San Jose, and R&D offices in Ithaca, New York and Bangalore India.

The company's mission is now to develop "the world's fastest FPGAs, which use a unique patented picoPIPE™ acceleration technology capable of up to 1.5 GHz peak performance." Achronix offers two product lines. The first, a specialized line of products operating near 350 MHz for high radiation and extreme temperature environments, has been shipping for some time.

Recently, Achronix began shipping the world's fastest FPGAs, according to the company. The Speedster family delivers speeds up to 1.5GHz, which represents a 3X increase in performance over existing FPGAs.

The Speedster family is based on Achronix patented (> 25 in various filing stages) picoPIPE acceleration technology, which speeds the way data moves through the FPGA fabric. In the absence of a global clock, picoPIPEs use simple handshake protocols to efficiently control data flow, resulting in significantly improved performance, all along using standard RTL for design-entry and employing familiar FPGA tools. picoPIPE technology can tolerate substantial variations in supply voltage, which enables power consumption to be lowered by adjusting the core supply voltage.

Achronix FPGAs achieve higher throughput compared with existing FPGAs because of the fine-grained pipeline stages. Within conventional FPGAs, signals travel on long routing tracks and

Startup Profiles

pass through routing components, thus suffering from high-capacitance. Additionally, there are often many levels of logic between state-holding elements (registers).

Within Speedster FPGAs, the built-in pipelining ensures that signals only travel on short routing tracks, reducing the capacitance of the signal at each stage. While larger devices may have slightly increased latency, unlike other FPGAs, they do not have decreased throughput as each pipeline stage is capable of holding a new data token. Therefore, the inherent pipelining of picoPIPE technology allows maximum throughput to be maintained, regardless of how large the FPGA is. Fine-grained pipelining also ensures there is a maximum of one level of logic per pipeline stage, allowing an extremely fast data-token rate.

Leveraging picoPIPE technology for the FPGA fabric has two major benefits compared with a traditional fabric. First, when a design is mapped into the picoPIPE fabric, it can be pipelined automatically. Any circuit that will benefit from manual pipelining can automatically achieve increased performance when mapped into picoPIPE technology. Second, the need for global clocks has been removed. picoPIPE technology uses very fine grained local clocking to ensure data can travel at very high speeds.

Achronix FPGAs consist of a traditional synchronous frame surrounding a picoPIPE reprogrammable logic fabric containing Reconfigurable Logic Blocks, Multiplier Blocks, Block RAMs, and Programmable interconnect links. Each of these building blocks operates at 1.5 GHz.

The frame provides all off-chip interfaces, including configurable I/Os, SerDes, clocks, and PLLs, and forms the boundary between the picoPIPE core and these interfaces. Containing up to 40 lanes of 10.3 Gbps SerDes, the Speedster family offers the highest SerDes bandwidth available in an FPGA today, and enables an aggregate SerDes bandwidth of 800 Gbps. The Speedster 10.3 Gbps SerDes supports numerous high-speed interfaces, such as 40G/100G Ethernet, CEI-6G, 10 Gbps backplane, XFI, PCI Express (Generations 1 and 2), XAUI, Serial Rapid IO and Infiniband.

Achronix non-SerDes I/Os are also among the fastest in the industry. Speedster FPGAs include four embedded DDR1/2/3 controllers, each offering up to 72 bits of data at 1066 Mbps. Having embedded controllers saves valuable programmable resources and alleviates design challenges related to DDR implementation. With performance of up to 1000 Mbps (or 1066 Mbps for DDR3) Achronix I/Os ensure data can be shifted into and out of the picoPIPE fabric fast enough to keep up with the 1.5 GHz internal throughput.

Speedster uses familiar LUT-based fabric and standard synthesis and simulation tools so designers can use their existing Verilog and VHDL RTL designs. Achronix has partnered with leading synthesis vendors to make industry-standard tools and methodologies compatible with the Speedster family. The Achronix CAD environment supports both Synopsys (formerly Synplicity) Synplify Pro and Mentor Graphics' Precision Synthesis tools for RTL synthesis. In addition, the Achronix CAD environment provides the necessary tools for physical implementation, performance optimization, timing analysis, simulation, debug, and device programming.

The SPD60, the first device in the Speedster family, has 47,040 LUTs, 3.4 million picoPIPE elements, 144 18kbit block RAMS, 98 18x18 multipliers, 8 5Gbps SerDes lanes, 20 10.3 Gbps SerDes lanes, 4 independent 1066 Mbps DDR2/DDR3 controllers, 16 PLLs, and 768 user programmable I/Os. Future devices will range from the SPD30 with 24,576 LUTs to the SPD180 with 163,840 LUTs. Other blocks like RAM, and I/O scale accordingly. The Speedster family will range in power consumption from less than 20W to around 40W for the very high-performance parts.

Achronix is targeting a \$1.7 billion slice of the ASIC market that traditional FPGAs cannot reach. The Speedster family of FPGAs removes the system performance barriers associated with traditional FPGAs, enabling system speeds of up to 1.5 GHz, 3X the performance offered by any other competitor. This enables its devices to be used in applications usually not addressed by the FPGA market. With up to 40 lanes of embedded SerDes per device, Speedster also enables extremely high I/O throughput.

The SPD60 is manufactured in TSMC's high performance 65nm G+ CMOS process. Achronix has already shipped devices to numerous customers. Early engagement customers are achieving ASIC-like performance in networking, telecom, test and measurement, encryption and other high-performance applications. Additional products are in the works. Volume pricing for the Speedster FPGA family ranges from under \$200 to \$2,500.

John Lofton Holt, founder, Chairman and CEO (previously led Integrated Strategies Group (formerly Saber Security Solutions), a small security technology and venture capital consulting firm in Washington, DC and a founding member of the Booz Allen Hamilton Commercial Information Assurance Consulting Practice)

Howard Brodsky, VP of Business Operations and CFO (previously VP of Finance & CFO at ChipX and Corporate Controller for C-Cube)

Paul Indaco, EVP of Worldwide Sales (previously VP of Worldwide Sales at Actel and Chip Express)

Dr. Rajit Manohar, founder & CTO (previously an Associate Professor of Electrical and Computer Engineering at Cornell University)

Yousef Khalilollahi, VP of Marketing (previously a Marketing Director at LSI Logic custom solutions group and held director level responsibilities in marketing and business development at Actel)

Dr. Kamal Chaudhary, VP of Software Engineering (previously a Distinguished Engineer at Xilinx)

Dr. Ravi Sunkavalli, VP of Hardware Engineering (previously Director of IC Design at Velogix)

Dr. Clinton Kelly, IV, founder & VP of Advanced Research (previously led numerous R&D programs related to ultra-low-power asynchronous microprocessors and FPGAs)

Dr. Virantha Ekanayake, founder (previously an Assistant Professor in the Department of Electrical and Computer Engineering at Johns Hopkins University)

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Enphase Energy

Enphase Energy was founded in 2006 to develop micro-inverter-based solar energy management systems. In January 2008, Enphase raised $6.5 million in funding led by Third Point Ventures. Energy recently raised $15 million led by new investor RockPort Capital Partners and including existing institutional investors Third Point Ventures and Applied Ventures.

Within the solar photovoltaic (PV) market, industry R&D has focused largely on improving the cost and efficiency of solar modules. Traditional solar energy installations deploy a single centralized inverter to convert the DC output from multiple solar modules into AC power.

Enphase Energy has concentrated on improving inverter technology and systems architecture that represent significant constraints on energy harvest and system reliability. The company has pioneered the industry's first networked solar energy system, which includes high-efficiency micro-inverters, communications gateways and web-based analytics and visualization. This integrated system maximizes energy harvest, increases system reliability, and simplifies design, installation and management.

The Enphase system represents a paradigm shift in the solar market from central/string inverter-based systems to distributed Micro-Inverter-based systems. Enphase systems include high efficiency micro-inverters that convert the DC power from each solar module to grid compliant AC power, eliminating the need for a large centralized inverter.

Solar energy system performance is affected by various factors such as module mis-match, obstruction shading, inter-row shading, and obstacles such as dust or debris. In addition, non-uniform changes in temperature, irradiance, and shading create complex current-voltage curves, further affecting energy harvest. This is due to the fact that the performance of the entire system is dictated by the performance of the weakest module.

The Enphase Energy Micro-inverter System solves these problems by providing each solar module the benefit of individual Maximum Power Point Tracking (MPPT). The Enphase's fast MPPT algorithm achieves greater than 99.6% accuracy thereby maximizing energy harvest during variable light conditions. Solar systems using Enphase technology have been shown to increase energy harvest by 5 - 10% over traditional inverter implementations, and in some cases up to 25%.

The Enphase system is comprised of the following three components:

The Enphase Micro-inverter converts the DC output of a single solar module into grid-compliant AC power. Enphase Micro-inverters are per-module inverters that are co-located with each solar module. The Enphase Micro-inverter turns each solar module into a "smart" module by connecting it to the Internet, thereby providing visibility and analysis of solar system performance.

The Micro-inverters have a MTBF of 119 years providing system availability of greater than 99.8%, a key consideration for both commercial and residential installations. The Enphase Micro-inverter Systems dramatically simplify design, installation and management of solar systems leading to Balance-of-Systems and Labor savings of about 15%. All these factors contribute to a greater ROI for solar system owners.

By eliminating the need for a large, central inverter, installation is no longer limited by string design, marginal designs, co-planarity, matched modules, or the burden of finding a location for a loud, hot, space-consuming inverter. Mechanical integration is improved, wiring time is reduced, and the need for DC switching points is removed. Enphase's Micro-inverter system eliminates the inverter as a single point of failure. The distributed Micro-inverter design also allows installations to be expanded over time.

The Enphase EMU (Energy Management Unit) is a communications gateway that allows solar performance data to be transmitted from the micro-inverters across a standard AC power line, eliminating the need for additional wiring, thereby keeping installation costs and complexity down.

Enphase Enlighten is a web-based visualization and analytics tool that provides production insight on a per-module basis. The system constantly monitors each module, automatically detects any shortfall in energy production, establishes a possible cause, suggests solutions and

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(Continued from page 7)

promptly alerts the owner of the issue. Unlike "bolt-on" third party monitoring systems that only monitor the inverter, Enlighten provides visibility into the performance of every individual module.

Enphase already has thousands of units in the field, with installations in commercial and residential solar power systems throughout the continental U.S. and Hawaii. Enphase products are compatible with most major brands of solar modules and are available from leading solar distributors and installers.

Paul Nahi, President & CEO (previously CEO of Crimson Microsystems and CEO and co-founder of Accelerant Networks)

Martin Fornage, Co-founder, CTO (previously led the Hardware Engineering group at Advanced Fiber Communications and a consultant to AFC, Cerent, Cisco, Calix and other companies)

Raghu Belur, Co-founder, VP of Marketing (previously an early engineer at Cerent, which was acquired by Cisco, whereupon he managed the team developing 10Gig interface products)

Greg Steele, VP of Operations (previously VP of Operations and COO at Advanced Fibre Communications, and CEO for the Nelson Family of Companies)

Andrew Nichols, VP of Sales (previously led North American Sales for Xantrex Technology)

Bob Bortolotto, VP of Engineering (previously co-founder and VP of Caymas Systems, which was acquired by Citrix)

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Infinisim

Infinisim was founded to develop a high-speed, SPICE-accurate simulator for large mixed-signal circuits. Dr. Syed Zakir Hussain, Dr. Perry Gee and Dr. Dileep Divekar have developed a number of simulation products that are used widely today in the EDA industry. RASER's team has a combined simulator development experience of more than 50 years.

First generation SPICE engines derived from Berkeley SPICE, focused on accuracy for small transistor circuits without any speedup optimization. Second and third generation Fast SPICE were derived from timing simulators and focused on speedup at the expense of accuracy. The current generation is an incremental enhancement to Berkeley SPICE based on increased efficiency of the SPICE algorithm and/or parallelization. Whether hardware or software accelerated, these engines provide up to 10X speedup and capacity over SPICE.

The complexity of today's mixed-signal designs has surpassed the capabilities of current simulation products and their underlying technologies. As a result, the analysis and verification of tightly coupled analog/digital circuits, developed in 90nm-or-lower process nodes, is resulting in long simulation run times and inadequate verification coverage, which contributes to increased silicon failures. Furthermore, at 40nm and below designs, statistical variations become significant. This requires accurate model evaluations. FastSpice tools cannot deliver the accuracy, and commercial SPICE tools cannot handle the capacity at acceptable performance level.

To address these challenges, Infinisim has developed RASER™ a transistor-level simulator and analysis tool specifically designed for pre-layout and post-layout verification of for mixed-signal ICs. Infinisim argues that RASER is the first simulator in the market that does not trade off accuracy for capacity and performance. RASER guarantees SPICE-accurate results with an average of 50 times speedup and capacity for large mixed-signal circuits. RASER is the fastest SPICE accurate simulator in the market, with the ability to handle full chip capacity of millions of elements.

Underlying RASER's performance is Infinisim's patent-pending Real-time Adaptive Simulation™ (RAS™ technology, which adapts to the changing circuit simulation environment at every time-point of the simulation while using the full device models and adhering to the full SPICE accuracy requirements. Using this technology, RASER is able to automatically and simultaneously deliver SPICE accuracy and handle large-scale mixed-signal circuits. This novel approach has been proven to handle 50X larger designs than traditional SPICE simulators while concurrently providing an average of 50X speed improvement with full SPICE accuracy.

RASER's speed and capacity uniquely position it to run simulations at all stages of design verification, from single-block to full-chip, from pre-layout to post-layout. RASER reduces simulation time from days to minutes while guaranteeing SPICE accurate results. It supports full-chip capacity of millions of elements, providing the highest simulation coverage prior to tape-out. It helps identify analog digital interface issues missed by other tools, reduces design cycle and minimizes mask iterations.

RASER is targeted to those designers who either cannot simulate a large design accurately using their current tool, or who experience extremely long runtimes. It is ideally suited to circuits like SerDes, high-speed wireline/wireless communication channels, precision analog interfaces, image sensors, critical paths in SoCs and clock networks. These designs typically consist of large numbers of elements and require SPICE simulation accuracy with high performance.

RASER is currently being used by several leading mixed-signal designers, enabling customers to eliminate silicon spins, reduce chip design schedule by a minimum of three weeks and dramatically improve product quality and production yield. Infinisim customers have already reported increased verification coverage prior to tape-out, the ability to uncover significant issues related to analog-digital interface, and the ability to verify larger circuits at SPICE accuracy.

Mahmood Panjwani, Chairman & CEO (previously co-founder, President and CEO of iManage, which merged with Interwoven, and founder and CEO of Q-Image)

Samia Rashid, Co-founder and President (previously part of the start-up team at iManage)

Dr. Zakir Hussain Syed, Ph.D., Co-founder and CTO (previously at Simplex Solutions, which was acquired by Cadence, since its inception where he was responsible for the development of verification products)

Dr. Perry Gee, Ph.D., VP of Engineering (previously part of the original development team at Simplex Solutions and director of semi-custom CAD at Synergy Semiconductor)

Dr. Dileep Divekar, Ph.D., VP of R&D (25+ years in EDA; author of "FET Modeling for Circuit Simulation"; co-authored 50+ technical publications)

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Nemochips

NemoChips was founded in early 2007 to develop "next-generation mobile application processor SoCs to provide DVD quality audio and video for future handheld devices." The company is headquartered in Silicon Valley with development centers in Fremont, California and Shanghai China.

NemoChips argues that its devices will usher in a new era in mobile computing with ultra-high performance for streaming HD video, and power usage as much as 10X less than its closest competitor.

The company has successfully taped out a low-power mobile video platform SoC leveraging Faraday's SoCompiler Design Services employing the Common Power Format (CPF)-enabled Cadence Low-Power Solution. The design took 2 months from netlist to tape-out while achieving >99% leakage reduction and 65% dynamic power reduction using advanced techniques such as Dynamic Voltage & Frequency Scaling, Multi-Supply Voltages, and Power-Shut Off.

The MAP-100 is a low power, high performance, multimedia application processor for mobile terminals, including mobile handsets, portable media player and car entertainment system. It delivers DVD quality video to mobile devices without video format limitation. The SoC is fully programmable and capable of supporting most major video standards up to 720p 30fps video decoding with very low power consumption. An open software platform is also built around this chip to provide a complete solution for portable multimedia devices including smart phones, PDA, DPF and PMP, etc.

The device features a 150MHz+ Programmable MediaCore Processor and 300MHz+ ARM926EJ-S Processor with 16KB I and 16KB D Cache, with Jazelle JAVA support. The Video Hardware Codec supports numerous standards including H.264 Baseline, MPEG4 ASP, VC-1 SP, AVS-M, and WMV7/8/9 decoder D1@ 30fps. Other features include a hardware encryption/decryption engine, numerous I/O, memory, expansion, and display interfaces, NTSC/PAL video encoder with integrated DAC output, and camera sensor interface with image processing. The device is fabricated in 0.13um CMOS.

NemoChips recently taped out its next-generation processor, designed jointly with Faraday's SoCompiler Design Services. The Faraday PowerSmart design flow speeds the development of low-power technologies using industry-standard flows along with best-in-class tools such as PowerTheater.

NemoChips designers scored their biggest power savings early in the design cycle thanks to Sequence Design's PowerTheater prowess in RTL power analysis and power prototyping where Sequence estimates as much as 80% of total power savings can be realized. PowerTheater is claimed to be the first RTL power analysis and power prototyping solution with the singular ability to accurately analyze power at RTL and support power management techniques such as voltage islands, mixed voltage threshold, power gating, and clock gating.

Dr. Lifeng Zhao, President
Danian Gong, Ph.D., CTO, VP Engineering (previously president at VMChips)

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Powervation

Powervation was founded in January 2006 to develop "a new class of Auto-control™ digital power IC solutions that optimize power-supply performance and efficiencies for manufacturers of electronic systems used in computing, communications and consumer applications." Powervation maintains corporate offices in Ireland and Palo Alto, Calif., with sales centers located throughout Asia, Europe and the U.S.

In September 2006, the company raised funding from 4th Level Ventures,

Startup Profiles

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Shannon Development and the founders. In December 2007, the company closed US$10 million in Series A funding jointly led by Intel and Scottish Equity Partners and including comparable participation from Venture Tech Alliance along with a follow-on investment from 4th Level Ventures. Enterprise Ireland, a state development agency, continues to support the company and retains its original investment.

According to digital power market research firm, Darnell Group, "The portion of the power supply market that will employ some form of digital loop control is expected to grow at an average annual rate of about 45% for the next five years. By 2013, the digital power converter market is projected to exceed 1.4 billion units."

Powervation recently unveiled its Auto-control™power-conversion technology, which marks a fundamental shift in the analog/digital power-management playing field, according to the company. In a simple Plug-and-Power™package, the company's technology delivers a reliable, scalable solution that reduces design complexity and cost, and accelerates time-to-market of eco power-smart systems.

At the heart of Powervation's solution is Auto-control, a digital control algorithm, implemented in firmware, which provides a true adaptive adjustment of the converter to take into account all system variations, while guaranteeing stability of the converter. Auto-control greatly simplifies what was once the time-consuming "black art" of designing analog compensation loops, which were sub-optimal by necessity and designed for worst-case conditions.

Auto-control enables a DC/DC control circuit to sense circuit conditions such as load, capacitance, inductance, etc.,

and automatically adapt the power-control function to compensate accurately. This stabilizes voltage conversion and transient response over a wide range of conditions.

Whereas conventional analog/digital solutions require complex calculations to compensate the controller, Powervation's Auto-control capability regulates controller behavior on a cycle-by-cycle basis, searching for any modification in the system operation. The entire system parameters are estimated and contained in a single parameter —"MOJO", which allows a simple adjustment knob for performance enhancement and guaranteed stability.

Powervation's Auto-control algorithm means that the power converter is truly self-contained. It can be plugged directly into a system and immediately operate at peak performance without user intervention. This Plug-and-Power capability enables outstanding performance without advanced expertise in control theory, firmware coding or running complex simulations.

Early test results reveal system efficiency gains of up to 30%, along with a 50% improvement in transient response. A tiny footprint adds to the advantages, which also include a 65% reduction in overall system components when compared to analog solutions. PowerVation's next-gen solution will improve transient deviation by another 50%.

The first product utilizing Auto-control is Powervation's Plug-and-Power controller aimed at power converter solutions in communications, computing and consumer applications. The new chip will be available in Q1'09.

Antoin Russell, CEO (previously managing director of Power-One, Ireland and VP of R&D)

Alan Dunne, GM (previously Centre Manager for PEI-CSRC and a design

engineer with several Irish companies)

Karl Rinne, Ph.D, CTO (previously a University Lecturer in the Electronics and Computer Engineering department at the University of Limerick and Principal Design Engineer with Artesyn Ireland, Commergy Ireland and, Siemens Germany)

Frank Cassidy, VP, Finance (previously VP of finance at Power-One)

Benoit Herve, VP, Marketing (previously product line/marketing manager at Zilker Labs and headed up strategic marketing for the MOSFET and Integrated Solution Business Unit at ON Semiconductor)

Jeff Purchon, VP of Global Sales (previously responsible for business development in Asia for Enpirion and held VP of International Sales and Marketing for International Power Devices, which was subsequently acquired by Power-One)

Anthony Kelly, Ph.D., VP, Digital Control (previously worked at Analog Devices, Cadence and STMicroelectronics)

Patrick McNamee, VP, Operations (previously VP of product engineering at Cambridge Silicon Radio)

Eamon O'Malley, Ph.D., VP, Digital Design (previously an ASIC design engineer with S3Group, Philips Semiconductors and the Circuits and Systems Research Centre at the University of Limerick, Ireland)

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People

Alchimer S.A., the thin films for TSV metallization company, has appointed **Dr. Claudio Truzzi** as CTO. Dr. Truzzi has previously served as CEO of IC packaging consultancy Convergix and CTO and VP at CS2. Most recently, he worked as an independent consultant to several large players in the EMS, semiconductor manufacturing equipment and wafer-level process companies.

Alchimer, a spin-out from France's CEA (Commissariat á l'Energie Atomique), has developed materials and process IP for creating thin coatings on the inside of high-aspect ratio through-silicon vias (TSVs). Since conventional techniques have reached their limit at TSV aspect ratios of 3:1, Alchimer's technology, which enables TSVs with aggressive aspect ratios of 10:1 and greater, is well placed to drive the adoption of 3D IC packaging. Steve Lerner, CEO. www.alchimer.com

Altair Semiconductor, a provider of 4G mobile ICs for handheld devices, has appointed **Mark Rice** as VP and GM, Americas. Rice previously was Director, Asia Business Development for DSP systems at TI and VP of Americas Sales for Alcatel Microelectronics. Oded Melamed, CEO. www.altair-semi.com

BitWave has appointed **Navi Miglani** as Director of Product Marketing. Miglani previously held senior positions within global corporations, including RF Micro Devices, where he was strategic marketing manager of the Radio Systems Business Unit, and Sychip, where he was marketing director. BitWave's BW1102 Softtransceiver RFIC is a highly integrated, low power reconfigurable transceiver. The company will begin volume shipments of production silicon and software later this year. Russell Cyr, CMO and co-founder. www.bitwave.com

CMOSIS has appointed its co-founder and Chairman, **Lou Hermans**, Ph.D., as VP of Marketing and Sales. Hermans was one of the founders of CMOSIS in November 2007. In November 1999, he co-founded CMOS image sensor start-up FillFactory, a spin-off of IMEC, where he served as SVP of Marketing and Sales. The company achieved sales of euro 24 million in 2004, and was acquired by Cypress in August 2004. Guy Meynants, CEO. www.cmosis.com

Dialog Semiconductor has appointed **Mark Tyndall** as VP of Business Development and Corporate Strategy. Tyndall previously held business development and marketing roles at MIPS, Infineon and Fujitsu Micro GmbH. Dr. Jalal Bagherli, CEO. www.dialog-semiconductor.com

Freescale has appointed **Dr. Lisa Su** as SVP & GM, Networking and Multimedia. Dr. Su joined Freescale in 2007 as SVP and CTO, leading the company's Technology Solutions Organization. She replaces Lynelle McKay, the prior GM, who has resigned. Dr. Su will continue in the role of CTO until a replacement is found. Prior to joining Freescale, Dr. Su led global semiconductor R&D for IBM. www.freescale.com

KLA-Tencor has appointed **Mark Dentinger** as CFO, reporting to CEO, Rick Wallace. Most recently, Dentinger served as EVP and CFO for BEA Systems, until the company was acquired by Oracle. President and COO **John Kispert** will be leaving KLA-Tencor at the end of 2008. Kispert served as president and COO since January 2006 and also as interim CFO since March 2008. His management responsibilities will be assumed by Wallace. www.kla-tencor.com

Innovative Silicon, Inc. (ISi), developer of Z-RAM zero-capacitor floating body memory technology, has appointed **Michael Van Buskirk** as SVP of engineering and operations reporting to Mark-Eric Jones, president and CEO.

Van Buskirk previously was CTO and corporate VP of engineering at Spansion. **Jeff Lewis** was promoted to the new position of SVP of marketing and business development. Lewis previously served as VP of marketing and most recently as VP of marketing and product operations. He continues to report directly to Mark-Eric Jones, Lewis joined ISi in January 2006, as VP of marketing. Prior to ISi, he was president and CEO of CiraNova, an analog EDA company. So far, ISi has announced license deals with AMD and Hynix, and expects to name other customers soon. www.z-ram.com

INSIDE Contactless has appointed **Richard Vacher Detourniere** as CFO. Detourniere joins INSIDE from Siparex, a leading independent French private equity and venture capital firm. Most recently, he served as a partner in the area of information and communication technologies. Remy de Tonnac, CEO. www.INSIDEcontactless.com

International Rectifier has appointed **Ilan Daskal** as CFO reporting to Oleg Khaykin, president and CEO. Daskal most recently served as VP of Finance & Business Administration for Infineon's North American Communications Business Group. www.irf.com

Intersil has completed the company's internal reorganization with the consolidation of five product lines into two product groups: Power Management and Analog Mixed Signal. **David Loftus** has been hired as SVP of Worldwide Sales and Corporate Marketing. **Peter Oaklander**, the former SVP of Worldwide Sales, has transitioned to the role of SVP of the Power Management Group. The product lines now under Oaklander's leadership are Consumer; Computing; Industrial, Communications, Automotive; and Specialty. The VP/GMs of Intersil's power businesses, **Michael Althar**, **Davin Lee**, and **Paul Sferrazza**, will report to Oaklander. **Susan Hardman** has been appointed SVP of

People

(Continued from page 11)

the Analog Mixed Signal Group. Hardman previously served as VP and GM, Analog Mixed Signal product lines. Loftus previously was employed at Xilinx, where he had 20+ years of experience in various executive leadership positions, including VP/GM of the General Products Division and VP/Managing Director of Xilinx Asia Pacific. Dave Bell, President and CEO. www.intersil.com

Lattice has appointed **Sean Riley** as Corporate VP and GM, High Density Solutions, and **Chris Fanning** has been promoted to Corporate VP and GM, Low Density and Mixed Signal Solutions. Riley was previously VP of Marketing for MathStar. Fanning most recently was Corporate VP, Enterprise Solutions. Riley may purchase up to 450,000 shares of the Company's common stock at an exercise price of $2.27 per share pursuant to the inducement stock option. Bruno Guilmart, president and CEO. www.latticesemi.com

Luminary Micro has named **Pete Zimmer** as VP of Worldwide Sales. Zimmer was most recently VP of Americas Sales at Microchip. Jim Reinhart, president and CEO. www.LuminaryMicro.com

Microchip's VP and CFO, **Gordon Parnell**, will retire effective December 31, 2008. He will be replaced by **J. Eric Bjornholt**, currently VP of Finance and Corporate Secretary. www.microchip.com

MIPS announced the resignation of **Jose Franca**, founder of Chipidea Microelectronica, S.A. Professor Franca resigned to pursue his personal interests and resume his career in academics. www.mips.com

Multigig, a provider of clock and timing solutions, has appointed **Ali Wehbi** as VP of product and application engineering, **Scott Gardner** as marketing director and **Stewart Speed** as sales

director. Wehbi previously was VP of design engineering at Mobius Microsystems. Gardner has held senior marketing and consulting positions with ICS, Inphi, Oki, and Siliconix. Speed previously was strategic account manager at IDT. Haris Basit, president and CEO. www.multigig.com

MVTS Technologies has appointed **Jim Fraine** as EVP of Sales. Fraine has held senior management roles with Teradyne, Nextest, IMS, and FEI. MVTS is a provider of value-added refurbished automatic testing equipment. Ron Maassen, CEO. www.mvts.com

NEC Electronics America has appointed **Bob Pinteric** as GM of the Multipurpose Microcontroller (MCU) Strategic Business Unit, reporting to Jim Trent, VP of the Multipurpose Microcontroller and Automotive Group. Pinteric has held a number of leadership positions including MCU marketing manager, infotainment operations manager, and director of a flash memory development center while at Motorola/Freescale. www.am.necel.com

Nusym, a provider of functional verification software, has appointed **Nafees Qureshy** as VP of Engineering. Qureshy most recently was VP of Engineering at Arteris, a network-on-chip interconnect IP company. Venktesh Shukla, president and CEO. www.nusym.com

Plastic Logic has appointed **Rik Thorbecke** as CFO. Thorbecke most recently served as VP, Global Finance for Levi Strauss & Company. Previously, he was VP of Global Finance and Audit at Electronic Arts and was a Partner in the Technology Practice of PricewaterhouseCoopers.

Plastic Logic recently opened its commercial scale plastic electronics factory in Dresden, Germany, which will immediately begin building plastic electronic displays for Plastic Logic's first consumer electronics product. The product, an electronic reader for busi-

ness, is scheduled to ship in 1H'09. Richard Archuleta, CEO. www.plasticlogic.com

Qualcomm has promoted **Derek Aberle** to EVP and president of Qualcomm Technology Licensing. **Marv Blecker** has decided to reduce his day-to-day management responsibilities, become a part-time Qualcomm employee, and step down from his current position as EVP and president of QTL. Aberle joined Qualcomm in 2000 after supporting the Company as outside counsel for several years. Most recently, he served as SVP and GM within QTL.

Quantum Leap Packaging has appointed Byoung Lee as **CFO**. Lee was most recently the CFO /VP Special Projects at REMEC Defense & Space. David Grooms, CEO. www.qlpkg.com

SiRF has appointed **Dennis Bencala** as CFO. **Michael Kelly** has been promoted to VP of Sales. **Al Heshmati** has been named VP of Software Engineering. Bencala has been Acting CFO and Principal Financial and Accounting Officer since August. He joined SiRF in 2000 as Corporate Controller, and became Senior Director, Investor Relations and Business Development in August 2007. Kelly joined SiRF in 1998 as Director, North America Sales. In August 2006, he was promoted to Senior Director, North America Sales. Heshmati most recently was Senior Director of Engineering for GPS at Qualcomm. www.sirf.com

Solaicx, the only manufacturer of monocrystalline silicon ingots and wafers to use proprietary growers designed exclusively for solar applications, has appointed **Peter Schwartz, Ph.D.** as VP of product engineering. Dr. Schwartz most recently served as VP of process and equipment for Nanoconduction. Bob Ford, president and CEO. www.solaicx.com

Tessera has launched a search for a new CFO following the resignation of

Charles Webster. **John Keating**, SVP of Corporate Development, has been appointed interim CFO until a permanent replacement is named. Henry "Hank" Nothhaft, president and CEO. www.tessera.com

Texas Instruments has launched its new "Kilby Labs", a center of innovation designed to foster creative ideas for breakthrough semiconductor technology. Kilby Labs will be located on TI's Dallas North Campus and is inspired by the original TI lab, where Jack Kilby invented the Microchip. **Ajith Amerasekera, Ph.D.,** a TI Fellow, has been named director of Kilby Labs. He previously served as CTO for TI's ASIC division. Gregg Lowe, SVP and the project's executive sponsor. www.ti.com

Trident Microsystems has promoted **Dr. Hungwen (Wen) Li** from SVP of Strategic Marketing to Chief Marketing Officer and has appointed **Saeid Moshkelani** as SVP, Engineering. Prior to Trident, Dr. Li was SVP and Chief Marketing Officer for Huahong International and founder, President and CEO of RedSwitch. Moshkelani previously served as VP of Engineering and Operations for Dust Networks and VP, Engineering and Operations, Consumer Division for LSI Logic via the acquisition of C-Cube where he served as VP, Engineering and Operations. Sylvia Summers, CEO and President. www.tridentmicro.com

Virage Logic has appointed **Brian Sereda** as VP of finance and CFO, reporting to Dan McCranie, CEO and chairman. **Daniel LaBouve** was named VP of global operations, reporting to Dr. Alex Shubat, COO. LaBouve takes over the operational responsibilities from **Ehsan Rashid** who has been appointed to the newly created position of VP of Japan sales. Sereda most recently served as CFO and treasurer at Proxim Wireless. LaBouve previously served as VP of engineering at Innovative Silicon and VP

of engineering for ARM's physical IP division. www.viragelogic.com ∎

Funding & IPOs

Altair Semiconductor, a provider of 4G mobile ICs for handsets and handheld devices, has closed a $22M Series C funding round, in the form of a combined equity and credit investment. The round was led by Pacific Technology Fund and joined by ETV Capital and returning investors. The funding will be used to support Altair's global expansion, sales and customer support, as well as future development of chipsets for WiMAX, LTE and XGP.

Altair's business has gained considerable momentum since its $18M Series B round of funding in May 2007. Less than six months after releasing the ALT2150, which is claimed to be the smallest and most power-efficient mobile WiMAX processor, Altair's solution is considered an industry benchmark for mobile, handheld devices, and is integrated in some of the world's leading device and module manufacturers' products.

Recently, Altair had been awarded the leading supplier position of chipsets for wireless devices operating on Willcom's next generation PHS ("XGP") in Japan, a 4G technology similar to mobile WiMAX. On the LTE front, Altair has created strategic partnerships with key ecosystem members to accelerate the development and interoperability of its LTE solution. Oded Melamed, CEO and co-founder. www.altair-semi.com

ASK has secured 11 million euros in funding from XAnge and CDC Entreprises (5M euro each) and CDC Innovation, an early investor (1M euro). Founded in 1997, ASK is a manufacturer of RFID and contactless products, including cards, tickets, readers and eCovers for electronic passports with over 120 million products delivered in more than 50 countries. All products are

based on a patented technology (53 patents) that combines a chip and a silver antenna linked together with a gold bump.

Clients and references include most of the public transport authorities in Europe, such as RATP, as well as public transport authorities in the largest cities of the US and Asia. ASK was the supplier of the 14.5 million contactless tickets of 2008 Beijing Olympic Games. In 2007, the company reached a turnover of 30.5 million euros with strong growth potential. Bruno Moreau, CEO. www.ask.fr

ASOCS, developer of a wireless Multi-Comms processor for handheld devices, has secured $8 million led by FinTech GIMV Fund and included existing investors Vertex Venture Capital and Harel Hertz Investment House. ASOCS has raised $20 million to date. Gilad Garon, CEO.

AVA Solar, an advanced thin-film photovoltaic (PV) module manufacturer located in Fort Collins, Colorado, has completed its second institutional equity round of financing. This $104 million funding was led by DCM and included new investors Technology Partners, GLG Partners and Bohemian Companies as well as prior investors, including Invus. The funds will be used to complete AVA Solar's first production facility in Longmont, Colorado, which will have the capacity to produce 200 megawatts of PV modules annually. Pascal Noronha, CEO. www.avasolar.com

CriticalBlue, a provider of accelerated embedded software solutions, has raised $4M of private equity funding from Toshiba and Scottish Venture Fund as well as previous investors Herald Ventures, Lanza TechVentures and Pentech Ventures. David Stewart, CEO. www.criticalblue.com

GateRocket has completed a $3 million Series A round of financing led by New

Funding & IPOs

Atlantic Ventures, Massachusetts Technology Development Corporation and Long River Ventures. Seed-stage investors and Angel groups also participated to bring the total GateRocket has now raised to $4.5 million. This round of financing will enable the company to engage more customers and broadly deploy its solution for FPGA verification and debug. Dave Orecchio, President and CEO. www.gaterocket.com

GreenVolts, a provider of concentrating photovoltaic (CPV) technology, has secured $30 million in Series B funding from Oak Investment Partners. GreenVolts is a utility-scale solar technology company focused on delivering wholesale-distributed generation solutions that can produce the lowest cost solar energy on a massive scale. A portion of the funds will be used for its GV1 project, the world's largest non-silicon CPV power plant built as part of its agreement with Pacific Gas & Electric. The first megawatt of GV1 will be delivered later this year. Bob Cart, founder and CEO.

Microstaq (see profile in April 2005 issue) has closed a $12.5 million Series B financing round led by Good Energies, with follow-on investments from existing investors Yaletown Venture Partners and Polygon Group. Microstaq develops MEMS-based flow control valves that enable material energy savings in HVAC, Refrigeration, Automotive, and other sectors.

Microstaq claims to be the first company to develop MEMS valves and commercialize them for macro-flow and macro-pressure fluid control applications at extreme temperatures. These characteristics make the products suitable for a number of different applications, including HVAC systems, which represents roughly a quarter of all electricity consumption in the U.S.

Microstaq's products enable energy efficiency gains of 20% or more in HVAC systems. Energy savings come from the valve's ability to precisely and electronically control fluid flow, down to 0.5% increments, which allow systems of all types to be more efficiently operated. The MEMS valves also have fewer moving parts than their conventional counterparts, increasing reliability and reducing maintenance costs. Electronic controllability eliminates the need for tuning. Microstaq's products also offer lower overall system cost. The company is now in late stage development work with major HVAC OEM manufacturers. Sandeep Kumar, CEO. www.microstaq.com

Nanosolar has added new capital and brought its total amount of funding to date to just below $500 million, as part of a strategic $300 million equity financing. The Nanosolar Utility Panel gives utility-scale power producers the solar panel technology to build and operate cost efficient solar power plants. AES (one of the world's largest power companies), the Carlyle Group, EDF (the world's largest electric utility), and Energy Capital Partners signed off on investments into Nanosolar through Riverstone Holdings, EDF Renewables, and simultaneously formed AES Solar. A fraction of the oversubscribed round also included financial investors such as Lone Pine Capital, the Skoll Foundation, and Pierre Omidyar's fund as well as returning investors GLG Partners, Beck Energy, and Conergy founding investor Grazia Equity. Martin Roscheisen, CEO

Nujira, has closed $18 million in Series C funding led by new investor BankInvest Group, New Energy Solutions Fund and including existing investors Amadeus Capital Partners, 3i, Cambridge Capital and Cambridge Angels. The funding enables Nujira to continue with the commercialization of its Coolteq products for the cellular network and broadcast markets and to accelerate development of its Coolteq handset silicon due to be launched during 2009.

Nujira High Accuracy Tracking (HAT™ Modulator technology dynamically controls the power supply to the circuit in line with the transmission performance required, enabling the creation of highly efficient RF Power Amplifiers for 3G and 4G cellular networks and DVB digital broadcast transmissions. Nujira is engaged with major OEMs and has a strong pipeline. The company is in negotiation with several more OEMs, which will bring its market coverage to almost 100% in the Cellular Infrastructure market, with TV Broadcast not far behind. Tim Haynes, CEO and founder.

Nusym, a provider of functional verification software, has raised $8 million in Series B financing led by Voyager Capital, with Simmons Goodspeed Investment Management, and a public company participating as a "strategic investor". Previous Series A investors Woodside Fund and Draper Richards, also participated. The product line is currently being evaluated on leading edge designs at Nusym's semiconductor partners. Venktesh Shukla, president and CEO. www.nusym.com

Percello has completed a $12 million Series B financing round co-led by Granite Ventures and Vertex Venture Capital, and including T-Mobile Venture Fund as a strategic investor. The company's $6 million Series A was led by 7-Main Ltd. Percello was founded in 2007 to develop baseband processors for the 3G and LTE femtocell market. Shlomo Gadot, CEO. www.percello.com

PowerGenix, manufacturer of nontoxic, high performance rechargeable Nickel-Zinc (NiZn) batteries, has closed $30 million in Series D financing led by Bessemer Venture Partners and included existing investors Advent International, Angeleno Group, Braemar Energy Ventures, Granite Ventures, OnPoint Technologies and Technology Partners. The company has signed $75 million in

customer supply agreements since beginning high-volume manufacturing in March of this year and is supplying NiZn cells into multiple markets including power tool, lawn and garden, consumer AA, military and light electric vehicles (LEV).

PowerGenix's NiZn cells pack one-third more power and energy than existing rechargeable alkaline cells. The company's cells have also received compliance, under third-party testing, with the European Union's Reduction of Hazardous Materials (RoHS) and Battery Directive requirements. In the U.S., the Rechargeable Battery Recycling Corporation (RBRC), which represents 90% of the global battery industry, recently expanded its recycling program for the first time in seven years to include PowerGenix's NiZn, the most recyclable rechargeable chemistry on the market. Dan Squiller, CEO.

Runcom, a pioneer in OFDMA-based silicon for user terminals and base stations that comply with the IEEE802.16e-2005 standard for WiBro and Mobile WiMAX applications, has secured $10 million in Series C funding from TLcom Capital. This is only the second round of financing for Runcom. The previous investment round currently held by SMAC Partners from Germany and Concord from Israel was executed in 2000. Runcom is already profitable.

Runcom's RNA200 ASIC was the first and most popular Mobile WiMAX compliant ASIC in the market for user terminals with more than 250,000 sold. The RNU2000 Base Station System on Board was first in the market as well with more than 1,000 fielded. Dr. Zion Hadad, founder and CEO.

Xunlight, developer of low-cost and flexible thin-film silicon solar modules, has received $11 million of additional financing from institutional investors. The investment was led by Rabo Ventures, a division of Rabobank, a top 25 global financial institution based in the

Netherlands. Existing investors Trident Capital and Emerald Technology Ventures also participated. This investment accompanies a recently awarded $4.97 million grant from the State of Ohio's Third Frontier Projects, which will be used to further improve the Company's manufacturing technologies. The Company operates a 2 Megawatt roll-to-roll pilot production line and is building a 25 Megawatt roll-to-roll production line to manufacture flexible and lightweight photovoltaic products. Xunming Deng, CEO. www.xunlight.com ∎

Mergers & Acquisitions

Freescale has signed a definitive agreement to purchase **Intoto**, a provider of software platform products for networking and communications equipment manufacturers. Terms were not disclosed. Freescale intends to apply Intoto's technology and talent to create high-performance applications and software components optimized to improve system performance, streamline development and enhance software support for its QorIQ multicore communications platforms. QorIQ platforms are Freescale's new brand of communications processors designed to take embedded multicore to new levels of adoption. Lynelle McKay, SVP & GM, Freescale's Networking & Multimedia Group. www.freescale.com

International Rectifier has rejected Vishay unsolicited, non-binding proposal to acquire all of the outstanding shares of IR for $21.22 per share in cash. The Board believes that the proposal by Vishay does not value the Company and its future prospects appropriately. www.irf.com

QP Semiconductor, a provider of mission-critical ICs for the military, aerospace and high reliability industries, has agreed to be acquired by **e2v technologies**, a developer of high technology components and sub-systems. With sales of approximately $360 million and

1,800 employees worldwide, publicly held e2v is much larger than privately held QP Semiconductor, with sales of about $24 million and 90 employees. Both firms are solidly profitable with strong balance sheets, and the product portfolios of the two companies are entirely complementary. John Stannard, QP Semiconductor co-founder and president; Keith Attwood, e2v's CEO. www.e2v.com, www.qpsemi.com

Samsung has sent a letter to the Board of **SanDisk** reiterating its proposal to acquire SanDisk for $26 per share in cash, which would deliver an immediate cash premium of 93% over SanDisk's closing share price on September 4, 2008.

Tegal (NASDAQ: TGAL), a manufacturer of plasma etch and deposition systems, has signed an agreement with **Alcatel Micro Machining Systems** (AMMS) and **Alcatel-Lucent** to acquire their **Deep Reactive Ion Etch** (DRIE) and **Plasma Enhanced Chemical Vapor Deposition** (PECVD) products, and the related IP, directed at 3D wafer-level packaging applications. The restricted stock and cash deal, valued at $5 million, is expected to close later this month. At closing, Tegal will pay to AMMS $1 million in cash and $4 million worth of newly issued shares of Tegal common stock.

The agreement calls for the continued support by AMMS of the existing installed base of DRIE tools in use by MEMS and integrated device manufacturers. Tegal will continue the development of the AMMS DRIE product line, including the integration of the AMMS process modules on its Compact bridge platform and the completion of a 300mm process chamber. Thomas Mika, Chairman, President and CEO of Tegal. www.tegal.com, www.alcatelmicro machining.com

XtremeEDA, an Ottawa-based professional services company specializing in the verification and design of ASICs and

M&A

FPGAs, has merged with **ESLX**, a US-based company offering design and educational services at the electronic system-level (ESL) Now a wholly-owned subsidiary of XtremeEDA, ESLX has been renamed and will operate as a US-based company, XtremeEDA USA. The combined companies will offer custom solutions across the full spectrum of the electronics design chain for architectural modeling, IP integration and verification of highly complex chips and systems. Claude Cloutier, president of XtremeEDA; Jack Donovan, president of XtremeEDA USA. www.xtreme-eda.com ■

Business & Financials

Alliance Semiconductor's Board has determined to begin proceedings to dissolve the corporation. The company has for some time been considering whether to re-invest in another business or to liquidate and distribute its net assets to shareholders. President and CEO, **Mel Keating**, has resigned to further reduce the Company's costs, continuing the substantial cost reductions since the Company sold its operating businesses in fiscal 2007.

AuthenTec (NASDAQ: AUTH), a provider of fingerprint sensors and solutions, updated revenue estimates for Q3 and FY2008 and reported the loss of a 2009 design-in opportunity at a significant PC customer. Based on order trends and discussions with customers, AuthenTec now expects Q3'08 revenue to range between $18.2 and $18.5 million and FY2008 revenue to range between $69 and $71 million. This represents an increase from the $15.1 million reported in Q3'07 and $52.3 million reported for fiscal 2007.

Additionally, AuthenTec has been notified by a significant PC customer that it does not presently plan to use AuthenTec's fingerprint sensors in its next design cycle in late 2009. AuthenTec anticipates an impact to its sales will occur in 2H'09. The business of this customer represented approximately 40% of AuthenTec's revenue in Q2'08 and is expected to represent approximately 30 to 35% of revenue in Q3'08. www.authentec.com

ChipMOS LTD. (NASDAQ: IMOS) announced that its consolidated subsidiary, MODERN MIND TECHNOLOGY LIMITED, has completed the US$130 million investment commitment to ChipMOS TECHNOLOGIES (Shanghai) LTD. with the injection of the remaining US$7.5 million registered capital in early August. ChipMOS is a provider of semiconductor testing and assembly services with facilities in Hsinchu and Southern Taiwan Science Parks in Taiwan and Shanghai.

Initially, US$250 million of registered capital for ChipMOS Shanghai was committed by the Company. The Company sought approval for reduction of registered capital to US$130 million and such approval was granted by the Shanghai Foreign Investment Commission in July 2008. The Company does not believe that the reduction will adversely affect planned operations of ChipMOS Shanghai. The reduction of the investment commitment and the completion of the investment mean that ChipMOS will not be required to make an additional US$120 million investment prior to December 7, 2008. www.chipmos.com

Focus Enhancements (NASDAQ: FCSE) has filed a voluntary petition for relief under Chapter 11 of the U.S. Bankruptcy Code. Six of the company's seven Board members have resigned. Brett Moyer, President and CEO. www.focusinfo.com

NeoMagic (Nasdaq: NMGC) announced a cessation of efforts to raise additional capital. As a result, NeoMagic is making efforts to wind-down its operations and has terminated employment for substantially all of its operational and engineering employees in all worldwide locations. Beginning September 19, 2008, management, acting based upon a plan approved by the Board, eliminated 52 positions. www.neomagic.com

NVIDIA announced a workforce reduction to allow for continued investment in strategic growth areas. As a result, NVIDIA expects to eliminate approximately 360 positions worldwide, or about 6.5% of its global workforce. NVIDIA will continue to invest in selective high-growth opportunities like its CUDA parallel computing technology and Tegra mobile single-chip computer. Jen-Hsun Huang, president and CEO. www.nvidia.com

NXP has announced a redesign program that will bring NXP to a healthy financial situation and position the company for future growth. The changes come in response to a challenging economic environment, a weak US dollar, and the reduction in size of the company after moving its wireless business into a joint venture with STMicroelectronics.

The redesign program includes major reduction of NXP's manufacturing base, its central R&D, and support functions. This program is expected to affect approximately 4,500 people globally and will result in annualized savings of $550 million. The restructuring cost will result in an estimated cash out of $800 million.

Moving forward, NXP will focus on its Automotive, Identification, Home, and MultiMarket businesses where it has a high share of innovative products and market leadership positions. The redesign measures will establish NXP with a strong base to achieve its mid-term targets to deliver profitable growth with 15% EBITA and positive cash flow.

Changes to the manufacturing operations reflect NXP's long term asset-light strategy, the need for a balanced

geographical cost base and commitment to ongoing customer programs. The program entails the migration to more advanced production processes and reduction of excess capacity in older technologies, while maintaining a strong manufacturing presence in Europe. NXP plans to consolidate the majority of its production to two higher capability European fabs: Nijmegen and Hamburg, and to SSMC in Singapore.

As a result, four factories are planned to be sold or closed. The fab in Fishkill, New York, USA will be closed ultimately in 2009. Additionally, two other factories are planned to be closed by 2010: the "ICN5" part of the NXP facility in Nijmegen, Netherlands, and part of the "ICH" fab of the Hamburg facility, Germany. NXP's fab in Caen, France will be put on the market for sale.

After the restructuring, NXP will invest 16 to 17% of sales in R&D, which is in line with leading semiconductors companies. The changes will lead to a reduction in annual operating expenses of $250 million and are expected to be implemented mostly during 2009. Frans van Houten, CEO. www.nxp.com

Transmeta (NASDAQ: TMTA) has initiated a process to seek a potential sale of the Company, with the assistance of Piper Jaffray & Co., after actively exploring a full range of strategic alternatives over the past few months and after strengthening its balance sheet. This year, as a result of its successful licensing activities, Transmeta will collect at least $265 million of cash payments for its IP and patents.

Transmeta has also entered into two agreements with Intel relating to the licensing of Transmeta technologies and IP. Pursuant to these two agreements, Transmeta expects to receive cash payments from Intel totaling $91.5 million before the end of Transmeta's current fiscal quarter ending September 30, 2008. Les Crudele, president and CEO. www.transmeta.com ■

Market Research

Worldwide sales of semiconductors grew by 7.6% to $22.2 billion in July from July 2007 sales of $20.6 billion. Sales grew by 2.8% from June when sales were $21.6 billion. Year-to-date sales through July were $148.3 billion, an increase of 5% from the same period of 2007 when sales were $141.3 billion. Sales of DRAMs and NAND flash memory continued to decline as a result of continuing price erosion. Total semiconductor sales excluding memory products increased by 11.6% year-on-year and by 3.2% sequentially.

300mm for the first time accounts for the largest share of wafer manufacturing capacity and actual wafers processed, with 44% of total capacity and 47% of total silicon processed. Overall capacity utilization remains high at 89% with leading edge above 95%. Consumer electronics, PCs and cell phones account for about 80% of chip demand. LCD TV units are projected to increase 32% this year, and digital set top boxes and digital still cameras will both be up around 20%, with PC unit growth of about 13% and cell phone growth of over 10%. www.sia-online.org

North America-based manufacturers of semiconductor equipment posted $884 million in orders in August 2008 and a book-to-bill ratio of 0.83, according to **SEMI**. The three-month average of worldwide bookings in August 2008 was $884 million, about even with the final July 2008 level of $889 million, and about 36% less than the $1.37 billion in orders posted in August 2007. The three-month average of worldwide billings in August 2008 was $1.07 billion, about 1% less than the final July 2008 level of $1.08 billion, and almost 37% less than the August 2007 billings level of $1.68 billion. www.semi.org

Worldwide semiconductor manufacturing equipment billings reached $7.83 billion in Q2'08, 26% less than Q1'08 and 29% less than the same quarter a year ago, reports **SEMI**. Worldwide

WW Semiconductor Manufacturing Equipment Billings ($B)					
Region	**2Q'08**	**1Q'08**	**2Q'07**	**2Q08/1Q08 (Q/Q)**	**2Q08/2Q07 (Y/Y)**
Europe	0.52	0.73	0.62	-29%	-15%
China	0.47	0.81	1.22	-42%	-61%
Japan	1.93	2.39	2.06	-19%	-6%
N. America	1.25	1.84	1.51	-32%	-17%
Korea	1.41	1.74	1.77	-19%	-20%
Taiwan	1.45	2.37	3.20	-39%	-55%
ROW	0.80	0.67	0.63	19%	26%
Total	7.83	10.56	11.01	-26%	-29%
Source: SEMI/SEAJ September 2008					

PC Shipments By Region And Form Factor (in millions), 2007-2012							
Region	**Form Factor**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
USA	Desktop & x86 Server	37.0	35.5	33.7	32.6	31.1	29.6
	Portables	30.0	35.3	41.1	47.5	54.1	61.1
	Total	67.0	70.8	74.8	80.2	85.2	90.7
Int'l	Desktop & x86 Server	124.1	127.7	133.0	141.1	147.6	154.7
	Portables	78.0	112.8	146.2	180.3	209.0	237.2
	Total	202.0	240.5	279.2	321.3	356.6	391.9
WW	Desktop & x86 Server	161.1	163.2	166.6	173.7	178.7	184.3
	Portables	108.0	148.2	187.4	227.8	263.1	298.3
Total		269.1	311.4	354.0	401.5	441.8	482.6
Source: IDC Worldwide Quarterly PC Tracker, September 2008							

Market Research

(Continued from page 17)

semiconductor equipment bookings reached $6.99 billion in Q2'08, 30% less than the same quarter a year ago, and 13% less than the bookings figure for Q1'08. www.semi.org

Worldwide PC shipments are projected to grow by 15.7% in 2008 to reach 311 million units, reports **IDC**. Growth will remain in double-digits through 2011, with growth above 9% in 2012, boosting annual shipments to over 482 million in 2012. ■

Emerging Trends

iRex has launched the iRex 1000 series **Digital Reader**. Although the iRex iLiad products with their larger screen and superior functionality have been successful, the company recognized the need for a new generation solution for business. The result is the iRex 1000 series, offering superior functionality and a 10.2-inch screen size to allow easy reading and referencing of documents from A4 Powerpoint presentations to sophisticated PDF files and from HTML to TXT and JPEG.

Weighing less than 570 grams and only 1.2cm deep, the 1000 series is an open system, which synchronizes easily with the PC and is able to read all common formats. The large display has 16 grey tones and storage capacity is delivered via a changeable 1GB SD card. The chargeable built in Li-Ion battery has sufficient power to last for several days. iRex was founded in 2005 as a spin-off from Philips The iRex team developed the electronic paper display for the Sony Librie in 2004. Hans Brons, CEO. www.irextechnologies.com

Ultra-mobile computing could far outsell desktop and notebook PCs in the long run, and is now garnering much attention from semiconductor firms, reports **In-Stat**. Intel is gearing up to do battle with ARM. There will be no clear semiconductor maker "winner" in the short run. www.instat.com

The **HomePNA Alliance** announced that more leading North American telcos are deploying its technology and that HomePNA was installed in more North American homes in the last quarter than any other coax home networking solution. In addition, HomePNA announced that TELUS, the $9 billion Canadian telecom company, has chosen the HomePNA 3.1 technology for its TELUS TV service offering. HomePNA delivers data throughput of up to 320 Mbps over existing coax wires. www.homepna.org

HomeGrid Forum announced continued progress and cooperation towards advancement of the International Telecommunication Union's Standardization Sector (ITU-T) **G.hn next generation home networking standard**. The members of the ITU-T's G.hn Rapporteur Group are creating a specification for a single MAC/PHY technology that can run over coaxial cable, phone lines, or power lines. homegridforum.org ■

New Products

Advent Solar has unveiled Advent Solar Ventura Technology, its cell-to-module solar architecture. Ventura Solar Technology provides a platform-level design by combining Emitter-Wrap Through (EWT) back-contact cells with semiconductor device manufacturing methods to create a highly scalable platform for module manufacturing.

With Ventura Technology, Advent Solar will develop solar cells and modules that deliver high energy output by optimizing silicon light capture, and dramatically improving cell and module-level connectivity to minimize resistive losses. The architecture provides higher cell-to-module efficiency, while using thinner silicon wafers to reduce costs.

By eliminating the front grid, more sunlight becomes available for electrical conversion. EWT provides higher light capture and efficient distribution of energy to the backside contacts. The Ventura architecture combines the EWT back contact cell design with MMA to deliver a scalable, high output module platform. Monolithic Module Assembly (MMA) enables fully automated module assembly, applying proven, high volume, high precision semiconductor-style manufacturing techniques. Peter Green, president and CEO. www.advent solar.com

Ambric has introduced its Ambric Rapid Media Processing (RMP) platform, a collection of five elements: the Am2000 family of Massively Parallel Processing Array (MPPA) devices; the aDesigner tool suite and libraries; the Am2045 GT family of reference boards; a rich set of codec IP content; and the OpenVIS compliance specification, which enables interoperability of codecs under a common host application and hardware platform. Many customers and third party IP providers are adopting the RMP platform to create a range of interoperable codecs and video processing IP. www.ambric.com

Analog Devices has created a MEMS microphone capable of high-fidelity audio/video playback, conference calling, TIA-920-compliant VoIP, voice recognition, and other functions. ADI combined audio applications know-how with MEMS technology to design a new family of microphones with the industry's highest SNR of greater than 61-dB A-weighted. Today, the highest quality sound available in a cell phone is just 55 dB. The new omni-directional input microphones are available with digital output or analog output and deliver the industry's flattest frequency response from 100 Hz to greater than 15kHz. Today, MEMS microphones account for a bit less than 10% of the total market in units, but shipments are expected to increase by 32% yearly over the next 4

years to exceed 1 billion units in 2012, according to iSuppli. Samples now. Mark Martin, VP, Micromachined Products Division. www.analog.com/mic

Cambridge Analog Technologies, a developer of ultra-low-power high-performance analog ICs, has successfully taped out low-power ADCs and digital PLLs using Cadence Virtuoso IC 6.1.3, the latest version of the Cadence custom IC platform. Kush Gulati, president, CEO and co-founder.

Celeno Communications has introduced its CL1300 WiFi Chip for service providers, which can reliably stream up to four concurrent and different HD streams with whole-home coverage while maintaining wire-like quality of experience. The CL1300 is a standards-based 802.11 SoC targeted at wireless video home networking access point applications that includes full 802.11 PHY and MAC functionality, a wireless network processor and an embedded CPU.

Powered by Celeno's patent pending OptimizAIR technology, the solution supports extreme range of over 50 meters (150 feet) through multiple walls and ceilings with enough throughput for 4 HD streams and with no packet loss or visual artifacts. The CL1300 also demonstrates superior performance with third party client chipsets, 802.11a/b/g or 802.11n and even with very low-cost single antenna client designs.

OptimizAIR integrates over a standard 802.11 core patent-pending Beam Forming MIMO to dramatically increase range, Channel Aware Transmission Shaping to boost robustness and zero out packet loss and Channel Aware Scheduling to achieve HD quality of service. Shipping now. Gilad Rozen, CEO. www.celeno.com

CHiL Semiconductor has introduced two new high-efficiency digital multiphase buck controllers for VR11.1-compliant server and gaming/enthusiast desktop applications. As the first digital controllers to offer up to 8-phase control, the CHL8316 and CHL8318 controllers use a number of patent-pending digital control techniques to meet over 90% power efficiency levels across virtually all load ranges. CHiL has also introduced the CHL8510 server driver, a new high-frequency MOSFET gate driver designed to support these new additions to the company's family of multiphase digital controllers.

At currents ranging from 30-40A, Chil simultaneously meets transient control requirements and increases server power efficiency by about 8%, which results in a 150W reduction at the voltage regulator level alone on a typically configured blade server. The 6-phase CHL8316 and 8-phase CHL8318 controllers are $2.49 and $3.29 respectively @ 1Ku. The CHL8510 MOSFET driver is $0.49 @ 1Ku. Ram Sudireddy, president and CEO. www.chilsemi.com

ClariPhy will demonstrate its all-digital CMOS 10-Gbps maximum likelihood sequence detection (MLSD) technology in an XFP application at ECOC 2008, Europe's largest conference on optical communications. The demonstration will be in combination with Sumitomo Electric's uncooled directly modulated laser technology. ClariPhy's MLSD PHY is a low-power, all-digital CMOS IC that delivers optimal electronic dispersion compensation (EDC) performance in optical links ranging from a few meters in data centers up to 100s of kilometers in long haul telecom networks. Dr. Paul Voois, cofounder and CEO. www.clariphy.com

ClearSpeed has announced industry-leading results in the acceleration of computationally intensive financial codes such as credit risk analysis. Benchmarking a number of customer applications on ClearSpeed's latest product, the CATS-700, ClearSpeed showed results on 64-bit codes that far exceed all other solutions in the market. In one example, a Japanese Tier One investment bank's 64-bit credit risk analysis code was accelerated from 50 hours on a standard x86 desktop machine to 10 minutes on a single CATS-700 1U node, a speedup of 300X. In other examples, speedups of 80X and 91X were achieved compared to the latest 8-core 3GHz x86 servers on 64-bit Monte Carlo codes.

The CATS-700 delivers 1.152 TFLOPS of 64-bit floating point performance in a 1U enclosure. It includes 24GBytes of ECC DRAM, typically consumes 300W and is programmed in C. A single 42U rack half filled with CATS-700 and half filled with standard servers would cost around $600K and provide performance equivalent to 40 racks filled with the latest 3GHz 8-core x86 servers. The CATS-700 system would deliver initial capital savings of over $9M and TCO savings over 3 years of over $11M. The CATS-700 solution is also only $1/40^{th}$ of the physical size and consumes 96% less energy than the unaccelerated system of equivalent performance.

These results far exceed what is possible with the latest 64-bit versions of Cell and graphics processors. For a 42U rack with equal numbers of servers and accelerators, the CATS-700 solution is 3x faster and 2.8x more power efficient than a system using IBM's latest 64-bit QS22 Cell blade, and 2.7x faster and 5x more power efficient than a system using Nvidia's latest 64-bit Tesla 1U GPU server. www.clearspeed.com

DS2 has developed major new features for its 200Mbps powerline communications chipsets to enable 4X faster transmission speeds than standard wireless networks. The upgrade enables service providers like BT, Portugal Telecom and Telefónica to offer affordable and fully self-installable IPTV services.

Key new features include automatic multi-cast capabilities, on-chip support DSL as TR069 remote network management features, and complete LLTD protocol integration with Windows Vista

New Products

users. DS2 is also developing a fully backward interoperable 3rd generation powerline technology that will provide throughput speeds of 400Mbps. Victor Dominguez, VP Sales. www.ds2.es

IBM has introduced the semiconductor industry's first computationally-based process for production of next generation 22nm semiconductors. Known as Computational Scaling (CS), a process that enables the production of complex, powerful and energy-efficient semiconductors at 22nms and beyond, this new initiative will feature support from several of IBM's key partners initially including Mentor Graphics and Toppan Printing.

Computational Scaling uses mathematical techniques to modify the shape of the masks and characteristics of the illuminating source at each layer of an IC. IBM's CS solution is an ecosystem that includes the following components: a new resolution enhancement technique (RET) that uses source-mask optimization (SMO); virtual silicon processing with TCAD; predictive process modeling; design-rule generation and corresponding models; design tooling; design enablement; complex illumination; variance control; and mask fabrication, along with necessary partnerships. IBM has partnered with **Mentor Graphics** on a new resolution enhancement technique to enable cost-effective printing of 2D patterns for the 22nm semiconductor technology generation. www.ibm.com/technology

Newport Media has unveiled a 65nm CMOS single-chip solution for the mobile version of Japan's Integrated Services Digital Broadcasting-Terrestrial (ISDB-T) digital television standard. The NMI325 Sundance J mobile digital TV receiver integrates an RF tuner, demodulator and all required memory into a single monolithic CMOS device. In addition to the standard single IC configuration, two NMI325 ICs can be used together to create a full diversity solution, thereby dramatically improving sensitivity and mobility performance.

Key features of the NMI325 include -99dBm sensitivity, 120dB of variable gain, and greater than 55dB of adjacent channel selectivity. The SoC includes a UHF-band radio, ISDB-T one-segment demodulator, plus all necessary memory and consumes less than 60mW of power. No other external memory, baluns or loop filters are required. Samples now; production in Q1. Mohy Abdelgany, president and CEO. www.newportmediainc.com

Nuvoton, a recently formed subsidiary of **Winbond**, has introduced the WAU8822 stereo-audio CODEC for portable-audio applications. Novoton has shipped more than one billion voice and audio chips in the last 20+ years under the Winbond name. Winbond spun off the unit in July 2008. Ike Saeed, VP of marketing. www.nuvoton.com

picoChip has expanded its massively multi-core product family with the introduction of the PC202-10, PC203-10 and PC205-10 multi-core DSPs, which deliver processing power of up to 262GIPS and 35GMACS. The PC20xx-10 devices are based on the same multi-core picoArray architecture as existing PC20x products, but with a larger array of processors, whilst retaining full code compatibility. The devices deliver a 40X advantage in price-performance, and 8X higher absolute performance, compared with traditional DSPs. The performance uplift is achieved by increasing the number of processor elements in the devices from 248 to 273. The PC205-10 is at the heart of picoChip's single-chip WiMAX solution, the only offering capable of delivering true IO-MIMO, a critical requirement of mobile WiMAX. Doug Pulley, CTO and co-founder. www.picoChip.com

Plastic Logic has previewed the Plastic Logic reader, an 8.5 x 11-inch device featuring a large, readable display. The device is thinner than a pad of paper, lighter than many business periodicals, and offers a high-quality reading experience, better than alternatives of paper or other electronic readers on the market today.

The Plastic Logic reader supports a full range of business document formats, such as Microsoft Word, Excel and Powerpoint, and Adobe PDFs, as well as newspapers, periodicals and books. It has an easy gesture-based user interface and powerful software tools that will help business users to organize and manage their information.

Plastic Logic's display technology, first developed at Cambridge University, uses high-resolution transistor arrays on flexible plastic substrates, manufactured at a low temperature. The reader incorporates **E Ink** technology for great readability and features low power consumption and long battery life. The Plastic Logic reader is scheduled to ship in the Q2'09. Plastic Logic's go-to-market strategy will include direct e-commerce as well as partnerships with publishing, distribution, retail, and other information services companies. Richard Archuleta, CEO. www.plasticlogic.com

RMI has launched a complete product solution for Media Personal Navigation Devices (mPND), driving lower cost GPS implementations. Based on the RMI Alchemy Au1250 and Au1210 SoC Processors, these high-performance power-optimized processing engines allow mPND manufacturers the ability to differentiate their products with new consumer-centric innovations including a variety of performance, power and integration features previously unavailable and to avoid the eroding margins that are typical of single-purpose GPS devices.

The mPND reference design from RMI implements the lowest cost alternatives to replace expensive GPS modules. The Au1250 media processor provides ample processing headroom to perform the complex baseband function in software, removing the need for external baseband hardware. For soft GPS, RMI works with GPS partners such as CSR, a leader in software GPS technology. For Host GPS, RMI works with GPS partners such as Nemerix and Atheros. For hardware GPS, RMI works with partners such as SiGe Semiconductor. Behrooz Abdi, president and CEO. www. RMICorp.com

Silicon Labs has entered the consumer timing market with the introduction of the industry's highest stability 100% CMOS oscillator, offering a replacement for crystal oscillators (XOs) with shorter lead times, lower cost, higher reliability and higher performance. The new Si500 family has the widest frequency range, widest selection of differential and single-ended clock formats, low total power consumption and the lowest jitter of any oscillator targeted at high volume consumer applications. The product family supports frequency stability options ranging from +/-100 to +/-150 ppm. Samples now; production in Q4. Dave Bresemann, VP. www.silabs.com

SiTime has introduced the world's thinnest clock oscillator, which is one-third the height of quartz-based oscillators. The SiT8002XT measures 3.5 mm by 3.0 mm, with a typical height of 0.25mm and is packaged in a four-pad XLLGA package. The devices offers 10X better reliability and shock resistance than quartz oscillators.

The SiT8002XT is fully factory-programmable, allowing samples to be delivered in 24 to 48 hours, which is significantly faster than the 8- to16-week lead times for quartz oscillators. Factory-programmable features include a highly accurate output clock frequen-

cy (1-125 MHz), operating voltage (1.8V, 2.5V, 3.3V), frequency tolerance (±100 PPM and ±500 PPM) and standby or output enable modes. Samples now; production in Q4. Piyush Sevalia, VP of marketing. www.sitime.com

Staccato has introduced the Ripcord2 family of single-chip, all-CMOS solutions targeted for WiMedia UWB and Wireless USB applications. This second-generation family is the industry's first implementation utilizing 65nm CMOS process technology. Staccato's Ripcord2 supports multiple protocols, including Wireless USB, High-Speed Bluetooth, Wireless IP and Wireless Audio/Video. In addition, several features were added to Ripcord2 including support for WiMedia Band Groups 1, 3 and 6, as well as the capability for detection and avoidance (DAA). Staccato has already shipped samples and development kits to key customers and is currently developing several reference designs to be released in the coming months. Marty Colombatto, CEO. www.staccato communications.com

Tilera has introduced its TILEPro family, comprised of two new processors. The TILEPro family improves the performance of highly threaded and shared-memory applications through the introduction of Dynamic Distributed Cache (DDC) technology. Further, the TILEPro processors have twice the L1 cache size, double the L2 cache associativity, and incorporate an additional on-chip communication network dedicated to cache management. The new processors are equipped with additional instruction set extensions for audio and video that deliver up to 2X improvement in multimedia signal processing.

The new devices offer double the performance of Tilera's first generation TILE64 processors, which have been employed by more than 45 customers, with less than a 5% increase in power consumption. The TILEPro64 delivers 35X better performance per-watt over

the Intel Quad-Core Xeon and 15X the performance of TI's DaVinci DM6467 series DSP.

The TILEPro64 is a multicore embedded processor that integrates 64 full-featured cores, four 800MHz DDR2 memory controllers and a complete array of high speed I/O and PCI Express interfaces. It can encode 12 streams of 1080p H.264 video (baseline profile) and execute over 20Gbps of pattern matching in networking applications. The TILEPro36 offers the same new features as the TILEPro64, scaled to 36 cores, and is ideal for mid-range (1-to-5 Gbps) networking and security applications, video-conferencing endpoints, and midrange multimedia applications. It can deliver 5Gbps of Snort intrusion prevention processing and 6 streams of H.264 1080p video encode (baseline profile).

The 2.0 version of Tilera's Multicore Development Environment supports the TILEPro family and includes enhancements to the development tools and run-time software. A new "zero overhead Linux" option offers all the benefits of a rich Linux operating system environment, with the timing predictability of a stripped-down task scheduler. MDE 2.0 also supports a "bare metal" programming environment with a thin services layer for signal processing and data plane applications. TILEPro64 samples next month; TILEPro36 in Q4. Omid Tahernia, president and CEO. tilera.com ∎

Licensing & Partnerships

Kotura, a provider of silicon photonic components, announced that **Sun Microsystems** has signed a five year $14M development contract with Kotura for DARPA's Ultraperformance Nanophotonic Intrachip Communications (UNIC) program. Previously, Sun announced its participation in DARPA's $44M program to advance a virtual supercomputer using an on-chip network of low-cost optical interconnects.

Licensing & Partnerships

Kotura has been in mass production of silicon photonics components for more than three years, and is an active participant in the IEEE 802.3 Higher Speed Study Group (HSSG), the Video Electronics Standards Association (VESA) and the Silicon Photonics Alliance. Jean-Louis Malinge, CEO. www.kotura.com

NanoGram has selected **OTB** as one of its contributing partners in building out the company's solar pilot plant currently under construction in Milpitas, CA. NanoGram will use the facility to scale-up their SilFoil technology for solar modules that will deliver the product performance and reliability of wafer-based crystalline silicon modules at prices competitive with thin film modules. OTB has the process engineering know how as well as proprietary inkjet printing and laser technologies to build the equipment that effectively produces this next generation solar cell with higher efficiency at lower costs. The Nano-Gram solar pilot plant is expected to be commissioned in Q2'09. Dr. Kieran Drain, president and CEO. www. nanogram.com, www.otb-group.nl

NEC Electronics and **ELMOS Semiconductor** are going to join forces demonstrated by entering into a worldwide long-term partnership. The agreement will encompass the joint development, cross-use of engineering and manufacturing services as well as common marketing of products for the automotive and industrial markets. Customers of both companies will benefit from the combined strengths of high performance devices from NEC Electronics, like the 8- to 32-bit microcontroller series, together with robust and reliable application-specific, analog/mixed-signal chips from ELMOS. www.necel.com, www.elmos.de

The **Storage Networking Industry Association** (SNIA) has formed the **Solid State Storage Initiative** (SSSI), which will serve to foster the growth and success of the market for solid-state storage in both commercial and consumer environments. www.snia.org/sssi ∎

Design Wins

BroadLight announced that **DASAN** has selected BroadLight's end-to-end (E2E) GPON technology in their FTTH products for deployment at **Hanaro Telecom** planned for later this year. DASAN has incorporated BroadLight's BL3458 4-port GPON OLT controller for OLT Equipment and the BL2345 for the ONU. DASAN is the largest broadband equipment manufacturer in Korea. Siemens acquired DASAN Networks in May 2004. Didi Ivancovsky, Founder and VP of Marketing

Newport Media is providing the system solutions for **Longcheer Holdings**, a Chinese manufacturer of 2G and 3G cellular handsets, upcoming release of TV-enabled 2G handsets. The TV350 GSM/GPRS handset supports the widely deployed DVB-T digital television standard using Newport Media's NMI305 DVB-T SOC. The DT100 GSM/GPRS handset supports DVB-H as well as DVB-T using the NMI310 DVB-T/H IC.

The IT100 GSM/GPRS handset supports the Brazilian ISDB-T mobile digital television standard using the NMI320 ISDB-T IC. Longcheer's clients include major Chinese telecom companies such as ZTE, Konka, TCL and Gionee.

Open-Silicon, a fabless ASIC company, has completed its 100th tapeout. The company, founded in 2003, reached this historic milestone in its fifth year of operations. Naveed Sherwani, CEO and president. www.open-silicon.com

Siano's DVB-H silicon receiver chips together with the SMS8021 internal chip antenna have been integrated into a new Personal TV Media Player by **Quantum**, becoming the first connected PMP in the world featuring OSF IPDC and OMA BCAST personal mobile TV and GPS navigation. The move introduces a new realm in portable entertainment, introducing high quality live mobile TV broadcasting of up to 30 channels onto a GPS-enabled device offering navigation, personal assistance and location based-services. Alon Ironi, CEO.

u-blox's latest positioning engine, u-blox 5, has been selected by **Microsoft** for a new "GPS Locator" USB stick, which will be bundled with the next release of MapPoint, Microsoft's business travel and map software package. The new u-blox 5 GPS chipset is a highly integrated, cost-efficient GPS engine that offers users accurate positioning in a small package without compromising on performance. Nikolaos Papadopoulos, president of u-blox America. www. u-blox.com ∎

Company Financials

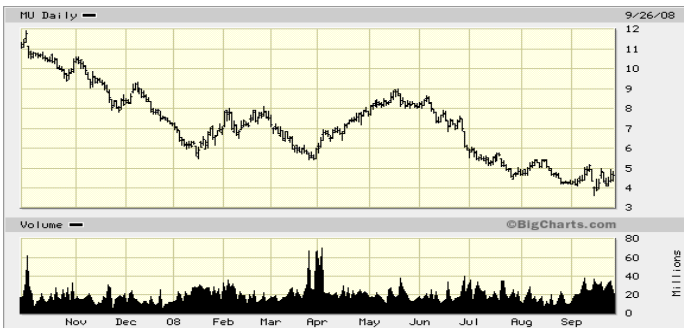| Company	Symbol	Next Qtr Outlook	Current Qtr				Last Qtr		Yr-ago Qtr			Sales Growth	Qtr	Ending
			Sales	Net	Margin	GM	Sales	Net	Sales	Net	GM			
Avago	n/a	n/a	439	44.0	10%	39%	411	17.0	381	-167.0	-3%	15%	2Q08	2-Aug
Gennum	GND	n/a	34	6.4	19%	76%	33	4.8	26	-1.5	73%	31%	3Q08	31-Aug
Metalink	MTLK	n/a	3	-6.6	-244%	63%	1	-9.8	3	-5.6	44%	8%	2Q08	30-Jun

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