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News Release

TEN COMPANIES TEAM UP WITH GEORGIA TECH TO FORM 100G CONSORTIUM

Georgia Institute of Technology

March 16, 2009

Ten companies have joined forces with the Georgia Institute of Technology to establish the Georgia Tech 100G Optical Networking Consortium, which is believed to be the first academic-industrial consortium of its kind in the world. To date, more than \$2.2 million in support has been designated for this facility by the consortium's founding research members—ADVA Optical Networking, Ciena, OFS, and Verizon—and by supporting members Avanex, IBM, Narda Microwave, Nistica Picometrix and RSoft Design Group.

The consortium and facility allow academic and industry personnel to perform multidisciplinary research in all aspects of 100-gigabit-per-second transmission, supported by the diverse and complementary strengths of the industrial partners and faculty members. Research topics range from fundamental studies of 100G optical transmission to assessment of optical and electronic technologies that will be used in such high-speed optical networks.

A variety of network architectures will be studied, including realistic impairments found in regional and ultra long haul links. These efforts also actively support the upcoming IEEE 100G standard for short reach, client-side transport in the local area network and future IEEE standards for short reach transmission over laser-optimized multi-mode fiber in data centers.

Historically, networking infrastructure has migrated to systems with increased transmission capacity, thereby allowing increased efficiency and the delivery of content-rich services, noted Stephen E. Ralph, the consortium's director and a professor in Georgia Tech's School of Electrical and Computer Engineering (ECE). Critical to the success of these new technologies is the ability to deploy them over existing fiber infrastructure, which is

equivalent to increasing the capacity of a highway 10-fold without changing the roadway, he said.

“Our industry-led effort creates a unique opportunity for students and industry to define and validate the enabling technologies necessary for 100G networks,” Ralph said. “The creation of this consortium at Georgia Tech enhances the competitiveness of our member companies, creating job growth in this critical area of communications and networking. The faculty of Georgia Tech is uniquely able to advance understanding in signal processing, high-speed circuits, and optical components and systems. This unique combination, together with the expertise of our industry researchers, will enable member companies to develop and demonstrate technical advantages and accelerate deployment of next generation systems and services while simultaneously influencing the next generation standards.”

Located in Georgia Tech’s Technology Square Research Building, the new 100G testbed and extensive supporting simulation capabilities enable rigorous and independent evaluation of optical and electronic signal processing strategies, new modulation formats and receiver technologies, high-speed silicon CMOS-based electronics, and classical/modern forward error correction, all in realistic optical fiber transport and electronic transceiver environments. Co-director of the effort is Gee-Kung Chang, Byers Eminent Scholar Chair in Optical Networking. Joining Ralph and Chang in the quest for 100Gb/s transport is Byers Professor John D. Cressler, whose research addresses high-speed electronics challenges, and Professor John Barry, whose work focuses on critical signal processing issues. All three faculty members are also based in ECE.

“Expertise in these three critical areas, in one place, cannot be found anywhere else, and lets the faculty team and their industry collaborators consider all of these factors at once,” added Ralph, who specializes in optics and photonics technologies. “Our corporate partners and our faculty members realize that performing these functions in a vacuum no longer works; everyone has to work together to achieve practical 100G performance.”

Construction on the Consortium’s 100G testbed started in July 2008 and was made possible with additional support from the Georgia Tech Office of the Senior Vice Provost for Research and Innovation and the Georgia Research Alliance. The first testbed link, which will allow testing of new modulation concepts within a point-to-point link engineered for 10Gb/s systems, became fully functional in November 2008. Two additional milestones,

which will include the creation of a long-haul DWDM mesh network environment exceeding 1,000 kilometers, will be met by July 2009, when the facility will be fully functional.

Growth for Phase 2 is expected to bring in additional corporate support and faculty involvement in the areas of dynamic mesh networks and network security. This facility will enhance the current capabilities of the Georgia Electronic Design Center.

“The 100G effort makes Georgia Tech the place to be for those interested in pursuing 100G technologies,” said Mark Allen, senior vice provost for research and innovation and a Regents’ professor in ECE. “From an economic development perspective, the implications could be huge, as our faculty, students, and industry partners create technologies that support 100G transport and that could be commercialized in a number of ways.”

Graduate students involved with this new consortium are receiving valuable technical experience that will serve them well in internships, co-op assignments, and beyond.

“We are very happy that these companies have chosen to support the 100G consortium and ECE,” said Gary S. May, Steve W. Chaddick School Chair of ECE. “Our students are seeing best technical practices in action and having important technical concepts enhanced and reinforced that they are learning in our electronics, digital signal processing, and optics and photonics courses. Upon graduation, our students will be ready to actively contribute to their employers in academia and industry.”

The Consortium’s industry members see benefits from the strong collaborations with Georgia Tech faculty and students.

“A close collaboration between industry and academia is crucial for successful development of new technologies,” said Michael Frankel, transport technology director at Ciena. “In addition to financial support, Ciena will leverage its proven ability to take breakthrough technologies into commercial products.”

Christoph Glingener, chief technology officer for ADVA Optical Networking, said the consortium is essential to the company’s ability to evaluate and drive future technologies. “As a global innovation leader in the field of optical networks, we are proud to participate in this partnership in order to drive component, systems and network performance,” he explained. “We are also pleased to support the education process for the students of

Georgia Tech, enabling focused research on areas of importance to the future of our industry.”

The diverse interests of the collaborators will help create a better understanding of issues in 100 Gbps transport.

“OFS is delighted to be working with a major global carrier, two systems companies, leading optoelectronic and RF designers, and both optical and signal processing faculty and students at Georgia Tech to develop a deeper understanding the science of 100 Gbps transport,” said Robert Lingle, Jr., director of fiber design and systems research at OFS. “We believe this research partnership will further enhance OFS’ position as industry leader in the development of next-generation solutions in the field of optical fibers, cables and photonic modules.”

“This consortium is an excellent example of the industry and university collaboration necessary to develop and test the next generation component technologies that will enable 100 Gbps optical transport on both the line side and client side,” stated Rob Risser, president and general manager of Picometrix. “Close collaboration with consortium members will help accelerate our development and deployment of advanced 100 Gbps optical receivers.”

Ralph and his colleagues from Ciena, OFS and ADVA Optical Networking presented their interests related to the 100G consortium, company goals, and their vision for the evolution of optical networks at the Fall 2008 Internet2 Member Meeting, held in New Orleans, La. October 13-16. They plan to present related materials at the Optical Fiber Communications Conference and Exposition and The National Fiber Optic Engineers Conference to be held in San Diego, Calif. from March 22-26.

About Georgia Institute of Technology

The Georgia Institute of Technology is one of the nation's premier research universities. Ranked seventh among U.S. News & World Report's top public universities, Georgia Tech's more than 19,000 students are enrolled in its Colleges of Architecture, Computing, Engineering, Liberal Arts, Management and Sciences. Tech is among the nation's top producers of women and African-American engineers. The Institute offers research opportunities to both undergraduate and graduate students and is home to more than 100

interdisciplinary units plus the Georgia Tech Research Institute. To learn more about the Institute, visit www.gatech.edu.

About the School of Electrical and Computer Engineering

The School of Electrical and Computer Engineering (ECE) is the largest of nine schools and departments in the College of Engineering and the largest individual school at the Georgia Institute of Technology. All ECE undergraduate and graduate programs are in the top 10 of the most recent college rankings by U.S. News & World Report. More than 2,300 students are enrolled in the School's graduate and undergraduate programs, and in the last academic year, 698 degrees were awarded. To learn more about ECE, visit www.ece.gatech.edu

More than 110 ECE faculty members are involved in 10 areas of research and education – bioengineering, computer engineering, digital signal processing, electrical energy, electromagnetics, electronic design and applications, microsystems and packaging, optics and photonics, systems and controls, and telecommunications.

About the Georgia Research Alliance

A model public-private partnership of Georgia's research universities, business and state government, the Georgia Research Alliance helps build Georgia's technology-rich economy in three major ways: through attracting Eminent Scholars to Georgia's research universities; through helping create centers of research excellence and through converting research into products, services and jobs that drive the economy. To learn more about GRA, visit www.gra.org.

About ADVA Optical Networking

ADVA Optical Networking (FSE: ADV) is a global provider of telecommunications equipment. With innovative Optical+Ethernet transport solutions, we build the foundation for high-speed, next-generation networks. Our FSP product family adds scalability and intelligence to our customers' networks while removing complexity and cost. With a flexible and fast-moving organization, we forge close partnerships with our customers to meet growing demand for data, storage, voice and video services. Thanks to reliable performance for more than 15 years, we have become a trusted partner for more than 200 carriers and

10,000 enterprises across the globe. For more information, please visit us at www.advaoptical.com.

About Ciena

Ciena specializes in practical network transition. We offer leading network infrastructure solutions, intelligent software and a comprehensive services practice to help our customers use their networks to fundamentally change the way they compete. With a growing global presence, Ciena leverages its heritage of practical innovation to deliver maximum performance and economic value in communications networks worldwide. For more information, visit www.ciena.com.

About Picometrix

Picometrix (an Advanced Photonix company; NYSE Alternext US: API) is a vertically integrated, world-leading developer and manufacturer of advanced high speed optical components and subsystems, including high speed optical receivers used in client side and line side 10, 40 and 100 Gigabit-per-second optical communication systems. The company's patented semiconductors, vertical integration and high speed analog circuit design provide a foundation for supplying the highest performance optical receivers for cost-effective transmission. Picometrix has been supplying high speed optical receivers since 1992, when it spun out of the University of Michigan Center for Ultrafast Optical Science and is headquartered in Ann Arbor, Mich., USA. For further information about Picometrix, please visit www.picometrix.com.

About OFS

OFS is a world-leading designer, manufacturer and provider of optical fiber, optical fiber cable, connectivity, FTTx and specialty photonics solutions. Our marketing, sales, manufacturing and research teams provide forward-looking, innovative products and solutions in areas including Telecommunications, Medicine, Industrial Automation, Sensing, Government, Aerospace and Defense applications. We provide reliable, cost effective optical solutions to enable our customers to meet the needs of today's and tomorrow's digital and energy consumers and businesses.

OFS' corporate lineage dates back to 1876 and includes technology powerhouses such as

AT&T and Lucent Technologies. Today, OFS is owned by Furukawa Electric, a multi-billion dollar global leader in optical communications.

For more information, please visit www.ofsoptics.com.

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