

Components Systems Software Services

TeleSoft

QUARTERLY NEWSLETTER—JULY 2006

NEWS

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A WORD FROM THE FIRM

Congratulations to OnFiber for its pending acquisition by Qwest, to Aarohi for its acquisition by Emulex, and to CreekPath for its pending acquisition by Opsware. Qwest's \$107 million acquisition of OnFiber will add fiber optics-based services in 23 metropolitan areas to Qwest's operating territory. TeleSoft co-invested with Amerindo Investment Advisors, Bear Stearns, Bechtel, GE Capital, Incepta Ventures, Kleiner, Perkins, Caufield & Byers. Aarohi will provide Emulex with critical intelligent data center solutions for 10 Gbps networking and intelligent storage. TeleSoft co-invested with Anthelion, Infineon Technologies, Intel Capital, Kennet Capital, McData Corporation, and Susquehanna International Group. Opsware's \$10 million acquisition of CreekPath will add advanced storage management to its existing server and network management solutions. TeleSoft co-invested with AG Edwards, Lehman Brothers Venture Partners, NEA, and Sequel Venture Partners.

In addition, Sierra Design Automation, AmberWave Systems, Calient, and VoiceObjects have successfully raised follow-on financings. Sierra Design, an EDA company focused on providing the highest productivity IC implementation system solutions to the semiconductor industry, raised \$6 million from Artiman, Evercore, and TeleSoft.

AmberWave, the leading supplier of strained silicon technology, raised \$25 million from 3i, Hillman, Arch, Adams Capital, and TeleSoft. Calient, the leading photonic switching and fiber optics management supplier, raised \$10 million from Cayuga Ventures, DuPont, Enterprise Partners, Sofinnova, Wall Street Technology Partners, and TeleSoft. VoiceObjects, an object-oriented service creation platform for developing speech-enabled applications, raised \$10 million from Deutsche Telekom, Enjoyventure, SAP, Wellington, and TeleSoft.

We would love to have you join us for TeleSoft's 10th Anniversary Venture Capital EcoSystem Meeting at The Fairmont in San Francisco, CA, on October 18–20, 2006. We will have a compelling list of speakers from both public and private companies who will provide insights on the current issues in service providers, enterprise IT, and consumer and capital markets. Please save the date and see you there.

— Arjun Gupta

Save the Date

● **OCTOBER 18–20, 2006**

**TeleSoft Partners' 10th
Anniversary 2006
Annual Venture Capital
EcoSystem Meeting**

The Fairmont
San Francisco, CA



TeleSoft Partners

Metro Tower
950 Tower Lane, Suite 1600
Foster City, CA 94404
650-358-2500

www.telesoftvc.com

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From the Front Lines

Byte in the Apple—Technology in Education

There is an increasing opportunity for technology vendors to expand access, reduce cost, and improve the quality of education. While the education market has been relatively slow to adapt to new technologies due to bureaucracy and funding issues, the market may be experiencing a turning point. Following a period of tight education budgets in the first half of this decade, availability of state and federal funds for education has improved. This is due to higher state tax revenue and a high priority placed on improving the quality of K–12 education by educators and legislatures.

On a national level, risks to U.S. global competitiveness have kept education high on legislative agendas. According to The Heritage Foundation, federal spending on education from 2001 through 2006 increased 137 percent and total spending (federal, state, and local) on public school systems was greater in 2004 (\$463 billion) than the proposed federal budget for defense in 2006 (\$419 billion). This market size has attracted technology vendors even with its moderate growth rate. Technology solutions appear ready to make an impact due to higher broadband and PC availability, plus increasingly technology-savvy students and educators. In this “From the Front Lines,” we focus on trends in education software targeted primarily at students in kindergarten through secondary schools (K–12).

Social Studies: 21st Century Needs

Given the realities of globalization, knowledge work, and accelerating societal change, many education leaders believe what students learn—as well

as how and when they learn—must change. According to the U.S. Department of Labor, “We are living in a new economy—powered by technology, fueled by information, and driven by knowledge.” Top economists, including Alan Greenspan, attribute our increasingly stable economy to the flexibility of global markets, economic dynamism, and increased productivity due to technology, all of which are dependent on a highly educated, high-tech, 21st century workforce.

Over the next decade, the United States economy and workforce will face ever-increasing worldwide competition. This competition will involve the

“ We are living in a new economy—powered by technology, fueled by information, and driven by knowledge. ”

— U.S. DEPARTMENT OF LABOR

mastery and application of new knowledge and will place particular emphasis on the need for heightened skills in mathematics and science. In addition, education systems need to focus on ways to improve student performance and better prepare students to be more critical thinkers, better communicators, and technologically competent enough to compete in a global economy.

At an Ed Tech Industry Summit held in May 2005, industry leaders called on schools to promote lifelong learning and warned that U.S. leadership in economic development and expansion could decrease over the next 50 years. To the benefit of education technology suppliers, the nation’s educational enterprise, including policy makers, recognizes the responsibility to help

secure our economic future by ensuring that our young people are adequately prepared to meet these challenges.

For the past 25 years, U.S. schools have invested billions of dollars in a number of education technologies with varying degrees of success. According to a report by ThinkEquity Partners, a San Francisco-based investment banking firm, the United States spends more money on education than any other nation except Switzerland, averaging more than \$8700 per student (federal, state, and local dollars) for elementary and secondary education, double what was spent in the 1970s. However, despite this investment, the National Assessment of Educational Progress (NAEP) reports that in 2005, 36 percent of fourth graders in the U.S. had below basic reading scores and 69 percent were not proficient in reading at grade level. According to the NAEP, between 1992 and 2005, there was no statistically significant change in the proportion of fourth graders below basic, despite a national focus on reading and significant and increased federal funding.

High school students in the United States are consistently outperformed by those from Asian and some European countries on international assessments of mathematics and science, according to The Condition of Education 2006 report by the U.S. Department of Education’s National Center for Education Statistics (NCES). Fourth graders, by comparison, score as well or better than most of their international peers, although their counterparts in other countries are gaining ground.

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U.S. students do relatively well in reading literacy when compared to their international peers, but they are outperformed in mathematics and science and our 15-year-old students trail many of our competitors in math and science literacy.

NCES reports that 28 percent of college freshmen need remedial coursework in mathematics, reading, or writing, as do 42 percent of freshmen at community colleges. Currently only 71 percent of U.S. students graduate high school and only one fifth earn a college degree, according to the National Governor's Association.

Science: Impact of Technology on Education

A theme at the Ed Tech Summit was that education must make better use of technology, especially in instruction, if schools are going to prepare U.S. students to compete well in the 21st century. As educators and legislators continue to invest in education technology, a question continues to be raised: "Is there evidence that using technology leads to higher levels of student learning?" It can, according to a study by Stratham and Torell which indicated that: When properly implemented, computer technology had a significant effect on student achievement. When used appropriately, computer technology stimulated increased teacher-student interaction and encouraged cooperative learning, collaboration, problem solving, and student inquiry skills. Students from computer-rich classrooms demonstrated better behavior and had lower absentee and drop-out rates than students from classrooms lacking computers. The

need for an answer to the effectiveness of educational software has become more urgent in recent years due to two key factors—an emphasis on standards-based accountability and the substantial financial, instructional, and organizational costs involved in purchasing and implementing technology.

While test scores are important, most stakeholders agree that they are no longer the only factor critical in the education of today's student. Leaders across the country are calling for a new emphasis on 21st century learning. Some key areas cited are problem solving, critical thinking, visual and information literacy, communication skills, teamwork, and the quality of students' multimedia products. Multiple assessments to measure academic achievement, 21st century skills, and engagement provide new insights into the quality and intensity of student learning. A 30-year study by the U.S. Department of Education found that a key predictor of whether young people will earn a bachelor's degree is their participation in and completion of a strong academic curriculum in high school, not their actual test scores.

Federal programs to date have focused on broadband connectivity, student assessment, and accountability measurement. Hence, many believe the true value of technology (beyond improved connectivity and data collection) has yet to be realized in schools. There is the need to make the existing technology infrastructure more productive. This implies a strong need for professional development and a shift in investing from hardware and one-off software applications to large, rationalized technology systems that

incorporate and enable individualized instruction, new curriculums, and adaptive learning methods. The value of technology may be realized in rich digital content, increased interactivity, online resources, along with intelligent tutoring and assessment.

Math: Adding Up the Numbers

ThinkEquity Partners estimates that total spending in the U.S. on all education is over \$1 trillion. This includes schools, real estate, maintenance, administration, salaries, benefits, books, hardware, networks, software, and services. About half of that spending is on the K–12 market. ThinkEquity further breaks down spending on K–12 products and services into: Alternative Education, Instructional Content (textbooks and courseware), Infrastructure and Hardware, Supplies, Tutoring, Assessment, and Curriculum and Data Management (figure 1).

These segments represent over \$25 billion in spending. An estimate of the market potential for supplemental education software and online content, by removing textbooks and off-site school services, could be between \$12 billion and \$13 billion annually. This can be an attractive market for software suppliers where there is additional growth potential through the displacement of paperwork and textbooks. Market researcher firm Simba Information estimates that the current U.S. market for K–12 courseware products alone is approximately \$1.68 billion dollars annually and that school districts will spend more than \$600 million on as-

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From the Front Lines

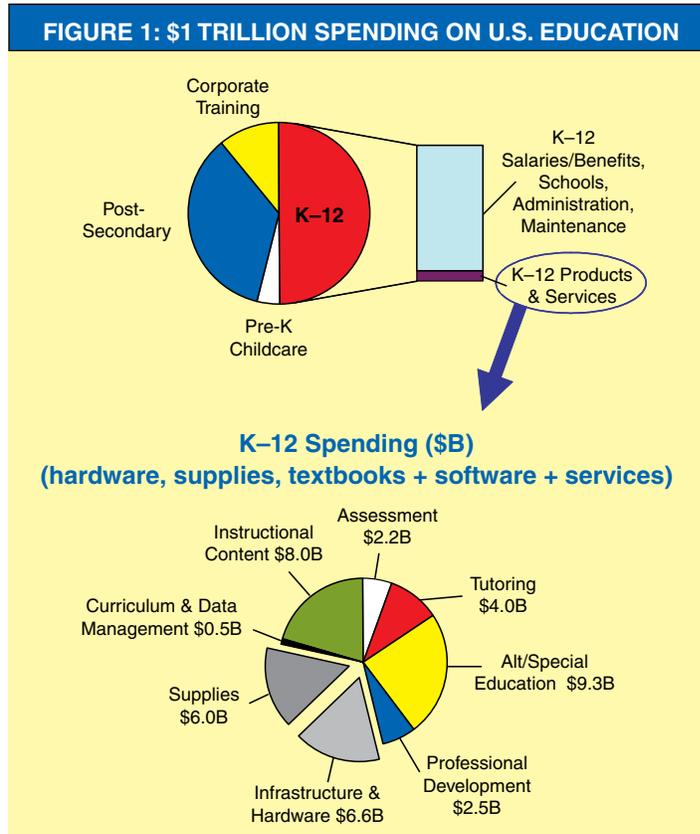
Byte in the Apple—Technology in Education

assessments software for the classroom in 2005.

Educational software materials purchased for use in schools fall into three broad categories. *Comprehensive courseware* provides year-long instruction for multiple grade levels in all curriculum areas that both supports and extends the existing curriculum. The courseware is based on rigorous educational standards and includes a management system enabling teachers to plan and customize instruction as well as assess students and produce timely reports on their progress. The management system should easily launch and manage other vendors' software, as well as integrate it into the sequence of instruction. *Modular software* has a considerably lower price point than comprehensive courseware, covers a specific area of study, and includes a management system. Modular software also may incorporate rigorous curriculum standards for its area of study.

Standalone or "shrink-wrapped" software, usually found on retail shelves, covers a smaller curriculum area, operates independently, and generally does not come with a management system. Products of this type are typically designed to supplement core curriculum technology. In addition, productivity software (e.g., word processors, graphing), electronic reference material, as well as simulations and gaming environments may also be integrated into or provide supplementary support for comprehensive courseware, modular, and standalone software.

The bulk of K-12 education software (courseware, modular, and standalone) is sold directly or through a number of independent dealer representatives to



nearly 15,000 school districts serving 54 million students. Sales of software to school districts are driven by federal, state, and local budgets. From 2001 through 2003, economic conditions at the state and local levels caused cutbacks in school budgets. Overall spending on software by K-12 schools was \$2.3 billion in 2004, up 2 percent from a year earlier but down from \$3.4 billion in 2001, according to ThinkEquity Partners.

State and local sources make up the bulk of education funding (figure 2.). Local districts draw largely from property tax revenues. States use a combination of income taxes, corporate taxes, sales taxes, and fees to generate school funding. State budgets are typi-

cally set based on economic conditions two years prior. Following three years of flat to falling funding allocation, despite rising enrollments, state aid to K-12 schools appears to have turned the corner in the 2004-2005 fiscal year. According to a survey released by the National Conference of State Legislatures, fiscal officers in 42 states expect revenue collections for FY '06 to be better than expected, and 24 states are already raising their revenue forecasts for the year. When districts and schools are in a position to spend money on supplementary materials and technology more freely, there is an increased opportunity for private enterprise.

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That's the good news. Although the state spending environment appears to have stabilized, states are facing rising costs in a number of areas, such as healthcare and energy, putting pressure on educational budgets.

Federal sources generally contribute less than 10 percent to a school's budget through grants and other targeted programs. Federal funds are typically distributed to schools on a per-pupil basis, though certain supplementary funding is also delivered on a categorical basis to provide additional dollars for special programs and facilities. The affect of federal funding should not be underestimated. It sets a tops-down priority and emphasis on education, in addition to targeting technology advances.

When the Elementary and Secondary Education Act (ESEA), which first passed in 1965, came up for renewal in 2002, ESEA was officially renewed under the name No Child Left Behind

(NCLB). NCLB vastly expanded the role of the federal government in the public school system through increasing K–12 funding allocations (see figure 3) and tying the funds to requirements and accountability measures, including regular assessment, disaggregated outcome data, school transparency (i.e., “school report cards”), teacher quality, and school choice. In terms of accountability, students have to demonstrate improvement over time and be proficient in reading and mathematics. Within 10 years, NCLB aims to abolish illiteracy and bring millions of children currently “lost” to the educational system into the mainstream of learning and achievement.

Federal sources fund a disproportionate amount of technology spending, with a great deal of grant money implemented for tech purposes. The most common sources of funds for technology purchases include Title I—Testing and Assessment, Title II—Enhancing Edu-

cation through Technology (EETT), Title III—English Proficiency, Reading First, and Special Education funds. In fact, a State Education Technology Directors Association survey of technology funding from NCLB, Title II D found that for 37 states (74 percent of respondents), Title II funds were either the primary or only funding earmarked specifically for technology in schools.

No Child Left Behind Funding Initiatives

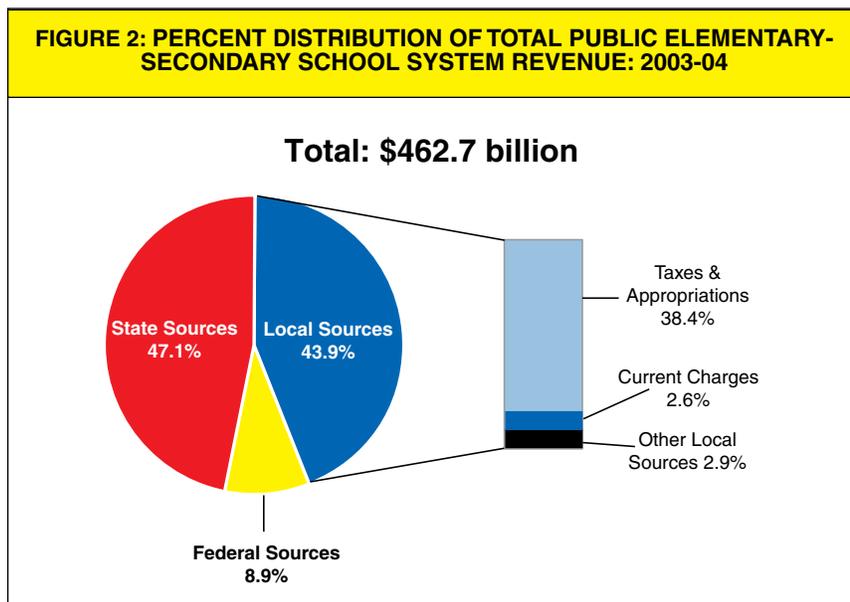
The technology funding from the No Child Left Behind, Title II D program directly supports NCLB goals in three distinct ways:

- Closing the achievement gap by providing access to software, online resources, and virtual learning aligned to academic standards for instruction and learning.
- Supporting the development of highly qualified teachers by providing online courses, communities of practice, and virtual communication that ensure flexibility and access.
- Enhancing data systems to ensure that educators can utilize real-time data to inform sound instructional decisions and ensure that they meet Adequate Yearly Progress or AYP (accountability provisions which districts are required to meet in Reading/Language Arts, Mathematics, and either Graduation Rate or Attendance Rate).

The 2006 federal appropriations for NCLB programs are at approximately the same level as in 2005. However,

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FIGURE 2: PERCENT DISTRIBUTION OF TOTAL PUBLIC ELEMENTARY-SECONDARY SCHOOL SYSTEM REVENUE: 2003-04



SOURCE: U.S. CENSUS BUREAU; ANNUAL SURVEY OF LOCAL GOVERNMENT FINANCES

From the Front Lines

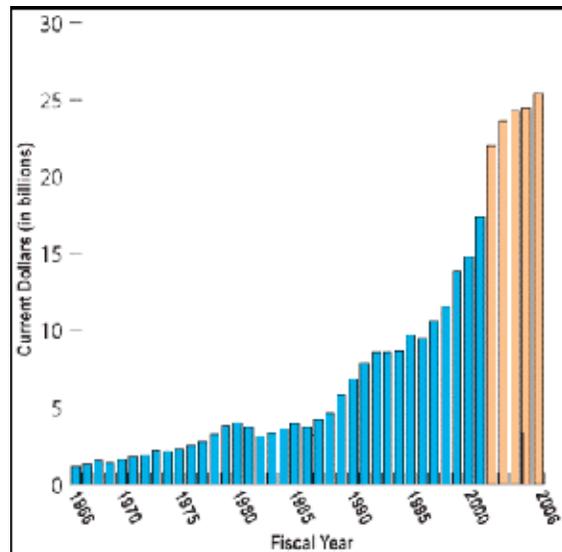
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current federal budget deficit and competing priorities may impact the continuing availability of federal education funding. The president's 2007 federal budget proposal calls for a decrease in overall federal education funding, particularly in funding for technology, but proposes increases in special education funding and would hold Title 1 funding level. A number of educators and technology leaders are lobbying for the reinstatement of the EETT program funding to approximately \$500 million.

Beyond increased emphasis and awareness of education technology, the effect NCLB has had on the market has been muted over the past three years as states, districts and schools struggled under major budget deficits while attempting to both interpret and become compliant with the new legislation. As these issues are worked through, the opportunity for spending will shift from broadband and assessment to courseware, professional development, tutoring, and curriculum management via NCLB over the next several years. However, for schools and entrepreneurs, this implies that expense requests often must win approval of not just local schools, but also a federal administrative entity.

There is also a retail market for education software that is significantly smaller than sales to school districts. Shrink-wrapped software is sold through a limited number of retail outlets such as Wal-Mart, Sam's Club, Target, and CompUSA. Retail education software sales are generally driven by driven by consumer spending and retail shelf space. In 2000, sales of educational software for home computers reached

FIGURE 3: FEDERAL SPENDING UNDER THE ELEMENTARY AND SECONDARY EDUCATION ACT



SOURCE: U.S. DEPARTMENT OF EDUCATION; U.S. BUDGET

\$498 million. However, by 2004, sales of educational software had decreased to \$152 million, according to the NPD Group, a market research concern. A number of factors contributed to the decline. Online reference material and Web-based learning sites became viable alternatives with increasing broadband connectivity. For younger children, the emergence of educational toys and the handing down of software from older siblings decreased the demand for early learner software. In addition, the increasing availability of computers in classrooms has made using home PCs for learning less appealing. It is also not clear for parents what software is compatible with a school's technology as guidance from teachers and standardization in schools are lacking.

The situation is broader than just retail educational software. According to the NPD Group, U.S. retail sales of all nongames software totaled \$2.4

billion in 2005, an increase of less than 1 percent. Education software sales declined 17 percent over 2004, which was an improvement over an average decline of 26 percent over the preceding five years. As sales decreased, retailers devoted less and less shelf space to these titles, making recovery for the industry more difficult. The NPD Group does not track online subscriptions and "software as a service" purchases yet, but believes these are growing areas of the software market.

Driver's Ed: Drivers and Inhibitors to Education Market

Quality education is consistently one of the top federal, state, and local government goals as well as being high on parents' desires. Frustration with school results on a national and family level

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remain key drivers of new education technologies. While increasing future education budgets are never guaranteed due to economic cycles, a number of factors suggest an increased adoption of education technology.

In 1994, only 4 percent of public K–12 classrooms in the United States had an instructional computer and 3 percent had Internet access. Today over

92 percent of classrooms have at least one instructional computer and almost 100 percent of the schools in the U.S. are connected to the Internet. Use of the Internet is expected to increase in schools as improved bandwidth access is installed throughout the nation's school buildings. While schools are far from providing a computer for each student, the student-to-computer ratio has risen

to 5:1. Digital access may be increased further through the innovative use of wireless technology, either through laptops or handheld devices. With most schools outfitted in basic PC hardware infrastructure, wireless technology is beginning to be implemented in U.S. schools. In 2003, approximately 27 percent of schools in the United States had wireless networks, up from 15 percent in 2002. In addition, 3.8 percent of schools used PDAs for student use in the FY '04 school year.

The resulting growth in the number of computers, Internet connections, and telecommunications systems in schools has created the technological infrastructure necessary to implement sophisticated courseware and Web-based applications. Importantly, it is believed that increased home access to the Internet will open up the potential for distributed learning and “e-learning” with the local school functioning as the hub of a community-wide network to access educational resources.

Change has been difficult to implement in the K–12 market. The system is enormous, bureaucratic, and highly politicized. Most educators and policy makers expect learning benefits from technology, but are unsure how these technologies will develop. Many are worried that existing platforms, software and equipment are already out of date and, consequently, are cautious about significant additional investments until the path ahead is more fully illuminated. If the education systems become more influenced by top-down initiatives and technology directions move toward more standardization,

FIGURE 4: EDUCATION SOFTWARE VENDOR MATRIX

PRODUCT MATRIX		VENDOR EDUCATION PRODUCT AREAS							PRIMARY SALES	
Education Software Vendor	Private / Public Stock	Text Books	Courseware	Reference Material	Tutor/Test Preparation	Student Assessment	Curriculum Management	Online Learning	Education Institution	Consumer / Retail
Academy 123	private			X	X	X	X		X	
ADAM	ADAM		X	X				X	X	s*
American Education Corp	AEDU.OB		X		X	X	X	X	X	
Apex Learning	private		X	X	X	X	X	X	X	s*
Brighter Minds	BRI.V	X	X					X		X
Cambridge Learning	private	X	X			X	X	X	X	
Carnegie Learning	private		X		X		X	X	X	
Class.com	private		X		X	X	X	X	X	s*
Cognitive Concepts	private		X						X	s*
Cosmi	private		X							X
Curriculum Advantage	private		X			X	X		X	
CyberED	private		X							X
Don Johnson	private		X				X		X	
Educate (Sylvan Learning)	EEEE		X		X		X	X	X	X
Education 2020	private		X			X	X	X	X	
Harcourt / Reed Elsevier	RUK	X	X	X	X	X	X	X	X	
Houghton Mifflin	private	X	X	X	X	X	X	X	X	
Inspiration Software	private		X				X		X	X
Knowledge Adventure	private		X				X		s*	X
Kutoka	private		X							X
LeapFrog	LF		X				X		s*	X
Learning.com	private		X			X		X	X	
McGraw-Hill	MHP	X	X	X	X	X	X	X	X	
Micrograms	private		X						X	s*
Navarre / Encore	NAVR		X							X
Pearson / DK Multimedia	PSO	X	X			X		X	X	s*
Peoples Education Holdings	PEDH	X			X	X			X	
Plato Learning	TUTR		X		X	X	X	X	X	
Princeton Review	REVV				X	X			X	
ProQuest / Voyager	PQE		X	X				X	X	
Renaissance Learning	RLRN		X		X	X	X		X	
Riverdeep	private		X			X	X		X	X
Scholastic (Tom Snyder)	SCHL		X			X	X		X	
Scientific Learning	SCIL		X			X			X	
Siboney / Gamco	SBON		X			X			X	
Sunburst	private		X				X	X	X	
TestU	private					X		X	X	X
Thomson	TOC	X		X	X				X	
Topics Entertainment	private		X	X						X
Tutor.com	private				X			X	X	X
Washington Post / Kaplan	private				X	X			X	X
WRC / Compass Learning	private	X	X	X		X		X	X	

s* = significant but not primary sales

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change may become easier.

In the past, computer and software expertise has been a limitation to the implementation of new technologies. This has become less of an issue as administrators, educators, and students are increasingly “tech-savvy.” In fact, students may be frustrated at the pace of new technology integration. Nearly 30 percent of high school students access foreign news sources via the Internet. Ninety percent of children between 5 and 17 use computers. Nearly all students who are Web savvy use the Internet for school-related research. Studies on the current generation of American students suggest a determined generation for whom the Internet appears to have stimulated interest in learning in general and, in particular, a revival of interest in researching and innovating using technology.

The heightened focus on school performance is expected to increase demand for education technology. The federal mandate for accountability, along with numerous state assessment initiatives, has caused the amount of testing in public schools to double in the past three years, according to the Center for Fair and Open Testing. This results-oriented environment should lead to more prevalent use of tools with the ability to raise test scores in the near term, a growing market for consumer-funded K–12 products and services, and increased use of consumer or public pay supplemental education (e.g., tutoring, after-school programs, etc.).

Positive demographic trends driven by the maturation of the Echo Boom and high immigration levels are also contributing to demand. According to the U.S. Department of Education,

FIGURE 5: SAMPLE ACQUISITIONS		
Year	Acquirer	Acquired
2006	Pearson	PowerSchool (Apple division)
2005	McGraw Hill	TurnLeaf Solutions
2005	Renaissance Learning	AlphaSmart
2005	Pearson	SOIP
2006	Pearson	Chancery Software
2005	ProQuest	Explore Learning
2005	Educate	Gateway (Hooked on Phonics)
2005	ProQuest	Voyager
2004	McGraw Hill	Grow Network
2003	Plato Learning	Lightspan
2002	Plato Learning	Learning Elements
2002	Riverdeep	Borderbund
2002	Navarre	Encore Software
2002	Plato Learning	NetSchools
2002	Pearson	DDC Publishing
2002	McGraw Hill	Reality-Based Learning
2002	Scholastic	Tom Snyder Productions
2001	Princeton Review	Embard.com
2001	Riverdeep	Learning Company
2001	Plato Learning	Wasatch Interactive Learning
2000	Pearson	DK Multimedia
2000	Pearson	Family Education Network
2000	Riverdeep	Edmark (IBM)

enrollment in elementary and secondary schools rose 20 percent between 1985 and 2004 to more than 54 million students and is expected to rise by an additional 2 million students between 2005 and 2013. Supporting these students comes back to the availability and deployment of funds. The school system sales cycle is long and reported to be getting longer. Federal funding, bureaucracy, changing technology, and higher costs of more centralized decision making (versus individual school

district discretionary spending) can require going through several levels of decision makers. The increase in private schools, charter schools, home schooling, and virtual online schools should offer technology vendors an alternative sales outlet with a quicker decision making process and higher willingness to adopt new solutions. According to Education CEO, Chris Hoehn-Saric, one out of six children

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has left traditional public schools for these alternatives.

Geography: Mapping Out the Landscape

There are a number of vendors, ranging from large textbook publishers to startups, which provide education software products. The market has historically been fairly fragmented. (See figure 4: Education Software Vendor Matrix and figure 5: Sample Acquisitions.) A number of vendors provide courseware on a specific area (e.g., math or reading), some focus on young children, and some on reference. More recently vendors have been targeting student assessment and school accountability solutions in support of NCLB and have begun to offer online alternatives.

Over the last several years, the market has been consolidating due in part by the tough economic conditions early in the decade, but also by changing market needs emphasized by NCLB. Companies are looking to provide a complete suite of courseware, or are filling out product lines to provide a complete solution of instruction, assessment and reporting, curriculum management, and teacher development that would allow them to address school district needs.

The consolidation trend is expected to continue. The larger product lines provide economies of scale to compete in the public school market. Standalone software vendor consolidation can compete for shelf space, offer a common look and feel, leverage sales across academic categories, as well as add online and tutoring support. Smaller companies

will offer innovative products to larger companies with established sales channels into school districts.

Reading... the Tea Leaves

No Child Left Behind is a catalyst for change. However, increasingly technology literate students, teacher, and administrators may be greater agents of change. Teachers will need to catch up to students or risk “losing” them, and administrators will have to catch up to teachers or risk losing them. With infrastructure moving into place, the pace of change in the education system is bound to increase.

Federal funding is creating an environment where vendors must now show or prove effectiveness of solutions. Software providers looking to tap into this market should be able to point to specific success stories or statistical studies for how their software helped improve test scores or help schools keep costs down while culling their data for reports. For service providers, there will be a strong focus on systems that can integrate multiple data sources to present a consistent picture of how the school is performing at different levels and how it is meeting specific requirements. Eventually improved training and improved reporting may merge into one as integrated systems are developed.

Increasing alternative and supplemental education solutions is a positive trend for education technology suppliers. There has been a growth in organized online instruction (e-learning) and “virtual” schools, making it possible for students at all levels to

receive high-quality supplemental or full courses of instruction personalized to their needs. Traditional schools are turning to these services to expand opportunities and choices for students and professional development for teachers. Vendors will likely expand online options with shrink-wrapped software. Textbook providers may begin to migrate to digital content, relieving students of the “50-pound” backpacks carried today, and providing increased interactivity and individualized learning. Future solutions may begin to incorporate social media, such as messaging, blogs, podcasts, and wikis. These technologies are already part of students’ lives and may further engage students into becoming active learners and critical thinkers.

The new landscape should reflect a growing presence and more complete integration of technology into the classroom. The past decade’s investment in hardware and basic functionality software is likely to be followed by a period of heightened investment in software aligned to “real change” as schools seek to make use of their new data and tools. “Real change” suggests that schools not only use technology to get organized, efficient, and compliant, but also to directly analyze, interpret, and ultimately improve student outcomes. This shift, along with stable school budgets, will translate into opportunities for companies selling standards-based instructional content, assessment, and data management and analysis software.

Aarohi Communications

www.aarohi-inc.com

■ Emulex Corporation acquires Aarohi Communications. The terms of the acquisition include a transaction value of up to approximately \$39 million in cash, contingent consideration, assumed debt, and assumed Aarohi stock options, plus employee equity incentive compensation. Emulex will leverage Aarohi's engineering teams in San Jose, CA, and Bangalore, India, and anticipates the Bangalore site will become a primary center for research and development expansion in the next two to three years (5/2/06).

AmberWave

www.amberwave.com

■ AmberWave joins with Purdue University to develop technologies for the integration of semiconductor devices on III-V materials. AmberWave has a tradition of working with leading research universities to advance semiconductor research to commercialization (3/24/06).

■ AmberWave hires two senior researchers to expand its work on new semiconductor material and device integration: Dr. Ji-Soo Park and Dr. Bunmi Adekore. Both studied under Professor Robert F. Davis at North Carolina State University (3/16/06).

BayPackets

www.BayPackets.com

■ BayPackets announces its Agility SIP Application Server is fully integrated with an ATCA Telco Server Proof of Concept based on Intel® Architecture and running in Intel® Modular Communications Platforms (MCP) Solution Labs. The solution labs, currently in China, New Jersey, and Belgium, are demonstration facilities used to show service providers real applications running on integrated IMS network elements based on Intel® standards-based building blocks. ATCA is a standards-based modular architecture that allows the integration of vendor platform and component solutions across a choice of standard backplanes (5/23/06).

■ BayPackets joins the IMS Forum, formerly the International Packet Communications

Consortium (IPCC), as a founding member. The IMS Forum's mission is to accelerate the adoption of IP Multimedia Subsystems (IMS) by providing an environment for discussion and resolution of real-world implementation issues, such as interoperability and standards-based architectures in the application layer (5/17/06).

■ The Instituto Costarricense de Electricidad (ICE), the sole telecommunications provider in Costa Rica, deploys elements of Lucent's IP Multimedia Subsystem (IMS) service architecture and a Multiprotocol Label Switching (MPLS) solution to offer next-generation voice and data services. Lucent solutions, which include BayPackets's Agility Platform, will be used to provide voice-over-IP (VoIP) calling, pre-paid services, and virtual private networks targeting the international segment for both business and residential customers. (5/6/06).

Calient Networks

www.calient.net

■ National LambdaRail (NLR), the provider of infrastructure for research and experimentation in networking technologies and applications in the U.S., has signed a multi-year supply contract to deploy Calient's DiamondWave® PXC in key locations across the U.S. NLR also has signed a partnership and reseller agreement with Calient for the sale of the PXC to NLR members, including regional optical networks (RONs) (5/30/06).

■ Calient and OSP Magazine offer educational programs at OSP EXPO 2006. Calient presented "Making Fiber Access More Profitable," which addressed the need for a flexible fiber plant with remote test and monitoring, automated fiber loop qualification, precise fault location, truck-less troubleshooting, and profitable service area penetration (5/10/06).

■ Calient signs a reseller agreement with EdenTree Technologies. EdenTree will sell Calient's DiamondWave® Automated Fiber Management (AFM) product to North American labs operated by equipment manufacturers, service providers, and enterprises, along with EdenTree's award-winning lab management software (4/6/06).

Calix

www.calix.com

■ *LightReading* names Calix CEO, Carl Russo, as one of telecom's Top Ten Movers & Shakers. Russo was cited as improving general company performance, streamlining staff, adding new products (e.g., PON, Ethernet, and BRAS functionality), and extending sales growth (5/11/06).

■ *Fortune* magazine names Calix one of nine "technology IPOs to wait for." *Fortune* noted that the nine companies in its article have not announced plans for IPOs, but suggested investors "keep an eye on them" (5/1/06).

■ TDS Telecom, the seventh largest independent U.S. telco, deploys the Calix C7 multiservice access platform (MSAP) to deliver FTTP and high-speed copper services to business and residential subscribers. Already widely deployed within TDS Metrocom, the Calix C7 will now allow TDS Telecom to support the full range of emerging access media—FTTP, ADSL2+, and Gigabit Ethernet—while continuing to support legacy telco services such as POTS, specials, DS1, and DS3. With the packet-based Calix C7, TDS is able to deliver a wide array of voice, data, and video services to business and residential subscribers over its 1.1 million access line footprint covering 30 states (4/3/06).

CreekPath Systems

www.creekpath.com

■ Opware signs a definitive agreement to acquire CreekPath Systems. Opware will build on the acquired technology and leverage it as the foundation for the company's upcoming application storage automation solution, which is scheduled to be available in



CreekPath Acuity's approach to storage asset management was validated by results of a recent study by industry analyst TheInfoPro's (TIP). The study confirmed that storage professionals are concerned with a variety of storage-related issues ranging from the need to more effectively manage infrastructure growth to the need to prioritize requirements and spending. In addition, the study indicated that the risk of overcapacity and under-utilization is significant and that managing storage growth and capacity forecasting are critical pain points for storage professionals.

the first half of calendar 2007. The Opware Application Storage Automation System will join the company's market-leading Server Automation and Network Automation Systems to provide the most comprehensive platform for data center automation available. It will be the first solution to integrate the automation of servers, networks, and storage to provide management from an application perspective instead of just at the infrastructure level. The acquisition is expected to close in early August. Under the terms of the agreement, Opware will pay approximately \$10 million in cash, with a maximum potential earn-out of an additional \$5 million in cash (7/11/06).

■ Creekpath unveils CreekPath Acuity™, a next-generation information technology (IT) asset and service management solution for data storage infrastructure. Creekpath Acuity is the first solution to align storage-related metrics and business concerns, helping IT executives mitigate the risk of misconfigured networks or capacity shortages, while avoiding unnecessary spending and dramatically raising return on assets (4/3/06).

■ CreekPath opens a new Silicon Valley office. In addition, CreekPath has launched a partnership with HCL Technologies, a global provider of IT and business process outsourcing (BPO) solutions. Under the agreement, HCL has created a development center in Chennai, India (3/27/06).

Ikanos Communications

www.ikanos.com

■ Korean-based OEMs Dasan Networks, Inc.; Millinet Co. Ltd.; and Woojyun Systec select Ikanos's Fx10050-4-HD multi-mode (VDSL2, VDSL, ADSL2+, ADSL) chipset for their next-generation fiber-to-the-building (FTTB) and central office/remote terminal (CO/RT) platforms. Carriers in Korea are in the process of upgrading their access networks to 100 Mbps performance (6/22/06).

■ Erenis, a company known for innovative broadband services in France, deploys Ikanos-based VDSL equipment to deliver interactive broadband services to its customers. Erenis operates an FTTB network to multi-dwelling residential buildings in greater Paris and has been using VDSL technology to deliver 15, 25, 40, and 60 Mbps service to customers. Erenis now plans to enhance its service offerings and deliver up to 100 Mbps of bandwidth to its subscriber base (5/16/06).

■ Ikanos announces record revenues for the first quarter of 2006. Net revenue was \$35.8 million, an increase of 26 percent from the \$28.5 million reported for the fourth quarter of 2005 and an increase of 191 percent from the \$12.3 million reported for the first quarter of 2005 (5/2/06).

■ Ikanos names Dean Westman as general manager and Rakinder Grover as vice president of business development. Prior to joining Ikanos, Westman served as vice president of sales and marketing at Mathstar, vice president of marketing at C-Cube Microsystems, and spent 15 years at LSI Logic. Grover had been a business development consultant and was a general partner at the venture capital firm of Walden International (4/28/06).

Jungo Software Technologies

www.jungo.com

■ Freescale Semiconductor and Jungo collaborate to deliver an Office-in-a-Box reference platform for the small-medium business (SMB) multi-service gateway market. The Office-in-a-Box platform blends Jungo's OpenSMB software with Freescale's MPC8349E mITX reference board. The versatile board features the MPC8349E PowerQUICC™ II Pro processor containing a PowerPC® core and Vitesse's SparX Gigabit Ethernet switch technology (4/3/06).

LiteScape

www.litescape.com

■ Needle & Rosenberg, one of the largest intellectual property law firms in the Southeast, purchases LiteScape's VoIP applications for the legal vertical market to automate its call tracking and billing processes to clients. The solution has been deployed in multiple locations to all employees including the firm's headquarters in Atlanta, GA, and offices in San Diego, CA (6/12/06).

■ Telecommunications industry leader and former AT&T executive Hossein Eslambolchi joins the LiteScape Board of Directors (6/5/06).

■ LiteScape's collaboration applications are now available on the new, video-enabled Cisco 7985G series IP

The Cisco® IP Phone 7985G is a personal desktop video phone



phones. The 7985G is a personal desktop video phone that makes instant, face-to-face communication possible directly between offices. The optional LiteScape Secure Personal Authentication Reader (SPAR) can be attached to any Cisco IP-device to provide identity management for personalization and security via RFID, magnetic card, smartcard, and bio-metric authentication (5/30/06).

■ Bell Canada begins marketing LiteScape applications throughout Canada. Applications cover three key areas: collaboration, identity management, and converged CRM. LiteScape's applications are built on the company's Multi-modal Application Platform™ (MAP), which enables the real-time management of interactive sessions comprised of voice, data, and image streams that can be coordinated and simultaneously delivered to various IP phones and devices (5/8/06).

■ Marking its entrée into the European marketplace, LiteScape announces that the law firm of Allen & Overy has selected LiteScape's VoIP solutions to improve the firm's global communications and collaboration. LiteScape's CallTrack PRO and OnCast Directory are being deployed at the firm's London offices to unify communications between phones, PCs, and other IP-enabled devices (4/26/06).

LogLogic

www.loglogic.com

■ LogLogic successfully collects audit logs from EMC's Celerra file server using Project Lasso. Project Lasso does not require an agent solution to be installed on the Celerra server. These audit logs are essential to many companies' security and compliance projects as they contain detailed records of information access (6/14/06).



LogLogic LX

■ LogLogic releases Project Lasso, a LogLogic-sponsored and community-supported open source project that promotes rapid development of innovative technologies for monitoring any kind of Windows event. Available at no cost for download from LogLogic.com, the Project Lasso reference design release is the first in a series of community initiatives from LogLogic intended to encourage developers, IT professionals, and other technologists to participate in, and accelerate the technology development process around log files and their management (5/1/06).

■ LogLogic becomes a member in the NetApp® Partner Program to help customers automate the ability to collect, alert, store, and report on log data, while delivering enhanced levels of reporting and alerting for critical processes such as COBIT 4.0, and regulations such as Sarbanes-Oxley, HIPAA, and PCI. Log data can account for up to 30 percent of enterprise data storage requirements. With as many as 10,000 log messages generated per second from a single set of firewalls, more than 25 terabytes of storage are needed each year to house all log data required for regulatory compliance initiatives (4/3/06).

Lynx Photonic Networks

www.lynx-networks.com

■ The City of Austin, TX, selects Lynx Photonic's LightLEADER bypass switching system to protect its fiber optic network.

The LightLEADER optical bypass system is specifically designed to recover from disasters and outages, keeping the network up and running. Failed nodes are bypassed, and the connectivity is maintained among the rest of the nodes, thus improving overall network resilience (5/2/06).

OnFiber Communications

www.onfiber.com

■ Qwest Communications acquires OnFiber Communications. The agreement calls for a \$107 million purchase price with Qwest having the option up until closing to substitute up to \$35 million of Qwest shares for cash. The transaction is anticipated to close in the third quarter. Qwest currently provides similar solutions to metropolitan areas within its 14-state operating region. This acquisition deepens Qwest's out-of-region metropolitan coverage while reducing third-party access costs (5/15/06).

■ OnFiber is ranked as one of the 10 largest U.S. Ethernet service providers, according to Vertical Systems Group, a market research and consulting firm. During the next year Vertical Systems expects significant shifts in share position as a result of more proactive service delivery, broader geographic coverage, and the rollout of cost-effective Ethernet offerings below 10 Mbps (4/27/06).

Sierra Design Automation

www.sierra-da.com

■ NEC Electronics selects Sierra Design's Sierra Pinnacle™ as the physical implementation tool of choice after multiple design successes. Sierra Pinnacle is the only physical implementation solution in the marketplace that comprehensively addresses variability issues such as process and manufacturing variations, multiple design modes, and high capacity requirements at 90nm and below. Sierra Pinnacle also is being used actively in many top 20 semiconductor companies to achieve the highest performance and fastest design closure (6/19/06).

■ STMicroelectronics uses Sierra Pinnacle product suite showcasing Advanced Chip Assembly to tapeout an advanced 90nm design. Sierra Pinnacle's Chip Assembly solution combines the strengths of the conventional hierarchical and flat design flows to deliver the high capacity, runtime, and memory benefits of a hierarchical flow without sacrificing the high-quality results of flat flows (5/31/06).



Sierra Pinnacle is the industry's first IC implementation solution that comprehensively addresses the performance, capacity, time-to-market, and variability challenges occurring at the 90nm and 65nm.

■ Sierra Design completes a \$14 million Series B financing. Artiman Ventures, TeleSoft Partners, and Evercore Ventures participated in the current round. The additional investment will be used to continue ongoing sales expansion and to broaden product portfolio (5/15/06).

■ Sierra Design establishes offices in India to support the growing adoption of its products. Sierra Design Automation Private Limited will be based in Bangalore, India, and will be headed by General Manager Raja Subramaniam (5/8/06).

Tele Atlas

www.teleatlas.com

■ Tele Atlas/Logistics, the first comprehensive digital map database for routing road-restricted vehicles, was named the Best Commercial Vehicle Application at the 2006 Telematics Update event in Detroit, MI. Dispatching, routing, load sequencing, and tracking software optimize fleet operations (6/2/06).

■ Tele Atlas appoints Brad Steer to the newly created position of senior vice president of sales for North America. Before joining Tele Atlas, Steer was regional vice president for Sprint (6/1/06).

■ Tele Atlas announces an agreement with TeleNav, North America's number one location-based services (LBS) application provider, under which Tele Atlas will supply

global digital maps for TeleNav's products. Tele Atlas' geographic content already powers 150 LBS-based applications on wireless personal navigation devices, PDAs, and smartphones, including city guides, real-time traffic, weather, and social networking applications (5/31/06).

■ Tele Atlas signs a three-year renewal of its agreement with AvMap, a rapidly expanding Italian navigation-based company. Based on Tele Atlas data, AvMap's fully detailed cartography offers road data as well as displays a large database of more than 1.8 million points of interest in Europe (5/29/06).

■ Tele Atlas expands its Latin American map coverage with the acquisition of detailed source data covering Mexico's highway and street network. The company also is opening an office in Mexico to focus on sourcing and data validation. The Mexico maps will enrich a database that already includes more than 7 million miles of roads in Canada, the United States, Brazil, and Argentina (5/23/06).

■ Tele Atlas moves its European headquarters from the Moutstraat, in Ghent, to larger offices at the new Office Park Zuiderpoort, in Ghent (5/19/06).

■ Tele Atlas announces the Tele Atlas DeveloperLinkSM program, which is designed to provide developers access to free map data and technical and business resources to support development of next-generation map-enabled applications. DeveloperLink forms a first-of-its-kind online networking community for application developers bringing new location-based and navigation services to market (5/15/06).

■ Inrix and Tele Atlas team up to optimally collect, integrate, and deliver enhanced Tele Atlas traffic solutions and related map information within wireless applications and personal and in-car navigation systems. Tele Atlas customers will immediately benefit from the expanded partnership through access to Inrix's real-time and predictive traffic information and the ability to develop next-generation navigation solutions featuring applications such as traffic-influenced dynamic routing. Inrix currently provides real-time traffic incident information for 138

metropolitan markets and real-time traffic speed and dynamic predictive information for more than 20 markets (5/8/06).

■ Tele Atlas supplies European and North American digital map data and point of interest (POI) content for the Pioneer Corporation's current and future in-car navigation systems, including the new

AVIC-X1BT and AVIC-N3 series of products. Pioneer's

after-market navigation systems, sold in Europe, the U.S., and Japan, combine innovative touch panel control and voice commands with a sophisticated menu designed for ease of use, precise position information, and advanced routing features (5/3/06).

■ Tele Atlas reports 40 percent revenue growth for its first quarter 2006. Revenue for the quarter was €56.5 million in the first quarter of 2006, compared to €40.4 million in the same period of 2005. European revenues for the first quarter rose by 44 percent to €39.8 million from €27.7 million for the same period in 2005. This increase was primarily the result of higher sales in the personal navigation segment. North American revenues increased by 31 percent to €16.7 million largely as the result of higher revenues from the government, enterprise sector, and automotive segment. Excluding the effect of movements in the EUR/USD exchange rate, revenues increased by 18 percent (4/27/06).

■ Tele Atlas announces the availability of Tele Atlas Traffic, a service that brings highly accurate, real-time traffic data, maps, and incident alerts to Java-enabled wireless phones. Downloadable for \$2.99 from Cingular Wireless, Tele Atlas Traffic allows subscribers to obtain instant access to information on roadway speeds, accidents, closures, and scheduled events that impact traffic, such as sporting games (4/5/06).

■ Tele Atlas opens a new office in Boston, MA. It houses about 30 employees including executive management, corporate marketing, and global technology teams (4/4/06).



Pioneer's AVIC-X1BT

Validity Sensors

www.validityinc.com

■ Validity Sensors debuts its latest next-generation durable fingerprint sensor product, the VFS161. Validity's new smaller-footprint VFS161 sensor, with its ultra flexible z-height, easily integrates into PC market devices such as consumer and enterprise notebooks and peripherals. Users can easily swipe their finger over an extremely durable plastic surface for password replacement, authentication, identification, and securing important data. The product uses Validity's patented LiveFlex™ Technology (5/11/06).

■ Validity Sensors appoints Jalil Shaikh as its chief executive officer. Shaikh formerly was vice president and assistant general manager at Broadcom following its successful acquisition of Zeevo, Inc. (5/2/06).

■ Validity Sensors names Tony Alvarez to its board of directors. Alvarez is the president, chief executive officer, and a member of the board of directors of Leadis Technology (4/25/06).

■ Validity Sensors appoints Atiq Raza as the chairman of its board of directors. Raza is the founder, chairman, and chief executive officer of Raza Microelectronics Inc. (4/20/06).

VoiceObjects

www.voiceobjects.com

■ VoiceObjects names Beatriz V. Infante as its new CEO. Infante also will take a seat on the company's board of directors. She has served as interim chief executive officer of Sychron and chairman, president, and CEO of Aspect Communications (3/21/06).

Xpedion Design Systems

www.xpedion.com

■ Xpedion introduces the industry's first transistor-level phase-locked loop (PLL) solution for verifying complete closed loop noise and jitter. GoldenGate allows PLL designers to fully verify their designs prior to silicon to save design spins and reduce time to production. Phase-locked loops represent one of the most challenging design hurdles to overcome in complex integrated circuits and are often the reason for failing silicon (4/25/06).

Conference Calendar

DESIGN AUTOMATION CONFERENCE (DAC)

July 24–28, 2006
San Francisco, CA
Participating: Sierra Design Automation

SPEECHTEK

August 7–10, 2006
New York, NY
Participating: VoiceObjects

CANALYS NAVIGATION FORUM 2006

September 11–13, 2006
Geneva, Switzerland
Participating: Tele Atlas

FALL VON

September 11–14, 2006
Boston, MA
Participating: BayPackets

MARTIN GROUP'S TECHNOLOGY CONFERENCE

September 12, 2006
San Antonio, TX
Participating: Calix

CTIA WIRELESS IT

September 12–14, 2006
Los Angeles, CA
Participating: Tele Atlas

ADC FTTX SYMPOSIUM

September 20, 2006
Penn State/State College, PA
Participating: Calix

2006 FTTX CONFERENCE & EXPO

October 2–5, 2006
Las Vegas, NV
Participating: Calient, Calix

ITS WORLD CONGRESS

October 8–12, 2006
London, England
Participating: Tele Atlas

SAE CONVERGENCE

October 16–18, 2006
Detroit, MI
Participating: Tele Atlas

VOICE DAY 2006

October 18–19, 2006
Bonn, Germany
Participating: VoiceObjects

MIDWEST TELECOMMUNICATIONS EXPO

October 24, 2006
Ft. Wayne, IN
Participating: Calix

Highlighting key job opportunities
at our portfolio companies

Executive Recruiting

Knowledge Adventure (Torrance, CA)

www.adventure.com

- Vice President, Marketing

Validity Sensors (Phoenix, AZ)

www.validityinc.com

- Vice President, Marketing

Investment Bank Analysts

Alcatel (ALA): Eiji Aono, Credit Suisse First Boston (44-20-7883-6884); Tim Boddy, Goldman Sachs (44-20-7552-1036); Tim Long, Bank of America (212-847-5506)

CIENA (CIEN): Tim Savageaux, Merriman Curhan Ford (415) 248-5600; Todd Kaufman, Raymond James (727-567-5647); Hasan Imam, Thomas Weisel Partners (212-271-3698)

Cisco (CSCO): Tim Long, Bank of America (212-847-5506); Wojtek Uzdelewicz, Bear Stearns (212-272-2139); Brantley Thompson, Goldman Sachs (212-902-9823)

Ikanos (IKAN): Jeremy Bunting, Thomas Weisel Partners (415-364-2610); Arnab Chanda, Lehman Brothers (310-481-4901); Ben Lynch, Deutsche Bank (212-250-0772)

Intel (INTC): Michael Masdea, Credit Suisse First Boston (415-836-7779); Rick Schafer, CIBC World Markets (720-554-1119); Christopher Danely, JP Morgan (415-315-6774)

SigmaTel (SGTL): Jason Pflaum, Thomas Weisel Partners (212-271-3583); Rick Schafer, (720-554-1119); Christopher Danley, JP Morgan (415-315-6774)

SanDisk (SNDK): Eric Gornberg, Thomas Weisel Partners (212-271-3427); Gurinder Kalra, Bear Stearns (415-772-3217); Craig Ellis, Citigroup (415-951-1887); Daniel Gebtuch, CIBC World Markets (212-667-8108)

Tele Atlas NV (TA.AS, TATL.DE): Stuart Jeffrey, Lehman Brothers (44-20-7102-4709); Charles Elliott, Goldman Sachs (44-20-7774-1649); Gary Rollo, Morgan Stanley (44-20-7425-4619)