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PONdering the Paradigm: 2005

Signs multiply of a turning point in view. Will it be a Christmas tree for the Telecosm, laden with riches? Or another deciduous delay?

Another year is passing, and visible in the gilded gloaming is an aurora of passive optical radiance. PONs (passive optical networks) they are called, and they are paradigmatic last mile systems that use passive optics, such as couplers, splitters, and triplexers to shunt and shuttle infrared light between optical line terminals (OLTs) in a central node to optical network units (ONUs) in the targeted households through a tree of glittering glass implanted in the neighborhood. It is the next generation of the broadband local loop, lifting it from its current megabit jitterware of digital subscriber line (DSL) and cable modem to a new realm of multigigabit connections. Will it be a Christmas tree for the Telecosm, laden with riches? Or another deciduous delay?

Signs multiply of a turning point in view. Internet traffic continues nearly to double annually in the U.S. and multiply at a far faster pace in Asia. In Japan, **NTT** (DCM) has committed to a plan to spend some $48 billion to reach 30 million households by 2010 with gigabit Ethernet passive optical networks (ePONs). That's $48 billion, mostly for the optical industry. Softbank/Yahoo's Broadband responds: "So what? We have 300 thousand ePON homes reached already." **UTStarcom** (UTSI) is deploying thousands of ePONs in China for about $300 per home. The Koreans are rushing ahead with VDSL (very fast digital subscriber line) at up to 52 megabits per second, but are contemplating PONs for the future. **Verizon** (VZ) and **SBC** (SBC) are launching a different line of PONs from **Alcatel** (ALA)—even faster ones called gPONs that run at 2.5 gigabits per second. Divide that by 64 households and it yields around 40 megabits per household. With new MP-4 and **Microsoft** (MSFT) Media 9 compression schemes, 40 megabits is enough to accommodate six high-definition video streams plus Wi-Fi backhaul and a chorus of voices-over-IP. While the Asians host PONs by the millions, hundreds of thousands of Americans will soon be served.

Nonetheless, some of the loyal subscribers on my subscriber message board (The Telecosm Lounge at *www.gildertech.com*) have been charging that my recommendations are all zPONs (Ponzi schemes), fact-free and fanciful.

Hey, I confess. Under current SEC Fair Disclosure regs and other rules, facts are illegal. Unless you are Warren Buffet or Vinod Khosla or Jeffrey Immelt–a VC or conglomerateur–you cannot go inside to invest. Unless you are Governor Schwarzenegger, you cannot even go inside to smoke. The entire investment industry is thus restricted to second-hand smoke. Analysts pore through the rearview residues of quarterly income statements; they study the entrails of economic astrology from the demand-side; they scrutinize the technical indicators from the market. I call it the outside trading scandal.

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Inside:

However, hark the herald angels, wafting up from the optical trenches into our Telecosm Lounge is some fragrant secondhand smoke from the redoubtable "Uniphase." Anyone who doesn't frequent the Lounge is missing a constant stream of savory observations from some of the best analysts in the business, whose pseudonymous posts bring you as close as legally possible to Schwarzenegger's pipe and other nutritious secondhand smoke. Apart from Uni, Charlie Burger, Nick Tredennick, and the others from the *GTR*, we now have Frank Coluccio, who posts eloquently from New York, where he has designed many of the key downtown networks around the Hudson Street nexus, and whose mastery of the evolving optical scene is nonpareil. Among multitudinous insights, he tells us to look into **Nortel** (NT) and its new common optical interface, which is being installed in the Netherlands, displacing a previous deployment from **Cisco** (CSCO).

Uniphase's key strategic observation is that the situation in last mile optics remains turbid, with the winners still uncertain. Under those circumstances, he advises you to disperse your bets among the best situated players. He points to the producers of key components, such as **Avanex** (AVNX), our old favorite fallen from grace, which has a direct line to the PONs deployments through its alliance with Alcatel, from which Avanex last year purchased the optical component business. Alcatel is a European titan that is supplying PON technology to companies around the world, including Verizon, which plans to pass 3 million homes by the end of next year, and SBC, which promises some 300,000 actual connections every year for the rest of the decade.

Every PONs tree needs modules encasing those splitters, couplers, and triplexers. In the Alcatel deployments many of these will come from Avanex. Also in these deployments, whether from **Tellabs'** (TLAB) AFCI or **Ciena's** (CIEN) Catena, will be critical path triplexers from **MRV Communications** (MRVC). As a play on the last mile broadband that will be expanding over the next year, Uni recommends both these component companies, AVNX and MRVC. His case is cogent and we endorse it.

While waiting for the PONs tides to flow in, however, Uniphase recommends Ciena as the company with the most complete set of edge and core equipment for both home and enterprise, including WaveSmith multiservice switches, **Laurel** routers, and Catena's last mile CN1000 switch now being tested by a couple of the BOCs. He believes that Ciena is a better play than Tellabs, even with its acquisition of AFCI, previously on our list. He explains: "Before you travel do you get directions?" Go to Ciena and it will tell you how to get from the ATM/Frame legacies still in the clutches of most carriers to the IP world beyond. It will enable you to deploy robust IP backbones for VOIP while retaining access for businesses through encapsulating legacy flows of Frame and ATM in IP packets at the node. Tellabs cannot offer a full solution. Hey, it's not fully paradigmatic, but Ciena might get you from here to there, before the full world of optical radiance dawns for Broadwing and the other pure plays.

What puts a company on the list is alignment with the paradigm: the direct coupling of fibersphere (optics) to atmosphere (wireless), with the "copper cage" of electronic networks dissolved and electronics restricted chiefly to computational functions: the "hollowing out" of computers and networks as they dissolve into worldwide webs of glass and light and air.

Thus Broadwing's all-optical backbone network, now extended by Focal's local loops, is a pure play in the paradigm; **Essex** (KEYW) extends the power of optics though dramatic all-optical innovations useful to the military and demonstrates that single fibers can carry as many as 14,000 different colors of light at low power with ever greater performance. Creating revolutionary new stacks of chips linked to the world through dense optical transponders on the top, Xanoptix has changed its name to **Xan3D** after abandoning a costly effort to create a full optical and hybrid manufacturing capability at their facility in Merrimack, NH. Explains Founder-CTO John Trezza, "It turned out no one wants to send their chips to NH." The new strategy is to collaborate in partnerships with foundries. Interest remains high, the investors are still on board and bullish, and imitators, from Kleiner Perkins' **Infinera** to Simon Cao's new **Aracor**, are joining the campaign to bring optical communications to the chip and board levels in a direct paradigm play.

Meanwhile, hollowing out the nodes of the network, **EZchip** (LNOP) dissolves the complex copper cages and harnesses of **Cisco** (CSCO) routers and **Lucent** (LU) switches and crossconnects and puts them onto single chips with a few memory devices. Thus EZ promises to play a role in the router similar to **Intel's** (INTC) role in the PC. With the center of the network hardening and the edge softening, **Altera** (ALTR) and **Xilinx** (XLNX) both are long time favorites because of their contribution to the "softening" of the network edge of complex hardwired nodes while the core with its millions of lines of central office code hardens into glass (Broadwing).

While the telecom industry rushes to replace copper connections with fiber optics, accelerating every link, the semiconductor companies in response are turning to copper to accelerate the metallization layers on top of the chip. This shift from the aluminum wires that have been standard for decades will be the prime change in semiconductor wafer fabrication until the move toward Xan3D stacks later in the decade. Since many people in the industry still imagine that copper metalization can enable microchips to usurp optics, the move to copper may even harbor an anti-paradigm impulse. But as a spearhead of the move to copper, **Semitool** (SMTL) is a favorite of mine. I continue to buy some shares more or less whenever the stock goes down. Its chief competitor is **Novellus** (NVLS), a much larger firm that recently was forced to license Semitool technology. Semitool is cheaper and riskier but very agile and creative. In general, you will find me discussing such companies—peripheral to the paradigm but not central to it—on the subscriber message board more than in the newsletter. In the following pages, we review the companies of the paradigm.

—George Gilder
December 17, 2004

TELECOSM TECHNOLOGIES

Advanced Micro Devices	(AMD)
Agilent	(A)
Altera	(ALTR)
Analog Devices	(ADI)
Broadcom	(BRCM)
Broadwing	(BWNG)
Cepheid	(CPHD)
Chartered Semiconductor	(CHRT)
Equinix	(EQIX)
Essex	(KEYW)
EZchip	(LNOP)
Flextronics	(FLEX)
Intel	(INTC)
JDS Uniphase	(JDSU)
Microvision	(MVIS)
National Semiconductor	(NSM)
Power-One	(PWER)
Qualcomm	(QCOM)
Semiconductor Manufacturing International	(SMI)
Sprint	(FON)
Synaptics	(SYNA)
Taiwan Semiconductor	(TSM)
Terayon	(TERN)
Texas Instruments	(TXN)
Wind River Systems	(WIND)
Xilinx	(XLNX)
Zoran	(ZRAN)

Note: The Telecosm Technologies list featured in the Gilder Technology Report is not a model portfolio. It is a list of technologies that lead in their respective application. Companies appear on this list based on technical leadership, without consideration of current share price or investment timing. The presence of a company on the list is not a recommendation to buy shares at the current price. George Gilder and Gilder

Advanced Micro Devices (AMD)

PARADIGM PLAY: INTERNET COMPATIBLE PROCESSORS

DECEMBER 16: 22.49; 52-WEEK RANGE: 10.76 - 24.95. MARKET CAP: 8.26B

AMD may be the Avis of microprocessor design, but in 2004 she flicked on her high beams and blinded Hertz from behind. Although posing no long-term threat to the Intel imperium, AMD gained a tactical edge at the top end with x86 extensions for 64-bit processors, at the desktop with its dual-core microprocessor strategy, and at the bottom with the purchase of the x86 Geode line from National Semiconductor.

In late February, Hewlett-Packard, long an Intel partner and the original source of Intel's high-end Itanium design, announced it would build servers with x86-friendly AMD64 chips. After this blow to the embattled Itanium, Intel admitted it would have to rush an x86-friendly 64-bit chip to market, confirming that in the all-Internet all-the-time teleputer paradigm, the DNA (digital normative architecture) will be the instruction set of the x86 microprocessors that inform both Windows and Linux operating systems and the applications that invoke them.

Further blindsiding Intel, AMD said it would release a dual-core microprocessor in 2005, probably beating Intel to market by several months. As processor and memory speeds continue to diverge and pin bandwidth fails to keep up, clock speeds do not deliver proportional performance gains. Thus the dual core strategies from AMD and Intel.

AMD wants to flood the world with cheap personal computers. In its first step in integrating Geode into its strategy, AMD announced the Personal Internet Communicator (PIC) in October. A Windows computer based on the Geode GX500, PIC will have a 10-GB hard disk, 128 MB of memory, a modem, and cost just $249 complete with display. Embedded x86 applications are the next frontier and they dwarf all other markets in unit volume. When the x86 invades embedded systems to take over those applications and displace ARM, MIPS, PowerPC, and hundreds of older instruction sets, AMD will be there to profit from it.

After three years of losses, AMD should earn about $0.51 per share this year (before one-time charges). Since being added to the list on 21 January, shares of AMD have appreciated 41%, from $15.90 to $22.49 for a calendar 2004 PE of 43, while shares of Intel have depreciated by 29%, from $32.20 to $22.87 for a calendar 2004 PE of 20.7. Working near capacity, AMD crucially needs to complete construction of Fab 36 on time (early 2006) and hopefully within budget. In case of further demand upside, AMD announced last month that Chartered Semiconductor has agreed to become a foundry partner, supplying AMD with microprocessors by 2006.

Agilent (A)

PARADIGM PLAY: MICROCOSMIC OPTICS, CDMA POWERAMPS

DECEMBER 16: 23.68, 52-WEEK RANGE: 19.51 – 38.70, MARKET CAP: 11.53B

Perhaps the prime mediator between telecosm and microcosm, Agilent focuses on the fertile crescents of opportunity between the two domains. Not only is it the leading supplier of CDMA duplexers and amplifiers, it is also the leader in fiber-optic test and measurement and in fiber-optic transceivers which convert electronic signals to photonic inputs and outputs. Based on integrated arrays of vertical cavity surface emitting lasers (VSCELs), Agilent's transceivers and connectors can now bring hundreds of gigabytes per second of optical communications power into the back planes and motherboards of computers.

Agilent's healthy balance sheet showcases the company's ability to withstand cyclical storms due to its multiple technologies and markets—test and measurement, automated test, semiconductors, and life sciences and chemical analysis. Thus, despite the recent semiconductor industry downturn, net working capital increased by $700m during fiscal 2004 ending October, reaching $2.7b, and revenues increased 19% over the same period, from $6.1b in fiscal 2003 to $7.2b this year while gross margin increased from 41% to 45%. With the company projecting the next quarter or two to be slightly weaker sequentially, the stock currently trades at an enterprise multiple of only 1.4x sales and is significantly off its January high of $38.80 as short-sighted investors neglect Agilent's far-sighted prospects.

Altera (ALTR)

PARADIGM PLAY: SOFTENING HARDWARE, HARDENING SOFTWARE

DECEMBER 16: 20.14, 52-WEEK RANGE: 17.50 – 26.82, MARKET CAP: 7.50B

In the paradigm, software is hardening and hardware is softening. Programmable logic titan Altera does both. Its programmable logic softens hardware by rendering it reprogrammable in real time. Its robust design tools automate, simplify, and thus "harden" the programming of its chips. These capabilities should enable Altera (and its rival Xilinx, see below) to expand from the $4b market for programmable logic into the $30b-and-growing market for application specific integrated circuits (ASICs) and eventually supplant it. Each ASIC is a custom design for its application, while the programmable logic device is generic in manufacture and is customized in the field through the Internet, avoiding costly service calls.

MEAD'S ANALOG REVOLUTION

NATIONAL SEMICONDUCTOR (NSM)
SYNAPTICS (SYNA)
SONIC INNOVATIONS (SNCI)
FOVEON
IMPINJ
AUDIENCE INC.
DIGITALPERSONA

COMPANIES TO WATCH

ATHEROS
ATI TECHNOLOGIES (ATYT)
BLUEARC
COX (COX)
ENDWAVE (ENWV)
LINEAR TECHNOLOGY (LLTC)
LUMERA (LMRA)
ISILON
LEGEND GROUP LIMITED
MEMORYLOGIX
NOVELLUS (NVLS)
POWERWAVE (PWAV)
TECHNOLOGY SAMSUNG
SEMITOOL (SMTL)
SIRF
SOMA NETWORKS
STRETCH INC.
SYNOPSYS (SNPS)
TENSILICA
VIA TECHNOLOGIES
XANOPTIX

Programmable logic has now improved to the point that it is good enough for most applications that previously required ASICs. Altera is eyeing the even larger ($40b) but harder to penetrate microprocessor and digital signal processor market. Clearly targeted to this market is Altera's soft core Nios device that can be implanted on any Altera chip.

Despite a 2% sequential decline in revenues in 3Q ending September, Altera reported that its new products, now mostly using the 90-nanometer process, grew 25% based only on prototyping-stage design-wins, indicating the possibility of strong revenue growth looking out a year or more. On 8 December Altera indicated that computer, storage, consumer and communications sales would be down sequentially in 4Q—noting particularly a slowing market for wireless and access products. After a 7.8% plunge to $20.47 the day following the preannouncement, shares of Altera were trading at 31.5x forecast 2004 earnings (after correcting for a one-time tax benefit) but were still up from the low of $17.50 in September. Though perhaps pricey for the short-term in the face of the semiconductor downturn and inventory buildup, informed investors will look past that to Altera's apparently early successes in the huge and still largely untapped ASIC, microprocessor, and digital signal processor markets, bolstered by $1b in working capital and no long-term debt.

Analog Devices (ADI)

PARADIGM PLAY: ANALOG EVERYWHERE, SOFTENING RADIOS

DECEMBER 16: 37.12, 52-WEEK RANGE: 31.36 – 52.37, MARKET CAP: 13.95B

A key to the paradigm is the continued power of analog in a digital age. Analog expertise is rare and costly and ADI has a meaningful share of the world's analog design talent. We like Analog Devices for its analog electronics and MEMS (microelectromechanical systems). Analog Devices is a pioneer in MEMS and has been in high-volume production for years selling accelerometers in the margin-tough automotive industry. ADI is well positioned to capture growth in RF MEMS. Radio frequency (RF) expertise, a form of analog, is hard to find, and ADI is well equipped in the field. MEMS were ascendant in the microcosm before "nanotech" NEMS became the fashion.

Broadcom (BRCM)

PARADIGM PLAY: LEADING FABLESS BROADBAND DESIGNS

DECEMBER 16: 31.91, 52-WEEK RANGE: 25.25 – 47.05, MARKET CAP: 10.50B

Next to Qualcomm, Broadcom is the most successful of the fabless companies, and like Qualcomm, it focuses on paradigmatic bandwidth and communications chips. Broadcom continues to proliferate leading-edge products in ascendant markets. For example, the company counts 150 design wins in Bluetooth wireless networking, from handsets and autos to PCs and peripherals—including several wins from Qualcomm. New Gigabit Ethernet chips in 2005 should extend Broadcom's lead in functionality and security over rival Marvell, and in the low-end, high-volume market where Fast Ethernet continues to grow, Broadcom is introducing ultra-low-cost switches.

The company continues to make inroads in storage with a chip designed to facilitate the networking of consumer-class PCs to one another and to hundreds of gigabytes or terabytes of storage in new office and entertainment servers. After serious gains against Terayon in DOCSIS 2.0 cable-head-end chips, Broadcom now boasts a whopping 85% share of the cable modem market. Also in 2004, Broadcom extended its lead in set-top boxes and digital video recorders, and continued to gain in Wi-Fi home networking with new chips for printers and other peripherals. After being designed out of most Intel-based servers, Broadcom is fighting back in support of AMD's Opteron platform with chipsets to hit the market in 2005.

In the September quarter, Broadcom completed the acquisition of WCDMA design house Zyray and entered the competitive CDMA wireless market, where Qualcomm leads but where fast growth should provide second source opportunities for Broadcom.

In December, Broadcom should complete its second consecutive year of 50% top-line growth, with $2.4b in sales, and see a surge in operating margin over the same two years, from negative 7.3% to plus 21.5%. Generating $287m in cash from operations so far this year, Broadcom has increased working capital from $492m last December to $955 in September and claims a healthy current ratio of 2.7. Though substantially off their high of $47 in June, shares are still trading at a pricey 33x estimated 2004 earnings (26x earnings before nonrecurring charges and amortization of goodwill), as investors appear to expect a continuation of recent growth.

Broadwing (BWNG)

PARADIGM PLAY: THE PARAMOUNT ALL-OPTICAL COMPANY

DECEMBER 16: 8.55, 52-WEEK RANGE: 5.11 – 30.70, MARKET CAP: 508.54M

Broadwing possesses the world's best fiber-optic network at a time when still rapidly expanding Internet traffic is beginning to impose discernible stress on the systems of the prevailing carriers. The best technology does not always prevail, but it is a mistake to bet on inferior technology. That rules out the other telecom companies.

The market's concerns are that like Global Crossing, MFNX, Globalstar, Exodus, Worldcom, and you name it as a telecom disaster of the nineties era of crash and burn, Broadwing will not survive: that it is diluting itself to gruel in order to pay its debt, that David Huber is an incompetently imperious CEO, that the company has hundreds of competitors, including the big four—ATT, Sprint, MCI-UUNET, and the regional Bells—that the price war in telecom will not end until all the smaller players are bankrupt, that the all optical advantage of Corvis equipment is specious or transitory, that Level 3 is buttressed or Buffetted by Warren, and that optics is over or at least overrated. There must be more qualms as well, enough to keep the critics coddling themselves while the bits flow right under their noses; in the last quarter Broadwing's data revenues rose 5% sequentially while the data revenues of its rivals nearly all fell between 5% and 10%, and it would appear that the superiority of the Broadwing network is beginning to pay off in market share gains. This is also reflected in the most recent financials showing growth in gross margin to 31%, up from the 20s last year and likely to climb to 35% to 40% next year. The recent acquisition of Focal Communications and its local networks should save substantially on network access costs going forward.

Though up a few bucks over the past two weeks, a purchase today could enable a rather quick double. (That is not going to come easy in this market with Greenspan and Snow talking down the dollar and caterwauling about the mythical menace of a trade gap.) Even if Broadwing equitizes the remainder of its convert debt through February 2006, an enterprise-value multiple of 2x sales at that time would still yield a share price of $18. If the dilution ends earlier and/or revenues increase, then we can expect even more upside in the price.

Remember. Broadwing has the best network in the world. Most people do not understand that. So you have an edge.

CEPHEID (CPHD)

PARADIGM PLAY: MICROELECTRONIC MACHINES FOR DNA IDENTITY

DECEMBER 16: 9.81, 52-WEEK RANGE: 6.16 – 13.56, MARKET CAP: 412.09M

The early leader in integrated systems for genetic analysis, Cepheid is Nick Tredennick's favorite candidate to create a lab on a chip. In an era of terrorism and of the globalization of highly infectious diseases, many analysts anticipate healthy growth in the biothreat, life sciences, and clinical genetic assessment markets over the coming decade. For Cepheid, growth has been nothing short of robust, with 3Q04 revenues up 25% sequentially to $14.1m and anticipated 2004 revenues of $49m, up 163% over the $18.6m of 2003.

Driving the revenue increase is the second-generation product, GeneXpert, which adds automated sampling to the first-generation SmartCycler that enables rapid genetic analysis of a sample. GeneXpert may be the world's only fully-integrated and automated genetic analysis

system; it eliminates contamination, enables testing at almost any location, and has a shorter time to result and higher specificity and sensitivity (up to a 1,000x more sensitive) than its known rivals. Though still in the final stages of development, GeneXpert is already being sold to the biothreat market through a Northrop Grumman led consortium developing an anthrax tester for the USPS. "Is it anthrax?" Now postal employees can get the answer in a little over half an hour rather than waiting until the next day.

Cepheid is increasing spending on R&D and manufacturing to accelerate delivery of clinical products, sacrificing near-term profits for long-term growth; the company projects gross margins well into the 60s in five years with customers clustered across the infection disease and oncology landscape, including operating and emergency rooms, doctors' offices, biothreat sites, labor and delivery rooms, and hospital, research, and public health labs. Today it trades at a lofty enterprise value of 7.6x anticipated 2004 revenues, and investors should plan on holding for at least five years. If revenue ramps at the same rate next year, enterprise value drops to 3x sales at today's market cap with still a long future ahead.

Chartered Semiconductor (CHRT)

MICROCHIP FOUNDRY SPECIALIST

DECEMBER 16: 5.81, 52-WEEK RANGE: 5.55 – 11.40, MARKET CAP: 1.46B

Guilty of not specializing enough amidst the rise of Chinese fabs, Chartered is forecasting lower than expected revenues (expected to drop 32% sequentially) and a decline in utilization, to 62% from 89% for Q4.

Despite the slowdown, we expect the foundry business to continue to grow, as the integrated-device manufacturers (IDMs) decline. The IDMs will increasingly share their proprietary semiconductor processes with the foundries to offload peak production. (IDM business models are tied to shrinking transistors.) Chartered and other foundries will add capacity in older processes to meet the demand for consumer appliances in emerging economies.

Equinix (EQIX)

PARADIGM PLAY: WHERE STORAGE AND BANDWIDTH CONVERGE

DECEMBER 16: 39.08, 52-WEEK RANGE: 24.24 – 41.38, MARKET CAP: 721.38M

This world leader in secure, Internet peering data warehouses will benefit from the continuing surge of Internet traffic, particularly from mobile devices with huge image files and meager memory, necessitating the migration of both storage and processing toward the core of the network. Adding 103,000 square feet of San Jose data center real estate, earlier this month, Equinix increased its global Internet exchange footprint to 1.4 million square feet. At capacity, the new Silicon Valley exchange should generate $25 - $30 million in annual revenues. Booking a record-breaking 87 new customers in Q3, this spearhead of the storewidth paradigm, continues its climb.

Essex (KEYW)

PARADIGM PLAY: "TURPIN'S LAW" – ANALOG OPTICS GALORE

DECEMBER 16: 17.87, 52-WEEK RANGE: 7.30 – 20.10, MARKET CAP: 272.50M

The world's leading company in analog optics, Essex boasts a technical team led by a genius named Terry Turpin, notable for an eye patch, a motorcycle, and a stream of unique inventions. The company's technology offers orders of magnitude superior performance in signal processing (for CDMA data, for example), Fourier transforms (conversion of signals from time domain to frequency domain), pattern recognition (finding Ben Laden), high resolution radar, encryption/decryption (up to 4 terabits per second), and optical communications mux/demux (up to 10,000 WDM channels). So far the company has failed to find large markets that enable low cost production of its unique and unorthodox products. Its time will come.

Until then, its radar and pattern recognition skills make it a vital and rapidly growing defense contractor on its way to a fourfold jump in revenues to $67m this year from $16m in 2003. Some $8m of that comes from the acquisition of two firms on the cutting-edge of cognitive computing and imagery processing and analysis. Having just raised some $80m through a public offering, look for Essex to announce additional acquisitions going forward. More than double its March low of $7.30, the stock now trades at an enterprise value of 4.2x sales.

EZchip (LNOP)

PARADIGM PLAY: TWO GENERATIONS AHEAD IN NETWORK PROCESSORS

DECEMBER 16: 11.56, 52-WEEK RANGE: 4.77 – 14.47, MARKET CAP: 106.94M

In late September, we told our readers on the Telecosm Lounge message board that LNOP shares would not be below 10 for long. The shares promptly moved from 6 to 8, then 10, 12, and up to 14. After settling around 12, LNOP took advantage of the higher share price in late November to buy an "insurance policy." Although the company had $12 million in cash and likely would have made it to profitability, EZ arranged a private placement of $14 million to erase any doubt of long-term viability. Current and potential customers can now rest easy. With quarterly operating expenses of under $3 million and $26 million in the bank, the company could now last for another 27 months with no revenues at all. But sales in the third quarter reached $1.4 million and are expected to grow to several million dollars a quarter as we move through 2005. With gross margins of more than 60 percent, the company could be profitable by year-end 2005, with just 10.6 million shares outstanding and almost $20 million still in reserve.

EZ's next generation of chips, known collectively as NP-2, expands EZ's addressable market more than tenfold. A series of seven distinct products all based on the same chip architecture, NP-2's will populate the highest-end 20-gigabit core routing applications as well as Gigabit Ethernet switches for the enterprise and data center. It is believed the proliferation of different NP-2 products arose from specific requests from existing customers, suggesting a substantial amount of built-in demand for these next-generation products. Two of EZ's best customers, moreover, are Huawei and ZTE, the two leading networking companies in the world's fastest growing major economy of China. Sales for 2006 could thus increase 5 to 10 times over 2005, tripling or quintupling share value over the next two years.

Flextronics (FLEX)

PARADIGM PLAY: CONTRACT MANUFACTURER MOVES UP AND INTO CHINA

DECEMBER 16: 14.36, 52-WEEK RANGE: 10.06 – 19.62, MARKET CAP: 8.03B

A leading contract manufacturer of electronic goods from cell phones to PCs, Flextronics specializes in simple electronics assembly. With operations in 28 countries and a large presence in China, Flextronics is a play in both the outsourcing paradigm and Asian ascendancy. It is also in a good position to move up market from board stuffing, to board design, to system design.

Intel (INTC)

PARADIGM PLAY: MICROPROCESSOR KING MOVES ONTO NETWORK

DECEMBER 16: 22.87, 52-WEEK RANGE: 19.64 – 34.60, MARKET CAP: 144.61B

Although EZchip is ahead at the high end, Intel is likely to move up the learning curve, after capturing the low end of the network processor market. Expect Intel to make its mark on this telecosmic sector and to continue as a major player in the Telecosm, through its microprocessor franchise.

JDS Uniphase (JDSU)

PARADIGM PLAY: COMPONENTS GALORE FOR THE FIBERSPHERE

DECEMBER 16: 3.05, 52-WEEK RANGE: 2.84 – 5.885, MARKET CAP: 4.40B

Still the giant in optical components, JDSU retains the broadest portfolio of devices in the industry. The company plunged deep into pump lasers at the top of the market, when its trailing-twelve-month revenues peaked at $3,233m in June 2001. The ensuing slide bottomed at $622m this past March and should creep back up to calendar 2004 sales of $717m based on company projections. Of note is that long-haul products grew to 25% of communications sales and reconfigurable optical add/drop multiplexers (ROADMs) began shipping.

Never profitable, even during the peak quarters of 2000–01, JDSU must still overcome some stiff production and market challenges before it can make its first penny. Facing possibly its first down-quarter in sales in over a year this December, gross margin has slid from the mid- to low-20s during 2004 due to low yields on new products and pricing pressures on mature lines. In particular, the recent ascendance of communications, with its negative 10% operating margin compared to the commercial and consumer group's positive 16% margin (but also down from 22%) has hurt the bottom line. Helping to stabilize quarterly EPS losses in the one- to two-penny range since March has been the decided decrease in combined research and administrative expenses from

45% of sales to 31%.

To reach the its long-term goal of 40% gross margins, management will continue to transfer production to China and to contract manufacturers such as Fabrinet, which recently bought JDSU's transceiver plants in Indonesia and entered into a strategic supply agreement.

An expensive stock, JDSU trades at an enterprise value of 5.6x estimated calendar 2004 sales and 4.7x management's guesstimated sales for 2005. Though the company is awash in liquidity, at the current price investors should await signs of more rapid sales growth and significant improvements in productivity before buying more shares.

Lenovo Group Limited (LNVGY.PK)
(formerly Legend Group)

PARADIGM PLAY: TO DOMINATE CHINA AND INUNDATE WORLD FOREIGN EXCHANGE

FOREIGH EXCHANGE

Moved to *Companies to Watch* list.

McData (MCDTA)

OFF THE LIST

DECEMBER 16: 6.01, 52-WEEK RANGE: 4.23 – 10.48, MARKET CAP 715.45M

Prices driven down by Cisco's entrance to market; weakened relationship with EMC; high level of management churn; better execution by Brocade (BRCD).

Microvision (MVIS)

PARADIGM PLAY: HEADS-UP TELEPUTER DISPLAYS

DECEMBER 16: 7.49, 52-WEEK RANGE: 3.75 – 10.93, MARKET CAP: 161.09M

Microvision is a superb technology, but it is still a niche. It will be some time before it breaks through into large markets. Until then it will go up and down. Its mastery of microelectronic machine technology, though, is likely to yield upside surprises.

Microvision is important for its MEMS mirror, used in displays and readers, and a good match for cell phones and cameras, where they complement the Foveon chip. MVIS's heads-up displays are also much better suited for automotive applications, than anything currently in use, and its future Flic bar-code scanners will be equipped to read 2D bar codes with handheld devices.

National Semiconductor (NSM)

PARADIGM PLAY: ANALOG LEADER AND IMAGER PIONEER

DECEMBER 16: 17.68, 52-WEEK RANGE: 11.85 – 24.345, MARKET CAP: 6.33B

Central among the Telecosm technologies since the launch of the *GTR* have been analog and mixed-signal chips—transducers that link electronic systems to such real-world forces as frequencies, amplitudes, temperatures, and pressures, crucially including light and sound. Indeed, every digital device must have analog interface to the real world, and as more functions go digital, such as CDs and DVDs, MP3 music and MPEG video, value migrates to the residual interfaces to the real world. Moreover, as more functions become portable, power economy becomes more important than processing power.

A major analog player, National Semiconductor combines the analog paradigm with the teleputer regime of low-power portable devices. Highly profitable analog products now account for a bit more than two-thirds of sales, and power management for mobile devices and consumer electronics accounts for 37% of sales, up 25% year-to-year in the November quarter. Although National supplies some power management for high-speed backplanes, where we expect Power-One's digital solution to take substantial share over the next few years (*GTR*, May 2004), most of National's power expertise is in smaller mobile products. For example, the company provides some 70% of the power control chips for handsets.

With orders for most product lines down in the November quarter, especially from Asian wireless handset customers and flat-panel display customers, revenues fell 18% sequentially to $448.9m. National has responded quickly to the downturn, lowering fab capacity utilization percentage to the mid-60s from the mid-90s. Yet gross margin fell only to 50.6% from 55%, well above the 35% of the previous downturn, attesting to National's continued successful push into a rich mix of analog products—while the entire analog industry grew 11.8% in the first ten months of 2004, NSM analog sales grew 35%. And CEO Brian Halla had yet more good news on the call, forecasting revenues to be flat to slightly down in February—a quarter that is usually down 4% seasonally—with gross margin holding steady. For National, the analog market lull appears to be ending, and investors responded by popping the stock almost 5% on the day to $16.79 or 20x fiscal 2005 earnings (ending May) assuming no growth in the next two quarters. This is still down significantly from the recent high of $24.35 in April.

National is one of the more modestly valued of the analog semiconductor players, and as a free premium, it owns nearly one third of Foveon's revolutionary new imager that is likely to dominate the industry over the next five years. NSM manufactures Foveon's chips at its wafer fab in Portland, Maine, and has licensed a very limited form of the Foveon technology. National can use the Foveon stacked sensors to fit a slot in a conventional mosaic system. In August, NSM sold its imaging business to Kodak while maintaining its investor and business relationship with Foveonz. Good news for Foveon and NSM, it means that these companies have ended their long tussle over intellectual property and ownership rights and are no longer rivals in the imager market.

Power-One (PWER)

PARADIGM PLAY: DIGITAL POWER MANAGEMENT CHIPS

DECEMBER 16: 9.46, 52-WEEK RANGE: 6.00 – 14.38, MARKET CAP: 794.07M

The digital economy now consumes some 14% of US electricity, having become the chief source of new energy consumption. Power drives this microeconomy of silicon: As the number of distinct supply voltages keeps increasing, delivering the right current at the right voltage with increasing reliability has become a key challenge of the telecosm. In addition, power management is the thermostat of an electronic architecture that continues to heat up. Not surprisingly, then, some 50% of the revenues of all the analog chip companies comes from power management. That's today. Tomorrow, Power-One may change that. Expert in the power arena for 30 years, the company has recently figured out how to digitize power management. Instead of many tens or hundreds of parts, Power-One condenses all board-level power into two. Its integrated board-level power system promises to remake the company's already strong line of power products. It may remake the industry.

Power-One does not expect significant sales from its new technology until 2006. Today the company's market cap of $795m is supported by $152m in working capital, no long-term debt, and projected 2004 sales of $275m, up 7% from last year. The company expects a repeat of last year's loss of $15m as it continues to invest in digitized power management. Power-One is a long-term play on a fundamental innovation that will not pay off fully for half a decade or longer.

Qualcomm (QCOM)

PARADIGM PLAY: AIR KING – WORLD'S BEST TECHNOLOGY COMPANY

DECEMBER 16: 43.45, 52-WEEK RANGE: 24.375 – 44.58, MARKET CAP: 71.22B

As the world's dominant wireless technology company, Qualcomm figures prominently in the Nextel-Sprint-Verizon merger drama. Whether the Sprint-Nextel merger goes through or Verizon crashes the party to acquire Sprint, it is difficult to see a downside for Qualcomm.

A Sprint-Nextel deal would deal a serious blow to Flarion, a private wireless technology developer and one of the few companies offering even a distant threat to Qualcomm's mobile hegemony. Nextel needs to upgrade its aging Motorola iDEN network and has trialed Flarion's flash-OFDM system. A Sprint-Nextel deal would squash Flarion's chief opportunity to break into the market, and, by adding 13 million mostly business customers, it would strengthen the hand of longtime Qualcomm partner Sprint against number-one Verizon and number-two Cingular. With Cingular moving to WCDMA, the top three wireless carriers, with some 80% of the market, would be firm Qualcomm customers, leaving T-Mobile, the only remaining non-CDMA operator, in a distant fourth place.

Should Verizon barge in and acquire Sprint, Flarion could remain alive as a possible Nextel vendor and potential thorn in Qualcomm's side. But the new VZ-Sprint combo would be the largest, most profitable, most technologically advanced network in the western hemisphere. America's two earliest Qualcomm CDMA adopters would have proven CMDA's effectiveness and would further cement Qualcomm's leadership for years to come. With advanced EV-DO data networks already up and running in many cities, VZ-Sprint's superior high speed data capabilities would help eat into Nextel's key client base of high-ARPU, high-profit business users, who want data but cannot yet get it from Nextel.

Samsung (SSNLF/SSNHY)

PARADIGM PLAY: LEADER OF WORLD CHAMPION KOREAN INTERNET FOREIGN EXCHANGE

FOREIGH EXCHANGE

Moved to *Companies to Watch* list.

Semiconductor Manufacturing International (SMI)

PARADIGM PLAY: MAINLAND CHINA'S BIGGEST SILICON FAB

DECEMBER 16: 11.67, 52-WEEK RANGE: 9.37 – 17.50, MARKET CAP: 4.2B

SMI is China's biggest silicon fab. Already the third or fourth largest fabs in the world (depending on where IBM is counted), it was one of the highest profile IPOs of 2004. Based in the Pudong hi-tech zone of Shanghai, SMI is the biggest foundry in the fastest growing nation, in the fastest growing region, with potentially the largest domestic market for all manner of digital devices. While TSMC and UMC are already shipping 90-nanometer chips, SMI doesn't need 90-nm process to grow with the domestic Chinese market.

Sprint (FON)

PARADIGM PLAY: NATIONWIDE CDMA WIRELESS NETWORK

DECEMBER 16: 24.52, 52-WEEK RANGE: 14.78 – 25.80, MARKET CAP: 36.07B

Sprint and Nextel agreed to a merger valuing each company at $35b. Verizon, meanwhile, threatened a $40b bid for Sprint. Either way, rational consolidation of the U.S. mobile phone industry continues after the FCC dropped its dumb "six carriers in each market" rule. Last summer Cingular, the joint project of SBC and BellSouth, acquired AT&T Wireless for $41b. The top six wireless carriers at the start of 2004 will thus be reduced to four.

A Sprint-Nextel marriage would create three large U.S. carriers, with 46m Cingular subscribers, 42m for Verizon, and 38m at the new Sprint-Nextel. T-Mobile would be a distant fourth with 16m. Verizon would face stiffer competition from Sprint's new EV-DO data network, as Sprint acquires Nextel's many data-hungry, high-ARPU, high-profit business users. Sprint-Nextel also becomes by far the largest owner of 2.5 GHz MMDS spectrum, with licenses covering 85% of the top 100 markets. Deployment of broadband wireless networks in the MMDS slot has so far been disappointingly slow or nonexistent, but the unification of these disparate licenses could be portentous. A happy byproduct of either deal will be Sprint's shedding of its local wireline assets (copper wires to homes and businesses), which are spread throughout the country, unlike the four RBOCs, who mostly enjoy geographic contiguity. Sprint-Nextel would apparently keep Sprint's long-distance and global IP networks but would still be the purest wireless play in the U.S. (and thus even more telecosmic, in our book).

A Sprint-Verizon deal would vault already-number-one VZ into the customer and technology stratosphere. Both companies run CDMA networks and are building next-generation Qualcomm EV-DO networks for high-speed mobile data. If Verizon gets Sprint, it will rule the high-speed data market unchallenged for at least two years. The combined entity would have 59.4m subscribers and about 34% of the U.S. market. By comparison, Cingular-AT&T has about 47m subscribers for a 26% share. Even today Cingular and AT&T are the two slowest growing major carriers, and Verizon is the fastest growing among the top five.

A Sprint-Verizon deal would force Nextel to spend $2-3 billion on a new network. Its existing Motorola iDEN network lacks voice capacity and cannot do high-speed data, increasingly crucial to the business users who are the foundation of Nextel's subscriber base. Upstart wireless equipment provider Flarion, said to be in the running for a Nextel contract before the merger news started flying, could be a winner in a FON-VZ scenario.

Either combination—a Sprint-Nextel pure wireless play or a Sprint-VZ wireless-plus-fiber-to-the-home colossus—would be more attractive to investors than the current FON configuration.

Synaptics (SYNA)

PARADIGM PLAY: ANALOG-DIGITAL INTERFACES FOR HAPTICS

DECEMBER 16: 33.15, 52-WEEK RANGE: 13.321 – 40.00, MARKET CAP: 846.65M

Founded in 1987 by microprocessor pioneer Federico Faggin and Carver Mead to create new microprocessors based on largely analog neural networks, Synaptics was the original host of the Mead camera project that came to fruition as the revolutionary Foveon imager, as detailed in George's latest book, *The Silicon Eye*, which tells the company's history and the spin out of Foveon from it. In the early 1990s, Faggin led the team of mostly Mead students into haptics (touch-based technology) and seized dominant market share in touch pads from Logitech(LOGI) by 1997. Synapatics's haptic tools are increasingly useful as the cell phone becomes a teleputer that is displacing the PC as the volume and features spearhead of innovation in electronics. Now under CEO Francis Lee, Synaptics is supplying haptic controllers to such additional products as Apple(AAPL) iPods and Samsung DVD players while retaining dominance in notebook computers, the fastest growing part of the PC industry.

Sales in the September quarter grew 29% year-over-year while operating margin climbed from 11.5% to 19.1% over the same period. In response, share price tripled since last December and now trades at a P/E of 47x projected calendar 2004 earnings. Though Synaptics has remained remarkably liquid during this period of rapid growth—working capital increased from $87m to $112m—the company has just raised an additional $100m in a private placement of convertible notes. (Is Lee eyeing some acquisitions?) Synaptics still owns 17% of Foveon and new Foveon CEO Faggin promises to give the imager pioneer the kind of raptorial strategic leadership he gave to Synaptics as he led it to leadership against Asian rivals in touch pads. But Foveon is not going to check in for awhile, and otherwise this company is well enough valued after a tremendous surge in share price this year. Wait for a pull-back before buying.

Taiwan Semiconductor (TSM)

PARADIGM PLAY: WORLD'S LEADING MICROCHIP FOUNDRY

DECEMBER 16: 8.20, 52-WEEK RANGE: 6.60 – 10.2291, MARKET CAP: 37.83B

TSMC is the world's leading foundry and long the most profitable semiconductor company outside of Intel.

Terayon (TERN)

PARADIGM PLAY: MOVING CDMA INTO CABLE

DECEMBER 16: 2.74, 52-WEEK RANGE: 1.44 – 6.25, MARKET CAP: 208.70M

Up almost 80% from its August low, Terayon remains a paradigm player in last mile broadband. CDMA remains the optimal technology for access to the fibersphere through noisy media, whether the air or cable. Digital video solutions are growing rapidly and present a new long-term opportunity for Terayon. High-definition video programming and gaming, over cable and satellites, demands high-bandwidth techniques to insert targeted, localized ads and graphics. Terayon's cable modems and cable headend technology are key.

While, DSL from the telephone companies is making inroads, Terayon's DOCSIS 2.0 advanced modem system increases upstream bandwidth for applications like voice-over-IP better than DSL. Based on Terayon's once proprietary S-CDMA modulation scheme, DOCSIS 2.0 should be the preferred solution to increase bandwidth and reliability to America's offices, once only served by the Bells.

Texas Instruments (TXN)

PARADIGM PLAY: PIONEER OF NEW PROCESSORS FOR TELEPUTERS

DECEMBER 16: 24.03, 52-WEEK RANGE: 18.06 – 33.98, MARKET CAP: 41.52B

TI and Qualcomm are currently the top two makers of cell phone chips; TI's chips are based on the GSM standard used by 80% of mobile subscribers and Qualcomm's chips are based on the CDMA system used in parts of the US and Asia. Now, the emerging third-generation (3G) standards are *both* based on Qualcomm's patented CDMA technology. WCDMA, the 3G successor to GSM that competes with Qualcomm's 3G successor, CDMA2000, was once thought to be a threat to Qualcomm. Now gorilla Qualcomm has mastered WCDMA ahead of the competition, has 21 customers for its WCDMA chips, and will soon integrate WCDMA with CDMA2000 EV-DO, GSM/GPRS, and Wi-Fi on its way to worldwide leadership in 3G. This will be tough on TI, which currently supplies about two-thirds of the world's chips for cell phones using GSM and derives about a *third* of its revenues from handset chip sales.

But TI is not without its bright lights. The company's digital light processor (DLP) business, now at about 10% of semiconductor sales, is one of the fastest growing segments of the semiconductor industry. DLPs are the microelectrical mechanical systems (MEMS) used in enterprise projection systems and new flat-screen digital TVs. As a manufacturer of combined digital signal processors (DSPs) and imaging controllers, TI is a likely winner in the explosion of digital imaging. And keeping up the fight in the teleputer market, TI, earlier this year launched a

series of industry leading microchips, including ingenious CMOS radio frequency emitters, paradigm CDMA and retro-digm GSM/GPRS processors, Bluetooth personal area network enablers, and leading-edge media processors for digital cameras and camcorders that are reprogrammable on chip. Then the company put it all together in a two-chip programmable module called the OMAP2 media access processor that combines an ARM9 core, high-speed TI DSP, a graphics accelerator for games, interfaces for high resolution liquid crystal displays, links to TV monitors, cameras, and camcorders at up to 4 megapixels, capable of playback and capture of 720 x 480 pixels (Super VGA) at 30 frames per second. Built on TI's 90-nanometer wafer fab, the processor is a low power device well-suited for your cell phone teleputer.

TI continues to control its expenses even during the semiconductor downturn; for the first three-quarters of this year, operating income improved from 16% to 20% of sales. The company also reports continued solid demand for wireless chips and projects total revenues for 2004 of $12.5b, up from $9.8b in 2003. TI, which will sample chips based built on its 65 nanometer process next year, is an incessant innovator and invoker of upside surprises. But considering the company's challenges, the stock's current P/E of 23 (based on projected 2004 earnings) may be too high a price.

VIA Technologies (2388.TW)

PARADIGM PLAY: INTEL OF CHINA?

FOREIGN EXCHANGE

Moved to *Companies to Watch* list.

Wind River Systems (WIND)

PARADIGM PLAY: WINDOWLESS REAL TIME OPERATING SYSTEMS

DECEMBER 16: 13.75, 52-WEEK RANGE: 7.15 – 14.77, MARKET CAP: 1.11B

Though its revenues sank for three straight years, from $438m in fiscal 2001 to $204m in fiscal 2004 which ended January 31, during which time it lost market share to competitors such as Microsoft and Linux distributors, Wind River is still considered the leading vendor of real-time operating systems for embedded applications, such as network processors and cell phone handsets that must perform complex operations without discernible delays. A paradigm theme is the increasing prevalence of real-time systems, as opposed to von Neumann architectures based on time-consuming fetches of data and instructions from remote memories. Wind River is also a leader in device optimization software (DSO) tools programmers use to write software for microprocessors.

In 1987, the company began marketing its proprietary operating system, VxWorks, and until this year has required customers to pay royalties on all products sold using Wind River technology. Focused on turning the company around, new CEO Ken Klein (arrived January) immediately began offering royalty-free licenses in addition to the traditional subscriptions; companies with low-margin, high-volume products are finding the one-time, higher initial fee more to their liking. Samsung signed up in May. Klein also has embraced Linux, which Wind River had previously seen as a threat to VxWorks, and the company's first Linux-based platform should hit the market in the spring. According to Klein, VxWorks is superior for complex devices and Linux for simpler systems.

For fiscal 2005 ending next month, the company projects a 15% increase in revenue to $234m, EPS of six cents, and positive operational cash flow of some $33m. The stock has responded accordingly and now trades up significantly from its low of $5.95 last December at an enterprise value of over 5x fiscal 2005 sales.

Xilinx (XLNX)

PARADIGM PLAY: PIONEER OF PROGRAMMABLE LOGIC

DECEMBER 16: 29.47, 52-WEEK RANGE: 25.21 – 45.40, MARKET CAP: 10.26B

Softening hardware by making it reprogrammable, Xilinx is one of the earliest paradigm companies. It competes neck and noggin with Altera (see above) in the rapidly expanding markets for programmable logic, which is used wherever fast adaptation to new demands is more desirable than the utmost in chip density and performance. As chip technology advances it tends toward performance overshoot, giving the programmable logic players more and more of the total microchip market. Although Xilinx has traditionally had the kind of down market edge that can disrupt the players above, its new hard-core embedded microprocessors will increase hardware customization of its chips and may take Xilinx away from the inherent advantages of general-purpose programmable logic devices. The *GTR*'s Nick Tredennick thinks Altera's Nios soft-core approach (see above) can better deliver the promises of the high-volume programmable logic device model.

Similar to Altera, on 8 December Xilinx preannounced an anticipated 4Q sequential decline in revenue of 5% to 8% on top of the 3Q decline of 5%, noting particularly softness in wireless and wireline communications. In 3Q, new product sales grew 44% sequentially but represented only 17% of total revenues, up from 6% a year earlier. Xilinx shares closed down 3.2% the day after the preannouncement, trading at 32x forecast fiscal 2005 (ending March) earnings but still above September's low of $25.21.

Zoran (ZRAN)

PARADIGM PLAY: DSPS FOR DIGITAL CAMERAS & DVDS

DECEMBER 16: 11.78, 52-WEEK RANGE: 9.48 – 22.48, MARKET CAP: 508.42M

A probable winner in the explosion of digital imaging, Zoran, like TI, produces combined digital signal processors (DSPs) and imaging controllers. Unlike TI, Zoran is fabless and closer to a pure play in the field. Beginning 15 years ago as an expert on digital signal processing chiefly for military operations, Zoran has moved massively into consumer electronics. The company's COACH (camera-on-a-chip) processor captures images from a sensor and processes them into JPEG and RAW files for dispatch to a memory card, to an Internet link, or at 30 VGA frames per second to a video device. Its DSPs are embedded in DVD/CD players, digital TVs, and other consumer electronics products. Key to the teleputer paradigm are chips to manage video in real time. But COACH competes with Canon's and TI's media processors, and the smaller and more narrowly focused Zoran is probably a riskier way to play this booming field.

The firm is anticipating a sequential slide in sales of 37% this quarter due mainly to bloated inventories in China; DVD revenues are 62% of Zoran's sales and China accounts for 40% of the company's revenues. Despite the dip, calendar 2004 sales should still surge past 2003 by 75%. And Zoran's balance sheet remains strong while its DVD market-share continues to grow during the downturn. Up from its 52-week low of $9.48 in October but still down significantly from a $22.48 high last January, the stock trades at an enterprise-to-sales multiple of just 1.7x.

Got Questions?

Visit our subscriber-only discussion forum, the Telecosm Lounge, with George Gilder and Nick Tredennick, on www.gildertech.com

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